

HEARING ON OVERSIGHT OF THE NUCLEAR REGULATORY COMMISSION

Tuesday, April 2, 2019

United States Senate

Committee on Environment and Public Works

Washington, D.C.

The committee met, pursuant to notice, at 10:05 a.m. in room 406, Dirksen Senate Office Building, the Honorable John Barrasso [chairman of the committee] presiding.

Present: Senators Barrasso, Carper, Capito, Cramer, Braun, Rounds, Ernst, Cardin, Whitehouse, Gillibrand, Markey, and Van Hollen.

STATEMENT OF THE HONORABLE JOHN BARRASSO, A UNITED STATES SENATOR
FROM THE STATE OF WYOMING

Senator Barrasso. Good morning. I call this hearing to order.

Today's oversight hearing will be looking at the Nuclear Regulatory Commission, the NRC, and I welcome all five commissioners here today to the Committee.

Last May, the Senate confirmed Commissioners Caputo, Wright, and Baran. As a result, the Commission now has a full slate of five commissioners for the first time since 2014.

This morning Commissioners Caputo and Wright will testify before Congress for the first time since being confirmed. I look forward to the testimony.

Today also marks the last time that Commissioner Burns will be testifying before the Committee. His term concludes this summer. Commissioner Burns has served the agency in various capacities for over 40 years. A remarkable service. We are very grateful. You were chairman from 2015 through 2017, so we just want to thank you on behalf of the entire Committee for all of your service to the NRC.

Last week marked 11 years of continuous service for Chairman Svinicki. This is unprecedented. So far, her tenure as chairman has been very productive. Last September Chairman Svinicki and then-Wyoming Governor Mead signed an agreement in Cheyenne, Wyoming. The agreement allows the State of Wyoming to license and regulate

uranium recovery facilities. It has been a long-time priority for me. Thank you for your leadership to assure the agreement was signed in a very timely manner.

Affordable, reliable electricity powers a strong economy. Nuclear energy is by far the most reliable carbon-free energy source. Nuclear energy also provides more than twice the amount of electricity as wind and solar combined. Nuclear power provides about 60 percent of our Nation's emissions-free energy. If we are serious about climate change, we must be serious about expanding our use of nuclear energy.

In 2018, nuclear energy generated a record-breaking amount of electricity in the United States. Regrettably, last year's record will not be broken again unless we take dramatic action. Two nuclear power plants will close this year. An additional eight reactors are expected to close between 2020 and 2022. We need to work to reverse this trend.

Shuttering nuclear plants not only reduces the amount of dependable energy produced, it also increases a plant's regulatory costs since fewer plants are available to fund the Commission's work. In this regard, I am pleased the Commission has submitted a smaller budget that reflects the reduced workload.

I encourage the Commission to continue to find ways to make their work more efficient. For example, the Commission staff should focus

their efforts on issues of greatest safety significance. This would not only reduce budgetary demands, it would also allow nuclear reactor operators to focus on the most important safety issues.

Predictable and transparent budgets should align with predictable and transparent regulations. The Commission's completion of a major rulemaking in January, I believe, did just that. This rulemaking requires nuclear power plants to be prepared for an unforeseen emergency. It is an accumulation of years of work in response to the 2011 nuclear crisis in Japan. I look forward to hearing more about the rulemaking.

In addition to maintaining predictable requirements for existing nuclear reactors, the Commission must also establish the rules for new nuclear technologies. That is why I was pleased that President Trump signed into law the Nuclear Energy Innovation and Modernization Act in January. A number of us cosponsored this bipartisan legislation. I cosponsored it, along with seven members of our Committee, to help American nuclear innovators develop, license, and deploy advanced nuclear technologies.

These new technologies could increase safety, could decrease costs, and could reduce nuclear waste. They are also necessary to achieve low carbon energy future for our Country and the world.

America has always been the global leader in nuclear technology. We can't allow our international rivals to surpass us. The

Commission plays a vital role in this global competition. The Commission should prioritize activities to advance American nuclear leadership. For example, new and upgraded fuel types, known as accident-tolerant fuel, can improve safety, make plants more cost-efficient, and generate less waste. This is a win-win-win.

While we seek to reestablish American leadership for nuclear reactor operation and technology, we must not disregard the dire outlook of American uranium production. Last year, two American uranium companies petitioned the Department of Commerce to consider the national security impacts of uranium imports. I support this review.

The deadline for the Administration's response to the petition is approaching. The Administration must take meaningful steps to maintain and grow American uranium production. Our American uranium industry must not be forced out of business due to unfair competition driven by Russia and other nations.

It is also critically important for the Federal Government to properly manage and dispose of our Nation's spent nuclear fuel and nuclear waste. I am pleased the Commission's budget requests \$39 million to resume its review of the Yucca Mountain site, as required by law. Congress should support this request.

I would now like to turn to Ranking Member Carper for his statement.

[The prepared statement of Senator Barrasso follows:]

STATEMENT OF THE HONORABLE THOMAS R. CARPER, A UNITED STATES SENATOR
FROM THE STATE OF DELAWARE

Senator Carper. Thanks, Mr. Chairman. Thanks for bringing us all together.

It is good to see each of you here before us today. Madam Chair, a pleasure.

And to our former chairman, I just want to echo the words of our Chairman John Barrasso to thank you for a lifetime of service to this Country. He has expressed my thoughts on the need for more carbon-free electricity, not less, and nuclear has provided anywhere from 60 to 70 percent of our carbon-free electricity for some time. It is dropping now, as you know, but I think we have an opportunity and I think an obligation to try to make sure it doesn't drop much further. And if we can somehow reverse that, we ought to do so.

But we are here today to continue our oversight of the Nuclear Regulatory Commission and to hear more about the President's budget proposal for fiscal year 2020. It is my sincere hope that today's hearing is just the beginning of other hearings on our Committee's budget over the agencies for which we have jurisdiction.

Since joining this Committee, I have worked closely with our colleagues to strengthen the culture of safety, worked closely with you to strengthen the culture of safety, and within the U.S. nuclear industry itself. In part, due to our collective efforts, and thanks

to the NRC leadership and the Commission's dedicated staff, the NRC continues to be the world's gold standard for nuclear regulatory agencies.

However, we are here to look forward, not look back, and we need to ensure that the NRC continues to have the tools that it needs to be successful and to be safe. We also need to ensure that the NRC's actions taken this year have safety in mind in order to ensure that America's nuclear power remains the safest in the world.

Today I am, and I think we are, interested in learning whether the President's budget, which I believe falls short in a number of areas, will provide the NRC with sufficient funding to protect the public, while being responsive to the legitimate needs of the industry that is being overseen.

While most any organization needs strong leadership, as I like to say, it is always the key to success. I don't care what the organization is, leadership is always the key. A dedicated workforce is certainly helpful, and the appropriate resources don't hurt, either.

I support improving the NRC's efficiency and its flexibility to respond to the changes in the nuclear industry; however, we cannot cut the agency's budget just for the sake of cutting. We must ensure that the NRC has adequate funding to continue to attract the best and brightest talents so that the agency continues to be the global

standard for safety.

Beyond the budget, I am particularly interested in hearing today more about why the NRC decided to change courses regarding the post-Fukushima rule. Our nuclear reactors must be able to withstand seismic or flooding events, regardless of when the reactors were built. Requiring our nuclear reactors, most of which were built decades ago, as you know, to withstand earthquake and flooding risks beyond the capacity of their original design doesn't make much sense to me.

This issue goes well beyond being able to withstand a similar event that occurred in Fukushima. As we continue to see the worsening effects of climate change nationwide, our nuclear fleet will experience flooding, experience drought and other extreme weather more frequently. As we saw a year or two ago in Ellicott City, Maryland, not far from here, and recently in the Midwest, 1,000-year flooding events are happening every couple of years, not every 1,000 years, and we need for our nuclear fleet to be prepared for this new climate reality.

Why the NRC has decided to reverse course from its proposal and make these protections voluntary is still unclear to me, especially since, according to the NRC's own staff, no one asked for this change; not industry, not staff, no one. With that said, I look forward to learning more today from the NRC about why its members decided to

take this approach.

I am also interested in hearing today how the NRC plans to implement changes in the advanced nuclear reactor licensing framework, as Congress directed in the recently passed Nuclear Energy Innovation and Modernization Act that the Chairman has alluded to. This legislation was supported by the Chairman, by me, I think many members of our Committee, and it is a good legislation.

I believe that if our Country is smart, and we are, we will replace older nuclear technology with new technology developed right here at home. That includes advances that are safer, produce less spent fuel, and are cheaper to build and to operate. In doing so, we can reap the economic benefits, along with the clean air benefits of a new, advanced nuclear electricity generation.

In closing, let me again reiterate the importance of making sure that the NRC has the resources that you need to review these new technologies and to ensure that our current nuclear fleet remains safe far into the future.

I want to thank our Commission for being here today. We look forward to your testimonies. Welcome.

I am going to have to slip out for a few minutes, but I will be back, and I look forward to a robust round of questions and answers. Thank you.

[The prepared statement of Senator Carper follows:]

Senator Barrasso. Thank you, Senator Carper.

We are now going to hear from our witnesses. We will start with the Chairman, Kristine Svinicki, and then move to Commissioner Jeff Baran, Commissioner Stephen Burns, Commissioner Annie Caputo, and Commissioner David Wright.

We are going to continue with the Committee's practice of a five-minute opening statement from Chairman Svinicki and the two-minute statements from each of the other Commissioners. I want to remind the witnesses that your full testimony will be part of the official hearing record.

Chairman Svinicki, please proceed.

STATEMENT OF KRISTINE SVINICKI, CHAIRMAN, U.S. NUCLEAR REGULATORY
COMMISSION

Ms. Svinicki. Thank you. Good morning, Chairman Barrasso, Ranking Member Carper, and Senators Gillibrand and Cramer, and other distinguished members of the Committee who may join us. My colleagues and I appreciate the opportunity to testify this morning on the U.S. NRC's fiscal year 2020 budget request.

The funding we are requesting provides the resources necessary to accomplish our mission to license and regulate the civilian use of radioactive materials to ensure adequate protection of public health and safety, and to promote the common defense and security.

The NRC's fiscal year 2020 budget request, including resources for the NRC's Office of the Inspector General, is \$921.1 million, which would include 3,062 full-time equivalent positions, or FTE. The fiscal year 2020 budget request represents an increase of \$10.1 million when compared to the fiscal year 2019 enacted budget. This requested increase in resources is due principally to the inclusion of \$38.5 million to support licensing activities for the proposed Yucca Mountain deep geologic repository for spent fuel and other high-level radioactive waste.

The NRC proposes to recover \$759.6 million of the requested budget from fees assessed to NRC's licensees and applicants. This will result in a net appropriation of approximately \$161 million

with, again, \$38.5 million of that to be derived from the Nuclear Waste Fund.

The NRC has initiated efforts to implement requirements of the Nuclear Innovation and Modernization Act and is progressing in each area to ensure timely implementation of the Act's requirements. The budget also proposes \$15.5 million for the continued development of a regulatory infrastructure for advanced nuclear reactor technologies.

We are mindful of the importance of the highly skilled staff that we have and the need to maintain our expertise while our workload continues to evolve. In addition, the NRC's focus on transformation and innovation continues. The Commission has met with NRC staff and external panels that included the nuclear industry, other Federal agencies with ongoing innovation efforts, and nongovernmental organizations to discuss the NRC's staff's efforts, and we have also explored broader organizational strategies and innovation perspectives from a range of external experts.

In summary, the fiscal year 2020 budget request reflects the NRC's continuing efforts to achieve efficiencies while maintaining reasonable assurance of adequate protection of public health and safety and safeguarding the security of our Nation.

On behalf of the Commission, thank you for the opportunity to appear before you and for the Committee's consistent support and

oversight of NRC's important mission.

Before I conclude, I would like to add my recognition and thanks to former Chairman Stephen Burns and commissioner. I think of the members of the Commission, I may have known him the longest. He was Deputy General Counsel when I joined the Commission, was then General Counsel, left for a time and came back and was both my chairman and my colleagues. I consider him a friend. He is a pleasure to work with.

We all think about the last day we might have on the job, but I think if any of us could leave the NRC with the amount of respect and esteem that Steve commands throughout the NRC, it would be a significant accomplishment.

So thank you, and I look forward to questions.

[The prepared statement of Ms. Svinicki follows:]

Senator Barrasso. Thank you, Madam Chairman.

Commissioner Baran.

Senator Carper. That was lovely. That was lovely. I hope when we leave as members that our colleagues say things about us that was as poignant and as meaningful as that. Thank you for that.

Senator Barrasso. Commissioner Baran.

STATEMENT OF JEFF BARAN, COMMISSIONER, U.S. NUCLEAR REGULATORY
COMMISSION

Mr. Baran. Thank you for the opportunity to testify today. It is wonderful to be here with my colleagues.

During the past year, NRC received a number of ideas for transforming the way we do our work. I would like to briefly share my thoughts about how NRC should approach transformation.

In my view, it makes sense to consider transformational change when a new technology challenges NRC's existing regulatory approach or when the agency has historically struggled to regulate effectively in a particular area. For example, a strong case can be made for updating NRC's regulations to account for non-light water reactor technologies.

But when a regulatory process has worked well over the years, it is better to pursue targeted refinements aimed at solving clearly defined problems. Whether NRC is considering a major transformational change or a more modest incremental change, we must keep our focus squarely on our safety and security mission. Transformation at NRC can't be about rolling back safety and security standards to save money, and it can't be about fewer inspections or weaker oversight. That would take NRC in the wrong direction.

Several of the transformational ideas being discussed involve the reactor oversight process. This is NRC's basic framework for

overseeing the safety of the Nation's nuclear power plants. It affects every power reactor in the Country. I would be wary of making any radical changes to this program because it has generally been an effective safety framework.

One of the proposals I am particularly concerned about is to replace some core NRC inspections with self-assessments performed by licensees. These baseline inspections are essential and NRC inspectors need to be independently conducting them. We should not allow licensees to inspect themselves. Doing so would be fundamentally inconsistent with our role as an independent nuclear safety regulator.

To do the best job for the American people, NRC needs to be open to new ideas and new approaches. But we also need to carefully and thoroughly evaluate the proposed regulatory changes to ensure that they will have a positive impact on safety. That is our core mission and must remain our top priority.

Thank you, and I look forward to your questions.

[The prepared statement of Mr. Baran follows:]

Senator Barrasso. Thank you very much, Commissioner Baran.

Commissioner Burns.

STATEMENT OF STEPHEN BURNS, COMMISSIONER, U.S. NUCLEAR REGULATORY
COMMISSION

Mr. Burns. Chairman Barrasso, Ranking Member Carper, and other members of this Committee, I appreciate the opportunity to testify today, and I also appreciate very much your very kind remarks. It has been hard to believe it has been 40 years or more, and I want to thank the chairman for also her eloquent statement.

Senator Carper. Were you in the third grade when you started?

Mr. Burns. Yes, I was in third grade.

[Laughter.]

Mr. Burns. Anyway, as noted, in the near future I will complete my service as a commissioner at the NRC. My service began at the agency in 1978, when I graduated from law school here at George Washington University, and continued from that time except for a brief respite at the OECD Nuclear Agency in Paris from 2012 to 2014. I am honored that President Obama appointed me as commissioner and designated me as chairman during the last years of his administration. I am proud to have served the NRC and particularly the people I have gotten to know who are dedicated to our mission.

I know there are times when we have had to learn from our experience, learn to do better and to improve our performance as a regulator, but on the whole I think we hit the mark the vast majority of the time in achieving a high level of performance and holding the

regulated industry accountable. This is a better agency today than it was when I walked into it in 1978.

We can always strive to better perform our safety and security mission, and to better risk-inform our decisions, but the safety and security of the public must always be the central focus. Credit belongs largely, again, to the day-to-day work of our dedicated staff in achieving those goals. I appreciate their day-to-day focus on ensuring adequate protection to the public.

Thank you again for the opportunity to appear before you and the work you do in oversight of our agency, and I look forward to answering any questions you may have. Thank you.

[The prepared statement of Mr. Burns follows:]

Senator Barrasso. Thank you so very much for your testimony and your service.

Commissioner Caputo.

STATEMENT OF ANNIE CAPUTO, COMMISSIONER, U.S. NUCLEAR REGULATORY
COMMISSION

Ms. Caputo. I would like to add my thanks to the Committee for inviting us here to testify. As the Chairman said, it is absolutely essential and very much appreciated, the rigorous oversight that this Committee brings to the work of our agency.

There are many diverse views about transformation and the changes that the agency should pursue, so I would like to just add a couple of my own thoughts just in the area of budgeting and transformation.

Our mission doesn't change, our high-level standards of safety and security don't change, and our principles and values don't change. But our workload and how we manage it will be different in the future. To manage a changing workload, I think it is necessary to modernize how we budget and allocate resources. The Treasury Department's white paper entitled The Future of Financial Management states, "The use of data is crucial to the future of federal financial management."

Currently, we use a budget developed two years ago to formulate a budget for two years from now. During that process, we use very little data on actual expenditures and performance to inform our budget development. This results in a budget that is slow to reflect our changing environment.

The Nuclear Energy Innovation and Modernization Act is a strong statement on the NRC's need to reform. The new budget and fee recovery structure in NEIMA provides an opportunity for us to harness analysis of actual expenditures to better inform our budget decisions and rethink how we allocate our resources, particularly in light of the fact that we anticipate retirement of an additional 13 reactors by the year 2025.

I look forward to working with the Committee, my fellow commissioners, the NRC staff, and our stakeholders to shape a modern, successful NRC. Thank you.

[The prepared statement of Ms. Caputo follows:]

Senator Barrasso. Thanks so much for your testimony.

Commissioner Wright.

STATEMENT OF DAVID WRIGHT, COMMISSIONER, U.S. NUCLEAR REGULATORY
COMMISSION

Mr. Wright. Thank you. Good morning, Chairman Barrasso and Ranking Member Carper and esteemed members of this Committee. Thank you for the opportunity to testify today.

I have been on the Commission about 10 months now and I am grateful for the warm welcome and collegiality of my colleagues, as well as the staff's efforts to bring me up to speed. I view the NRC as a team and one I am proud to be a part of.

As I promised, I have gotten out of my office and spent considerable time walking the halls of the NRC and visiting plants. I visited every office on every floor at NRC Headquarters at least once now. These meetings and visits with the NRC staff and our licensees have given me invaluable insights into the agency's critical safety mission, their priorities, successes, and challenges. I am humbled and impressed by the people that I have met, as well.

I come to this position as a former State regulator and I am, therefore, mindful of the impact regulation has on regulated utilities. When I make decisions as a commissioner, I combine that perspective with my dedication to the NRC safety mission and the agency's principles of good regulation, particularly the principle of efficiency.

While I am not yet an expert on the NRC's budgeting and licensing process, I do see room for improvement in both areas when it comes to efficiency. I also know the agency is busy analyzing and preparing for changes required by the Nuclear Energy Innovation and Modernization Act, so I am also interested in how this law will motivate other changes in how we do our work.

I view change, in particular changes how we perform our work, as an opportunity. Change is an opportunity to transform, innovate, and recalibrate the things we do to achieve our important safety mission in the most efficient and effective way possible.

Thank you, and I look forward to your questions.

[The prepared statement of Mr. Wright follows:]

Senator Barrasso. Well, thank you very much, all of you, for your testimony and your service. We will start with a couple rounds of questions, and I would like to start first with Chairman Svinicki.

In January, the Commission approved the final rule known as the Mitigation of Beyond Design Basis Events. The rule codifies a number of existing requirements imposed on nuclear power plants following the 2011 Japanese nuclear accident. Would you please summarize the key provisions of that rule for us?

Ms. Svinicki. Thank you for the question, Chairman Barrasso. I would note that yesterday I received a correspondence from Senators Carper and Whitehouse asking a series of questions. We look forward to responding to the Committee's questions on the Commission's action on the rule.

It is not easy to summarize a lengthy rule, but let me attempt. After Fukushima, the Commission mandated a host of changes and reevaluations of the hazards that U.S. plants face. We did that through other instruments like immediately effective orders and demands for information.

As a matter of rigor, agencies such as ours typically follow that up with a rulemaking process afterward so that those measures can go through the Administrative Procedure Act process of being promulgated as a formalized rule.

As laid before the Commission, the rule went beyond the measures

that had previously been mandated and included a set of additional measures that the staff proposed that the Commission adopt and make into requirements on the basis of what is called our adequate protection authorities under the Atomic Energy Act, which do not require an analysis. If we invoke adequate protection, there is not a legal requirement to do an analysis of the safety benefits and the costs and benefits of the new requirements.

The majority of the Commission, in looking at the provisions beyond those already mandated, was not willing to adopt or invoke the adequate protection basic summary conclusion for the additional measures and indicated that they would move forward with the rule with the measures that had been mandated and the continuation of the site-specific evaluation of the flooding and seismic hazard at U.S. plants.

In addition, the Commission, in 2016, had established a center of expertise for the ongoing continual evaluation of external hazards to U.S. nuclear facilities. This group has been stood up and will contain a library of information where we will go out to the USGS, to the climate change experts and others and look at the hazard information as it changes over time.

So, I would depict it as a way to bring visibility and focus to new information as it comes in. And, of course, we would assess that and take action.

We did have a very severe difference of opinion on the Commission over the final rule and I have deep respect for my colleagues who differed on the outcome, but, in totality, looking at all of the measures that the NRC enacted since Fukushima, and, again, I had direct and personal involvement going all the way back to the accident in 2011, the outcome of the Commission majority I think was an acknowledgment of this efficiency of the measures in place.

There was a particular difference of opinion over the forward going regulatory treatment of certain of the changes and what we call the flex equipment. This is the surplus sets of equipment that are now at every U.S. nuclear power plant to deal with hazards or events that would go beyond the design basis.

The majority of the Commission felt that the industry's commitment previously given to maintain that equipment was sufficient, and I know that other members of the Commission would have turned that into a regulatory requirement.

There were other differences, but that was, I think, the most pointed difference that we had.

Senator Barrasso. In October, the EPA withdrew an Obama Administration midnight rule. The midnight rule, of course, would have added unnecessary red tape, in my opinion, to the principle method of uranium production. In 2015, the NRC staff communicated substantial jurisdictional concerns to the EPA about the proposal

and the EPA proceeded despite the concerns that the NRC had come up with. These jurisdictional issues I think need to be resolved. Accordingly, in 2017 I asked EPA to sign a Memorandum of Understanding with the NRC clarifying the EPA's regulatory authorities.

Madam Chairman, could you please provide an update on the status of the NRC's engagement on that Memorandum of Understanding?

Ms. Svinicki. My understanding of the current status is that upon the withdrawal of the rule by EPA, NRC and EPA staffs have been engaging over the renewed interest in the Memorandum of Understanding. There are, as you note, I think some statutory interpretation differences that are being worked out, but the experts do continue to engage on this matter. As a matter of fact, I believe there is a meeting that will be held yet this month between the EPA and NRC on the MOU development.

Senator Barrasso. Thanks so very much.

Senator Carper.

Senator Carper. Just very briefly to the chair, quickly, how are we doing in terms of retention, attracting new folks to come to work at the NRC? How is morale? Just very briefly.

Ms. Svinicki. Very briefly, I would characterize the concern about our demographic shift to more senior workers, while we are very, very grateful to have them and they have a lot of expertise, we are realizing now that the front-end of the pipeline and entry level

workers I think I would characterize that as an increasing concern for the agency. While we wouldn't take a broad brush to it, for myself alone, I think it is imperative that we begin to look at strategic hires of recent university graduates and things like that.

I will say, on morale, you know, transformation and change is hard. Human beings have a lot of concerns over what it might mean for them, so the leadership team at NRC has a strong focus on messaging and outreach and communications regarding changes that are or might be in the future coming for NRC.

Senator Carper. All right, thank you.

Do the other commissioners agree? If you agree, raise your hand. Do you agree with that assessment?

All right, let the record show four hands. All right, good. Thank you very much.

Question for Commissioner Baran. With the President's NRC budget for fiscal year 2020, in your judgment, will the NRC have the resources needed to do its job to ensure safety for current nuclear reactors and to be ready for the next generation of them?

Mr. Baran. I believe it will. I would just provide a little bit of context, though, and say since fiscal year 2014 NRC's budget has decreased by 15 percent and our workforce has declined by 21 percent. That is a huge amount of change in a short period of time, so I think we have adjusted well.

Our budget and staff need to reflect our workload, but I share the chairman's concern that one of the things that has been sacrificed in that period of time is entry level hiring. We are at a point now where only 2 percent of the people who work at NRC are below 30 years old. That is really low and it is an indication, I think, that we are not doing much entry level hiring, and we have to get back to that, I think, in the near future for the long-term health of the agency.

Senator Carper. Okay, thank you.

To our chair, you mentioned that Senator Whitehouse and I recently sent you a letter regarding the post-Fukushima rule that the Commission finalized I think back in January. We appreciate your attention to that and your timely response. Senator Whitehouse and I are concerned that the changes to the final rule made by the chair may have missed the mark in addressing the lessons learned from the Fukushima nuclear accident, and we need answers regarding why changes were made to the final rule, changes that I think went against the career staff's recommendations.

Just a quick yes or no on this one. I don't ask a lot of yes or no questions, but I want to be mindful of my time.

Madam Chair, did the NRC career staff recommend changing the mandatory safeguards against seismic and flooding hazards to voluntary ones? Did they recommend that?

Ms. Svinicki. No, but there were expert staff that had -- they didn't go through the former differing views process, but we did have a handful of agency experts that disagreed with the proposal as it was laid before the Commission. And I have spoken with those individuals who were in disagreement.

Senator Carper. A follow-up to that. Did public comments during the rulemaking process ask the Commission to make the mandatory safeguards against seismic and flooding hazards voluntary?

Ms. Svinicki. No, they did not.

Senator Carper. A follow-up on the same issue, a follow-up to Commissioner Baran and maybe Commissioner Burns. You both voted against the changes. Would you please take a moment and explain your concerns with the final rule? And in your answer please verify if you know of any party that asked for this change.

Mr. Baran? Mr. Burns, go ahead.

Mr. Burns. Essentially, Senator, I thought that the rule as proposed, as commented on, and as then offered to the staff in final form was a more direct, in fact, a direct and elegant solution to the issue that had been identified; that is, looking at current seismic and flooding type hazards and assuring that they were addressed during the course of a lifetime by licensees, and there wasn't, to my understanding, adverse comment on that from the external stakeholders who would have commented on the rule.

Senator Carper. All right.

Mr. Burns?

Mr. Burns. I think everyone agrees that the flex equipment that the chairman mentioned is the single biggest post-Fukushima safety improvement, but the equipment doesn't do us any good if it is not there and available when called upon; and that means protecting the equipment from entirely predictable natural hazards. We spent several years, the staff and licensees, using the latest science to figure out what are the current modern-day hazards, flooding and seismic hazards, at the power plant sites across the Country.

From my point of view, and I think Commissioner Burns agreed with this, it makes sense to protect that equipment from those modern understood hazards, and not the old outdated hazards. It is the biggest improvement we had. You want to protect that equipment.

Senator Carper. All right, thanks.

All right, thanks for those responses, and we look forward to a second round. Thank you.

Senator Barrasso. Thank you, Senator Carper.

Senator Capito. Thank you, Mr. Chairman.

It is nice to see the full Commission here. I want to give a shout out to Commissioner Caputo, because we worked together on the Subcommittee, so welcome. He says it is confusing him because it is Caputo and Capito, but we know what it really is.

Ms. Caputo. I can keep us straight.

Senator Capito. I am going to ask a question I think I ask every year and I still don't understand.

I understand that you are making great strides to right-sizing the Commission and I thank the NRC, and that is a question that comes up every year, but there is a significant amount of carryover funding, which suggests there is a mismatch I don't understand. In fiscal year 2017 carryover was \$37 million, at the end of fiscal year 2018. Per your budget, carryover from the prior year totaled \$40.4 million, with \$22.7 million still wholly unallocated.

And then again, the request is for more carryover, which is described to be in the budget to jump-starting licensing around Yucca Mountain. But I understand that that cannot be funded by a carryover.

So, could you help me with what do you do with all these millions of dollars that you are carrying over, and are you overprescribing your budget to allow for a carryover to give you some flexibility that maybe your regular budget doesn't provide for you?

Ms. Svinicki. Thank you for that question, Senator. We have engaged in previous years on the NRC's efforts to develop and end the year with a more accurate figure so that it does not have this surplus at the end of the year. There are a number of factors that contribute to ending the year without the amount of outlay that one

predicted. Receiving the budget later, after the beginning of the fiscal year, can often be a contributor, but we did not experience that this year. So, as of right now, being approximately midway through the fiscal year, we estimate that we would have about \$20 million of carryover on the fee base.

So, as happened with the appropriations bill last year, when we had about \$25 million, appropriators directed us to use \$20 million of that as an offset. So, I can't speak for what appropriators will do, where we will end the fiscal year and what they would do. We have had an effort on improving our budgeting and trying to get greater fidelity and end the year with less of a surplus. I don't know that we would ever get to having it be down to the penny, but we have driven down the figure in recent years and I think we continue to look at what we end the year with.

Senator Caputo. Was last year the first year that the appropriators had asked you to use that as an offset?

Ms. Caputo. No, it was not.

Senator Caputo. That is pretty much standard, then? Okay.

The other question I think is with the anticipated shrinking number of reactors and the fees associated. You are raising the 8 percent annual increase this year, what, 6.5. What steps are you making to make sure that that is not just an incremental thing over years as we see more of these being retired?

Ms. Svinicki. Well, I think the most prominent change to that will be arising out of the NEIMA bill that is now enacted law. Of course, it has a number of measures that have interrelated effects on the agency's budget, but one of which is to create a ceiling for the operating reactor fee. In addition, there are other measures that exert budget discipline on the agency that arise out of NEIMA.

I will say that embedding some of that statutory, again, those provisions, kind of by virtue of mathematics, affect different parts of the budget. We are working to build that into our accounting and budgeting systems, so I can't testify to the totality of the impact of the provisions. Of course, there are a number of provisions on our corporate support costs as well.

I think it would probably take one year through the budget cycle to have a complete picture of how those provisions impact each other, so in future appearances we should be able to give you a better sense of that.

Senator Caputo. Commissioner Caputo, I am going to put you on the spot here because you have spent years on the other side of the dais here. What perspectives could you say becoming a commissioner has changed your view from where we sit to where you sit now?

Ms. Caputo. Well, I think this budget, the 2020 budget that is before you now, is my first budget on the Commission, so it is an introduction to how the Commission develops its budget, and that,

I think, largely is what lies behind my remarks about the fact that I think the Commission could use data and data analytics to a much greater extent to inform our resource allocation decisions.

I think the increase in the fee that you are talking about, this year in particular, is driven by the retirement of a few reactors. But if you look at a two-year span, as an example, the 2020-2018 and the budget before you now, the 2020 budget, six plants will have retired, and those six plants would be paying in \$4.8 million, roughly, in an annual fee.

So, when we look at the 2020 budget, six times 5 is \$30 million. But we don't see a decrease in the operating reactors' budget in that order; we see a decrease of \$5.4 million. So I think that is evidence of our struggle to sort of right-size in advance of the cessation of those fees coming in. And this will continue to be a struggle, I think, going forward, but one that hopefully the new fee structure under NEIMA will help with.

Senator Capito. Okay. Thank you.

Senator Barrasso. Thanks so much, Senator Capito.

Senator Cardin.

Senator Cardin. Thank you, Mr. Chairman. Thank you for calling this hearing.

I want to thank the entire Commission for being here. It is impressive to see you all out there. We thank you very much for your

work.

I want to follow up on Senator Carper's point in regard to the personnel issues. Since fiscal year 2010, there has been approximately a 23 percent reduction in the workforce at the Commission. The past fiscal year saw another decline. I first would like to know whether we should anticipate a further reduction in the workforce or do we have the right numbers now?

Why don't I ask that question first. What is your game plan on downsizing, Madam Chair?

Ms. Svinicki. We continue to trend down. Again, our demographic is we have a very, very senior workforce. A substantial portion of our employees are retirement eligible. Now, many of them stay well beyond their retirement eligibility, but it is a growing concern that the front end of the pipeline -- Commissioner Baran was mentioning a statistic that only 2 percent of NRC employees are younger than the age of 30, which is an extreme figure.

Senator Cardin. You are getting to my second question. My first question is the size that you are attempting to get to; the second is retaining good people. My staff tells me that by 2023, 42 percent of your workforce will be eligible for retirement. I know that Commissioner Baran already mentioned the 2 percent under the age of 30, which is a very small number for any of our workforce.

Put on top of that the general challenge for Federal workforce

today as a result of attacks on the Federal workforce on the budget and their benefits, as well as the shutdown impact. You may have been directly impacted, but you were indirectly impacted by the Government shutdown. It has caused a drain of some of our best from agencies that are not clear as to the future commitment of the Government to their mission.

I worry that the same thing could be happening at the NRC as to whether you are attracting young people to this profession. Do they see a future here and are we challenged in maintaining the capacity, moving forward, of the NRC to keep us safe and to be at the top of the game internationally on regulating nuclear energy?

We really need to pay a little bit of attention to this, and it looks like the fact that you don't have younger workers -- I know at NSA, by way of comparison, we always are concerned that they can bring in the youngest, brightest people so they have a pipeline to the future. Are we missing this opportunity on the nuclear regulatory side?

Mr. Baran. I would just say that on the question of the overall size of the agency, personally, I think we should get to the point of stabilizing at this point. We have had a lot of reduction in a relatively short period of time. I do worry that, continuing on the track we are on, we are going to have problems maintaining our core capabilities, our core technical capabilities. I worry about that.

Of course, the other issue is the lack of entry level hiring, which is significant.

One of the things we are seeing is retaining. It is harder to retain folks because, with a smaller agency, an agency that has been shrinking, you don't have the same promotional opportunities, the same career enhancement opportunities. We see folks leaving, great people, mid-career, who can't really advance the way they want to.

Senator Cardin. So how do we counter this? How do we counter this?

Mr. Baran. Well, the staff is working very hard on that and the Commission focuses on it a lot. It is challenge, but I think as long as the budget keeps declining steeply and the workforce keeps declining steeply, it is difficult to counteract that.

Senator Cardin. I would just urge, Mr. Chairman, we are the authorizing Committee. I would like to get a game plan from you as to how we can attract the youngest, brightest talent for the future into your agency.

Also, I would think from the appropriators' point of view that they also need to have a game plan as to where you are heading so that we can try to assist. We understand the size is one thing, but not having the brightest minds coming out of our universities interested in a career in nuclear safety does present challenges for us moving forward.

One of those challenges, and it might be the right thing, but the Nuclear Energy Institute has asked for a self-assessment, rather than inspection, in regard to some of their nuclear activities. We saw that didn't work very well on airline safety with Boeing. The question is are we moving more towards reliance upon self-assessment rather than the work of the Commission in order to keep us safe, a down-product of not having the capacity because of downsizing and the lack of recruitment?

Mr. Baran. Speaking for myself, I would just say I strongly believe we should not head in that direction. I think the role of NRC is to set the health and safety standards and to inspect to make sure those standards are met. The role of licensees is to operate the plant safely. We shouldn't operate their plants; they shouldn't be conducting our inspections. That is our job; it is a core responsibility of the agency and we should be doing that.

Senator Cardin. I would just ask the Commission if you could just share with us your game plan for attracting the professionals that you need moving forward so that we can have that in our planning as authorizers and as appropriators. I think that would be helpful.

Ms. Svinicki. Yes, Senator Cardin. We do have a detailed work on our strategic workforce planning ongoing. We can provide an update on where that stands to the Committee with a focus on the younger workers.

Senator Cardin. Thank you.

Senator Barrasso. Thanks, Senator Cardin.

Senator Braun.

Senator Braun. Thank you, Chairman.

Especially interesting for me to be sitting in on this. I am the Chair of the Clean Air and Nuclear Safety Subcommittee, so I intend to do more work on this down the road.

A two-pronged question, and this would be for any of the witnesses. Number one, Purdue University has had research on some new technology and it is with the digital version that has been in place in other countries. I am interested in what is going to get us across the threshold for using nuclear energy for all the pertinent topics that are in front of us, clean energy generation.

Also, what is happening in other countries, because I know many other countries have put an emphasis on it and I feel they are going to lead more than us due to the fact that there has been gun shyness about pushing forward with nuclear power for electric generation.

In addition to what Purdue is working on, tell me about what else is happening, how that is going to lead in to where we have more confidence here, and then tell me about the competition across the world where they seem to be embracing nuclear energy for power generation more than we are.

Ms. Svinicki. If I may, Senator, I will just begin, and if my

colleagues want to add to that broad question.

But I would note that with respect to the modification to the Purdue research reactor, I was made aware that the agency has completed its review of that amendment and modification to that facility, and I think that the completion of that was communicated yesterday or may be communicated today to Purdue. I knew we were very close to the finish line, but I didn't know what we had actually concluded our work on that.

On your broader questions about the global energy picture, I think it doesn't necessarily fall squarely in our domain. What we do is look at nuclear safety and security regulation. The United States is generally considered to have an extremely strong and set a high standard for nuclear safety and security.

I know that there are countries that have looked closely, such as Spain, that has adopted, I think, a near replica of the U.S. nuclear safety regulations whole cloth. We do continue to try to advance global objectives on nuclear safety, not so much the penetration of the technology for energy production, but setting a strong, high level of expertise on the nuclear safety issues.

Mr. Baran. I agree with all that. I would just add on the new technology side, really, our role is licensing, so it is about having a good, efficient licensing process for new technologies, whether it be non-light water reactor technologies or innovations and fuel

in other areas, so there is a lot of focus right now on that at NRC to make sure that we have the technical capabilities to do those reviews and have a good process in place and that we have the right standards.

If you take the example of non-light water reactors, all the existing fleet in the U.S. is light water reactors. Our regulations were really written for that. One of the big efforts at NRC now is adapting those regulations for other technologies so that we can have efficient and thorough and effective reviews of newer technologies unlike anything we have currently deployed across the Country.

Mr. Burns. One thing I might add is that we do participate in international forums through the OECD Nuclear Energy Agency and also the International Atomic Energy Agency that are looking at, for example, on the small modular reactors or advanced reactors technologies, and there have been other cooperative efforts so that we learn from folks who are building, say, in Finland or France or in China through what is called the Multinational Design Evaluation Program, so I think those have been of benefit to us as regulators because it is really about what are the approaches for regulation; what types of things are they finding that can have learnings for us, and I encourage us to continue in those types of fora.

Ms. Caputo. With regard to advanced designs, I haven't been to Purdue, so I am not familiar with what Purdue is doing, but I have

visited Texas A&M and the University of Wisconsin, and my observation from both of those visits is the universities are really conducting a lot of exciting work in developing both accident-tolerant fuel technology and advanced reactor designs. So I think there is a fair amount of exciting work being done in our universities to lay the foundation for ultimately the designs that come to the Commission for review.

Mr. Wright. Thank you, Senator. I agree with everything that you have heard, but I think there is another leg to this, too, and that is that if we are not efficient in our regulatory scheme at the NRC and get things done efficiently as well, we are possibly seeing ourselves around the world where other technologies are being sold, which would be a DOE or State issue and obviously a congressional issue, and that could have long-term security impacts on our Country, too. So, we have to do our part at the NRC to make sure that we are putting things in place for these new technologies to make them efficient so we can get them through the regulatory scheme effectively and efficiently.

Senator Braun. Thank you.

Senator Capito. [Presiding.] Senator Whitehouse.

Senator Whitehouse. Thank you, Chairman.

Do any of you doubt that climate change is causing sea levels to rise around the globe and along our shores?

[No audible response.]

Senator Whitehouse. Let the record reflect no doubts. Okay.

Does anybody contest that post-Fukushima it has been established that flooding interferes with nuclear plant operations? Pretty obvious statement, isn't it?

[No audible response.]

Senator Whitehouse. Okay, all agreed, let the record reflect.

I represent a coastal State. For those of you aren't from coastal States, let me let you know that we are all coastal States looking at dire and uncontested and best science predictions of significant sea level rise and harm to our coasts, just so you know. So it is from that background that I wonder about the recent chain of events along this timeline.

In November of 2015, the NRC proposed its comprehensive post-Fukushima flooding preparation rule with full agreement of the Commission at the time. It is called the Mitigation of Beyond Design Basis Events Rule, and our Ranking Member just spoke about it. It went to public comment and in 2016, after receiving public comments, the staff issued a draft final rule with mandatory requirements for flood preparation.

At this time, the NRC Commission had two Democrats and one Republican appointees, and you couldn't get three votes, so the order wasn't finalized, but the staff recommendation was there. A month

later, Commissioner Svinicki was designated Chairman. The Commission still did not move forward on a final order for the rule.

In July of 2017, the Nuclear Energy Institute sent this letter, which I ask unanimous consent to be made a part of the record --

Senator Capito. Without objection.

Senator Whitehouse. -- saying that all of its concerns had been addressed and it was okay to go forward with the rule; still mandatory.

[The referenced information follows:]

Senator Whitehouse. In May of 2018, after all this closed, two new Republican appointees joined the Commission, giving Republican appointees a three to two majority, and in January of 2019 NRC weakened the rule, made it voluntary. The NRC has acknowledged that there were not any public comments calling for this change.

Now, I am somebody who has worked to get you more authority. I have been a prime mover on two pieces of legislation to promote innovation and nuclear technology. I am the cosponsor, with our acting chair, of another one that is working its way through the Senate right now.

It is going to be a real problem for me to continue to trust in all of you if either of two things is true: one, there is some kind of an industry back door into the Commission that gets a change like this done after the public comment period is closed, without any public comment and apparently outside of the APA public process. That would be a very unfortunate set of events, probably also illegal. So I think this Committee is entitled to an answer as to what exactly took place that caused that.

The second is, you don't take sea level rise seriously. You don't think this is a real risk for the nine nuclear plants that are within three kilometers of our coast or the four that have been deemed susceptible to sea level rise and flooding. That is not acceptable either.

So I see this event as a potentially very significant bellwether as to the trustworthiness of this Commission, and I have been trusting this Commission. So I need some serious answers and we are going to follow up. We sent this letter, Chairman Carper and I, which I would ask to be put into the record as an exhibit. We need to get to the bottom of this.

If there is some back door where industry people can come in and fix a rule without going through the APA process, that is just plain wrong. And if the reason for this is that you don't take flooding and sea level rise seriously, that is just plain wrong. The first is wrong procedurally and legally; the second is wrong morally and factually.

So I intend to pursue this, and I am just putting you on notice that I think this is really serious. And I say this as a person who has trusted you with very important new responsibilities.

Senator Capito. Is there any reaction?

Ms. Svinicki. Senator Whitehouse, I look forward to responding to the series of questions that you provided to the Commission yesterday. Thank you.

Senator Whitehouse. We look forward to hearing your response.

Senator Capito. Senator Markey.

Senator Markey. Thank you, Madam Chair.

The Pilgrim Nuclear Power Plant is set to close in June, and

I know the commissioners are not going to answer some specific questions as related to matters that are pending before the NRC, but we need more clarity.

Chair Svinicki, does the NRC have the statutory or regulatory authority it needs to make sure that licensees bear all of the financial costs of decommissioning and site maintenance?

Ms. Svinicki. Thank you, Senator Markey. I believe that the decommissioning funds that are collected under our authority are principally for decommissioning of the radiological hazard. There may be amounts beyond that that State authorities require to be collected, and often these funds are comingled in the decommissioning fund.

Senator Markey. Well, obviously the communities, including Plymouth, need assurance that all the financial costs are going to be borne, and they don't want to get stuck footing the bill if costs go up or businesses go under, so the proposed decommissioning rulemaking at the NRC would do even more to cut NRC approval and public comment out of the already flimsy decommissioning process, including by automatically granting exemptions to safety regulations.

Commissioner Baran, do you think the proposed decommissioning rule might tilt the balance of power farther towards nuclear plant operators and away from the independent NRC staff?

Mr. Baran. I think the proposed rule needs a lot of work. I

think we need to produce a balanced rule that considers the interests of a broad range of stakeholders, including States and local governments. I think in terms of who is making the big decisions about decommissioning, I don't know that the proposed rule changes that much. Right now that is tilted heavily towards the licensees. NRC is pretty hands-off when it comes to decommissioning. We, of course, do safety inspections, which are important, but licensees get to make most of the major decisions, and the proposed rule really wouldn't change that.

Senator Markey. And that is my concern, that the nuclear industry wants the NRC to turn a blind eye, but we actually need more independent oversight, not less.

The Nuclear Energy Institute is pushing for major changes to the reactor oversight process, the cornerstone safety program at the NRC. The industry wants to inspect and assess itself more often, rather than allow the NRC to conduct independent inspections. If adopted, these changes would make inspections like a take-home exam and leave the NRC just hoping that plants don't cheat.

Chair Svinicki, plants often do self-assessments before the NRC comes in for an inspection. Do the NRC inspectors find issues that the plants have missed?

Ms. Svinicki. Yes, they do sometimes.

Senator Markey. Yes, you do, because the NRC does frequently

uncover issues that the operators don't find themselves, and these could be problems that would be totally ignored if the nuclear industry could self-assess.

One of the proposed changes is to take less of a look at "white findings," which are safety issues that are less obviously severe than yellow or red findings, but white findings are incredibly important. Following a series of white findings, Pilgrim Nuclear Power Station in Plymouth was placed in the lowest active safety category after NRC inspectors followed up and found major safety issues. This designation triggered additional inspections and oversight, ultimately helping Pilgrim operate more safely and improve its rating.

Madam Chair, if the proposal to ignore more white findings was adopted, would Pilgrim have gotten a closer look from NRC inspectors?

Ms. Svinicki. I think it is difficult for me to conclude one way or another on that, respectfully. It is a certain number of findings of a certain color that lead them to move to different performance categories, and I can't, off the top of my head, kind of recreate what those triggers were back in 2014 and 2015.

Senator Markey. Well, let me ask you, Commissioner Baran, does discounting low-risk findings mean we might miss higher risk issues down the line?

Mr. Baran. Yes, I think white findings are very important for

that. Since the beginning of the reactor oversight process, white findings, and even green findings, have been leading indicators of potentially more safety significant problems at plants, so Pilgrim is a good example of that; it got into column four with three white findings. There were no yellows, there were no reds; it ended up there on whites. And it absolutely needed to be in column four. I think everyone agreed that was a right safety outcome.

So, if we moved in the direction of really reducing the significance of white findings, I would have significant concerns about that.

Senator Markey. And I have that concern as well, because the NRC should not be giving take-home exams to nuclear power plant operators, because the tendency on a take-home exam is to always give yourself an A+, and obviously the history of this industry tells us that that temptation too often has been succumbed to by industry participants. So, I just think that we have to make sure that the industry doesn't cut corners, doesn't undermine public safety, so I am going to be following this very closely.

I thank you, Madam Chair.

Senator Capito. Thank you.

Senator Van Hollen.

Senator Van Hollen. Thank you, Madam Chairman.

Thank all of you for your testimony today. As we have heard,

the NRC plays a vital role in regulating the domestic nuclear industry by ensuring the secure and safe use of nuclear materials. That is the goal. You also play an important role in regulating nuclear exports, exports abroad, by ensuring that U.S. nuclear materials and technology do not fall into the wrong hands. In other words, you are part of a mechanism that is supposed to pursue rigorous due diligence when it comes to these export controls.

I am concerned that, when it comes to Saudi Arabia, this Administration is severely testing the strength of the alignment between the NRC's role, the DOE's role, and the goal of a nonproliferation policy. Reportedly, and I think they have confirmed they are pursuing a nuclear cooperation agreement with Saudi Arabia, which has enforced the lowest standard of international safeguards, a country whose leaders have loosely talked about acquiring nuclear weapons and a country that we know consistently flouts international norms. And now this Administration wants to do nuclear business with Saudi Arabia.

Last week, DOE confirmed that the Administration has deepened nuclear cooperation with Saudi Arabia. Secretary of Energy Perry acknowledged that the Department of Energy has issued seven undisclosed Part 810 authorizations to American companies to transfer unspecified nuclear technology and know-how to Saudi Arabia. In my view, it doesn't appear that the Administration is

exercising due diligence.

I know the NRC is not the lead agency here, but under the statute and regulations you play a consulting role. In fact, it is required that DOE consult with you on these, so my question, Madam Chairman, is when did the Department of Energy consult with the NRC on issuing these seven Part 810 authorizations?

Ms. Svinicki. Thank you, Senator. As you have described, under the Atomic Energy Act, the NRC does have a consultative role, it is not a concurrence role; and, again, it is not an opinion on U.S. foreign policy. We have a consultative role under the law because, as you note, should the U.S. get to a point where they are exporting components and nuclear materials, the NRC is the central export licensing authority for that.

The NRC's consultative role I would generally describe as something that they are looking at whether matters of law and under an 810 or whether or not you could effectuate the export licensing, should you get to that point, so it is a narrow consultation on some matters of expertise of the agency, but it differs from our role in the --

Senator Van Hollen. No, Madam Chairman, my question was not what is the nature of your role. You have a role. My question was when did the Department of Energy consult with the NRC with respect to the Part 810 authorizations to Saudi Arabia.

Ms. Svinicki. I don't have that answer for you today, Senator. I would need to get back to you.

Senator Van Hollen. I would like you to get back as soon as possible. I mean, these 810 authorizations were apparently kept secret, and I must say I am surprised. Were you involved in the consultation?

Ms. Svinicki. In general, since the role is narrow --

Senator Van Hollen. I mean specifically on the 810 authorizations.

Ms. Svinicki. Members of the Commission. This is a delegated staff process.

Senator Van Hollen. Were any of you individually involved? Nobody at the table was part of that 810 consultation process.

All right, so then you wouldn't know when it took place. I see.

I must say that is staggering. So you don't know whether or not the NRC raised any concerns as part of this consulting -- I know you don't have signoff authority, but none of you at this table know whether the NRC raised any concerns about entering into these 810 authorizations.

Ms. Svinicki. I do not.

Senator Van Hollen. Okay.

Madam Chairman, I would request that you get this information as soon as possible. This just came to light. You have a statutory

and regulatory role to play here, and I have to say it is astounding that not a single one of you is aware of whether, when, and what role the NRC played in that particular authorization.

Senator Capito. Well, if there are no more questions for today -- oh, yes, Senator Carper.

Senator Carper. I want to come back to the Nuclear Innovation and Modernization Act from when we talked about it earlier in the hearing. My question for you, just a little bit different, could you all take a moment and tell us how you believe NEIMA implementation is going and will the changes help the advanced nuclear technologies, and do you have any concerns with implementing any of those new changes?

Madam Chair?

Ms. Svinicki. If I may start, Senator Carper.

Senator Carper. Please.

Ms. Svinicki. Candidly, with Congress passing it in December and its signature in January, it is candidly off-cycle from the development of the fiscal year 2020 budget that lies before the Congress right now. That being said, we moved out very quickly on it in January to do kind of a diagraming of all the different provisions, and it is our assessment today, based on where we are, that with a shifting of some priorities and other things we are confident that within the budget request that pends before you, even

though we didn't have NEIMA enacted at the time that we formulated that request, we are confident that we could perhaps reprioritize a bit within fiscal year 2020 activities in order to accommodate the NEIMA requirements under the budget we have.

As I had mentioned to Senator Capito, there are a number of provisions that are interrelated by their mathematical effect on our budget. We are still working to run some scenarios and have a better sense of how all of those provisions will work in concert with each other. It will probably take one full budget cycle before we could come back to you in an informed way and say it creates a significant downward pressure here, but offers relief here.

So, certainly, we would keep the Committee informed as we implement, we have feedback that would be of utility and informing the Committee about how we are doing on it. It is a little bit early days right now. That would be my characterization of where we are.

Senator Carper. Anybody have a different view or feel a need to amplify on that?

Mr. Baran. The only thing I would add just specifically on advanced reactors, I think probably the main provision under the statute on the advanced reactors is having NRC do a rulemaking that would be a rulemaking that could cover any of the advanced reactor technologies, something that is not technology-specific but, rather, more of a performance-based approach that would cover any of the

technologies.

That is very much consistent with where the staff had been moving. The staff had already proposed to the Commission a rulemaking of that sort, so on the advanced reactor side I think the vision expressed in the bill that became law and the vision kind of at NRC are very much consistent.

Senator Carper. All right, thanks.

I have a last question, a different question. I just want to ask you for advice, and we will start with you, Commissioner Burns. Like Senator Whitehouse, I live in a coastal State. Our State is the lowest lying State in America. The seas are rising, my State is sinking, so we have a huge concern about sea level change, climate change.

It was not long ago roughly 70 percent of the non-carbon electricity that was generated came from nuclear. I am told we are now down to about 60 percent of the non-carbon electricity generated comes from nuclear. We are seeing more wind, we are seeing more solar, which is a good thing.

Like the Chairman, I have a longstanding interest in making sure that we continue to address climate change and we do it in ways that are cost-effective and safe. Give us, each of you, just a very brief word of advice on what this Committee can do to make sure that the nuclear industry, rather than continue to diminish in terms of its

contribution to carbon-free electricity, gets to increase it.
Please.

Commissioner Burns?

Mr. Burns. Thank you, Senator Carper. I think, again, it is looking across this span of our history as an agency, and even going back into the development of civilian nuclear power. One thing is maintaining the integrity of the institutional integrity that we have, that we have a strong regulator, an independent regulator. That is the international norm and, in a way, when we were created, we created, in many respects, what became the international norm for regulation through the convention on nuclear safety.

I think, again, your role in terms of oversight for us, in terms of holding us accountable through hearings and through the process is important, and you also compliment that by looking into things like research and development that is undertaken by DOE, by private industry. Those things I think continue to be the most important things that I think you can do.

Again, I would say one of the interesting things about working at this agency for many years has been that, across time, we call it a learning organization, using this word transformation, it is continually to think about how we do our work and how we can do it better, more effectively. I think that is the challenge for you, to keep pushing at us.

So those are just some brief thoughts.

Senator Carper. Mr. Chairman, I know my time has expired, but would it be possible if any of the other commissioners who wanted to comment on that question, just to say a few words?

Senator Barrasso. [Presiding.] Please.

Senator Carper. How about our newest member?

Mr. Wright. I agree with everything that you have heard. I do think that right now we are going through change, transformation. That is the word that you are hearing in the paper that is before us.

But if we don't do things within our agency to keep ahead of the curve and be prepared for what the future is going to hold, regardless of which direction it goes, and that is kind of what the agency is looking at, then we are going to cede ourselves to somewhere we don't want to be. So we need to be prepared for anything that comes along, especially making sure that we have the ability for new technologies to be licensed in this Country that can be sold around the world.

Senator Carper. All right. Thank you, sir.

Ms. Caputo?

Ms. Caputo. I think one thing that I would add is just the importance of the NRC conducting predictable and timely decisions, because I think a lot of companies that are looking at advanced

reactor technology are not traditional nuclear utilities and, to a great extent, if we are perceived to be slow, untimely, not predictable, it will have drastic impacts on the nature of their investment and their business prospects for proceeding. So, I think there is a great attention toward making sure that we take risk-informed actions and that we do it in a timely fashion in order to make the regulatory process as predictable as possible.

Senator Carper. All right, thank you.

Commissioner Baran?

Mr. Baran. I don't know that I would have too much to add. I agree with Commissioner Burns that your focus on the work we are doing and on safety is so critical, because it is the foundation for everything. You know, whether it is about having the plants continue to operate that are there or having new plants come online, safety is just key to all of that, and your focus on that is so appreciated.

Senator Carper. Thank you.

Madam Chair?

Ms. Svinicki. Well, I agree with the perspectives of my colleagues. I think I am increasingly daunted by how hard change is in large organizations. If we were manufacturers, we could shut down the line and we could retool, but our product is really decisions and regulatory outcomes; and what you are asking people to do at every level in the organization is to think differently about things, to

be open to innovation and new technology.

Now, we do want to get them improved tools to do what they do, maybe better ways to monitor their program activities and metrics, and we are making a lot of IT investment and we are trying to equip them. Because if you are asking people to change, you have to give them the tools to go about and do things differently or more efficiently. But when an agency has had such a strong performance record regulating one type of reactor and doing it one way, it is a hard thing to surmount how accustomed people are to reflexively, without even thinking about it, kind of picking up something and going about it the same way, so hats off to our leaders.

We do have a lot of mid-career employees who I think are bringing strong energy to this. They want to work there 15 years from now, 20 years from now, and they are actually, I think, a little excited to say, hey, I will get to put my imprint on how we do things they have inherited. Things like the reactor oversight process that has been mentioned here, that was designed 20 years ago, and they want to have an opportunity to take what we have learned in the intervening years and make NRC not less than it was or diminished, but just the NRC that is going to continue that they want to be working at 20 years from now.

Senator Carper. All right, thank you.

Speaking of change and transition, I would just say to Stephen

Burns, what do they say in Hawaii, aloha, whether you are coming or going? In the Navy, we say fair winds and a following sea. Thank you for your service. God bless you and your family. Thank you.

Senator Barrasso. Just a couple more questions.

Chairman Svinicki, the Nuclear Waste Policy Act required the Department of Energy to begin receiving spent nuclear fuel in 1998. American taxpayers now pay I think over \$2 million of legal costs every day because Yucca Mountain is not operational. The NRC's budget requests \$36 million to hire 77 staff to receive the Commission's nuclear waste disposal program in terms of reviving the program and moving along with it. What can the Commission accomplish with that funding if Congress is able to appropriate the money?

Ms. Svinicki. Thank you. The increment of funding that we have asked for would be allocated principally towards the resumption of what is called the adjudicatory hearing. There are over 300 what we call contentions or disputed issues on the Yucca Mountain license application, and we need to have a hearing infrastructure, we need to have hearing judges and staff.

As has been noted, this project for NRC has been dormant now for nearly 10 years, or it would be 10 years when the fiscal year 2020 budget is put in place. We have lost a lot of people; we have lost a lot of knowledge and expertise. We have good experts. I think we could reacquaint them with the record and try to have them

begin to participate fully in this activity, but there would be a lot of capability and infrastructure to be restored, and the funding we have requested would be put to that purpose.

Senator Barrasso. One last question. You do a monthly report on the status of the NRC, the licensing actions, the budget. I have recently reviewed I think your 26th monthly report. I think the report would benefit from some redesigning, maybe for clarity and for some usefulness, and I just wondered if you and your staff would work with me and my Committee staff to revise the format and the content of the monthly report, if that is something we can work on.

Ms. Svinicki. Yes, Chairman Barrasso, we would welcome an opportunity to try to better meet the Committee's information needs in that report, which has become a bit, ponderously, long and cumbersome. We seek only to provide you with something that is beneficial.

I would note that we also have legacy reports that I think Senator Voinovich may have initiated, and if, as a part of that, we could propose to you any combination that would make sense. We send you committee reports on different frequencies, on different topics that have simply accumulated over the course of the Committee's request to the agency, and there may be some rationalization and we could result maybe in an improved product on more than just the monthly report.

Senator Barrasso. That would be very helpful.

I am grateful to all of you for your testimony, especially Commissioner Burns. Thank you for your long years of service to our Nation. It is bipartisan gratitude for all the work that you have done.

If there are no further questions, members may submit follow-up questions for the record over the next couple of weeks. The hearing record will therefore remain open for two weeks.

I want to thank all of you for your time and your testimony. The hearing is adjourned.

[Whereupon, at 11:26 a.m. the committee was adjourned.]