

## Table of Contents

U.S. Senate Date: Wednesday, May 1, 2019

Committee on Environment  
and Public Works Washington, D.C.

STATEMENT OF:	PAGE:
THE HONORABLE JOHN BARRASSO, A UNITED STATES SENATOR FROM THE STATE OF WYOMING	3
THE HONORABLE THOMAS CARPER, A UNITED STATES SENATOR FROM THE STATE OF DELAWARE	8
THE HONORABLE CATHERINE CORTEZ MASTO, A UNITED STATES SENATOR FROM THE STATE OF NEVADA	13
THE HONORABLE SENATOR JACKY ROSEN, A STATE SENATOR FROM THE STATE OF NEVADA	19
TIMOTHY O'CONNOR, SENIOR VICE PRESIDENT AND CHIEF NUCLEAR OFFICER, XCEL ENERGY	26
ANTHONY J. O'DONNELL, COMMISSIONER, MARYLAND PUBLIC SERVICE COMMISSION	32
GEOFFREY H. FETTUS, SENIOR ATTORNEY, CLIMATE AND CLEAN ENERGY PROGRAM, NATURAL RESOURCES DEFENSE COUNCIL	37

LEGISLATIVE HEARING ON A DISCUSSION DRAFT BILL, S. \_\_\_\_\_, NUCLEAR  
WASTE POLICY AMENDMENTS ACT OF 2019

Wednesday, May 1, 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, Boozman, Ernst, Cardin, Gillibrand, Markey, Duckworth, and Van Hollen.

Also present: Senator Cortez Masto.

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.

This morning, we will receive testimony on discussion draft legislation that is titled The Nuclear Waste Policy Amendments Act of 2019. America launched the Manhattan Project to win World War II. The project was unprecedented in time and scale, and in urgency. It also produced nuclear waste, which our Country is still managing 75 years later.

President Eisenhower launched the Atoms for Peace program in 1953. This established the United States as the global leader for the peaceful civilian use of nuclear energy. America continues to generate the most nuclear power in the world.

Radioactive material is also used for lifesaving medical procedures, for oil and gas production and for numerous other industrial applications. With immense benefits of nuclear energy comes a responsibility to permanently and safely dispose of the byproduct material.

Throughout the 1960s and 1970s, the Federal Government studied dozens of locations to identify a suitable nuclear waste disposal site. These sites were located in 36 States around the Country, including several represented on this committee,

including Indiana, New York, South Dakota, Illinois, North Dakota, Alabama, Maryland, Massachusetts, Vermont and my home State of Wyoming.

In 1982, Congress passed the Nuclear Waste Policy Act. The Act formally established a comprehensive nuclear waste management policy. In doing so, Washington made a promise to the American people. The Department of Energy would dispose of spent nuclear fuel by 1998. Ratepayers began paying Washington to fund this program. And over the last 35 years, ratepayers have paid more than \$40 billion to keep their end of the deal.

Maintaining our nuclear weapons deterrence and powering America's submarines and aircraft carriers also creates nuclear waste. The Act also provided for the safe disposal of this material. From 1982 to 1987, the department conducted multiple in-depth scientific and technical analyses of targeted disposal sites. The Yucca Mountain site, located on Federal Government-owned land in Nevada, consistently ranked at or near the top of those scientific studies. The site is located adjacent to an 8,400-square mile area of U.S. Government-owned land. The area is larger than the State of Massachusetts.

In 1987, Congress selected the Yucca Mountain site to host the Nation's first disposal site. After 15 years of detailed engineering and scientific work, President Bush formally

recommended the site in 2002. The State of Nevada officially objected to the recommendation. With a bipartisan vote, Congress overrode the State's veto. All of this followed the process established by the Nuclear Waste Policy Act.

In 2008, the Department of Energy submitted the Yucca Mountain license application to the Nuclear Regulatory Commission. The Commission staff conducted its own technical analysis known as the Safety Evaluation Report. The five-volume, 1,900-page independent report found the department's Yucca Mountain design would meet all regulatory requirements.

Today, Washington is over 20 years late in keeping its word. As a result, American taxpayers are footing the bill. Taxpayers pay over \$2 million per day in legal costs. Cumulatively, taxpayers will be liable for over \$35 billion. This number increases with every day that Washington delays. We can't walk away from the law of the land. We can't start over and let another 40 years pass to solve this challenge.

The discussion draft before us today is a solution. It is nearly identical to the text of legislation passed by the House of Representatives last year by a vote of 340 to 72. Over 60 percent of the House Democrats voted for that bill. The draft makes critical reforms to our Nation's nuclear waste management policy.

It authorizes the Department of Energy to contact with private companies for interim storage of spent nuclear fuel. It provides the State of Nevada the opportunity to present their scientific opposition to the use of the Yucca Mountain site to independent judges in a legal proceeding. It reforms the program's financing mechanisms to protect ratepayers. And it allows host communities to partner with the Federal Government to receive benefits.

Nuclear energy is an essential part of our energy portfolio. It is also critical to reducing carbon dioxide emissions. If we are serious about addressing climate change, we must be serious about preserving and expanding nuclear energy use. That means keeping our commitment to the 121 communities in 39 States where nuclear waste is located. Safely disposing of nuclear waste is a national problem and requires a national solution.

Just as our committee did with legislation promoting advanced nuclear technologies last year, I would like to find bipartisan agreement to move legislation to get our nuclear waste program back on track. This morning's hearing is the first step in that process.

I will now turn to my friend and Ranking Member Senator 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. Welcome to our witnesses, it is a nice way to start our day.

Thank you, Mr. Chairman, for convening this hearing. As you know, I think any actions dealing with our Nation's spent fuel is something our committee ought to discuss and should address.

Our Nation's nuclear power plants are currently storing their spent nuclear fuel in a way that most of us think is safe and reliable. I have been told that the technology we have to store spent nuclear fuel enables that fuel to be stored safely for anywhere between 50 and 100 years, maybe longer.

Having said that, our nuclear reactors were not designed to keep spent fuel onsite forever. So as our reactors age and are decommissioned, it is imperative that we find an alternate resting place for our nuclear spent fuel.

Almost 40 years ago, Congress passed, as we just heard, the Nuclear Waste Policy Act of 1982 to help find a final resting place for our Nation's high-level nuclear waste from our defense programs and from our nuclear energy reactors. Congress felt this action would move our Country toward a deep-mined geological nuclear waste repository. But after years of study



and debate, we find ourselves at a dead end, with no functioning nuclear waste repository, and with nuclear spent fuel building up at our Nation's nuclear power plants. I appreciate our Chairman's bringing forth a discussion draft on how we can restart this critical conversation.

Before Congress takes any actions on nuclear waste, however, we need to be sure that we are not going to repeat the mistakes from our past. If we don't, our Country may well find itself 30 years from now in the same dead-end situation that we face today.

I believe that one of the biggest mistakes we made in Congress, when I served in the U.S. House, was not obtaining consent from all parties on the location of a disposal site. Somehow, we have learned how to get communities across the Country to compete for the siting of prisons in our Nation, but we have not yet learned how to get communities to compete for disposal of our nuclear spent fuel.

As a recovering governor, I believe that any actions we take on nuclear waste must include a consent-based approach that fosters a meaningful partnership between federal, local and State leaders. We must also have open communications with the people who live and work in those communities.

We don't have to solve all the nuclear waste issues today.

I know we are not going to. But I believe there are actions we can and must take to make much-needed progress on this issue. My hope is that our committee can find common ground on legislation with the input of our witnesses today to do just that.

I had the pleasure of meeting yesterday with Senator Rosen, and one of the things we talked about was a trip I took to France a number of years ago, not for tourism purposes, but to try to learn what they are doing in that country with their spent fuel. They don't regard it as a waste product, they regard it as a resource. One of the things they try to do is derive additional energy from the spent fuel rods. Usually when we finish, we pull a lot of spent fuel rods out of nuclear plants in this Country. They have plenty of energy left, we are just good at harvesting that energy.

One of the things they are pretty good at in France, where they get 80 percent of their energy from carbon-free nuclear power, one of the things they are pretty good at is trying to get as much energy out of them as they can.

My State is a little State. When I was privileged to be the Governor for eight years, one of the toughest issues was siting prisons. We don't have a lot of land, about 50 miles wide, 100 miles long. Most of our people live in the northern part of the State. Siting a prison for men, a prison for women,

very difficult issue.

What we found out is that other States were happy to have our inmates. It was a business opportunity for them. They built prisons, they operated them, some of them very well, some of them not so well. So I like to say, if somehow one of the toughest issues I faced as Governor, siting prisons, if other States are willing to say, hey, wait, wait, maybe your problem, that is something we would like to do for you, to help you with. We have to be smart enough to figure out how to do something like that with respect to spent fuel in this Country.

I think one of the big mistakes we made is when we passed legislation back in the 1980s that we talked about here today, we did not incent States to actually line up and say, you know, this could be good jobs. It's a clean business, clean industry and would actually help solve an immediate challenge for our Nation, we should be smart enough to incent other States to do that. I think we are going to have a second chance. We don't always have second chances in life. I think we may have a second chance here, and we need to do it right and make sure that the incidents line up as they should.

Thank you very much. We look forward to hearing from our friends.

[The prepared statement of Senator Carper follows:]

Senator Barrasso. Thank you very much, Senator Carper. We would now like to invite the two Senators from Nevada to testify and share their views. We will first start with Senator Catherine Cortez Masto and then turn to Senator Jacky Rosen.

STATEMENT OF THE HONORABLE CATHERINE CORTEZ MASTO, A UNITED STATES SENATOR FROM THE STATE OF NEVADA

Senator Cortez Masto. Good morning, Chairman Barrasso and Ranking Member Carper, and members of the committee. I appreciate the opportunity to sit before you today, along with my Nevada colleague, Senator Jacky Rosen, to discuss the legislative draft before you, and our opposition to Yucca Mountain.

I last sat at this table in October of 2007, that was 12 years ago, as the Attorney General for the State of Nevada. At that time, I provided testimony before the committee on this very topic. For over 30 years, many in Congress have been trying to force a repository facility on Nevada, despite the fact that Nevada does not generate or consume nuclear energy, and that Yucca Mountain is a seismically and geologically unfit site to store this dangerous material.

A vast majority of Nevadans oppose Yucca Mountain when the site was selected as the Nation's sole repository back in 1987, and they continue to do so today. Over the years, this committee has heard from both Republican and Democratic governors and members of the Nevada congressional delegation, as well as environmental advocates and our State's prominent travel, tourism and outdoor recreation industries, all of whom

are united in their opposition to Yucca Mountain.

Today, I would like to dispel a few misconceptions. Many believe Yucca Mountain is settled science, that Yucca Mountain was selected through a reasoned and thorough process, or that Yucca Mountain is already equipped to receive nuclear waste. Well, they are wrong. In 1982, Congress passed the Nuclear Waste Policy Act, creating a structure for a final repository siting. This structure established a schedule for selection of a first repository to be made among three candidates in a western State, followed by the selection of a second repository from a set of five candidates in an eastern State, along with consideration of an interim site to be located at Oak Ridge, Tennessee.

It also allowed all States to have a voice in this process by granting them a veto. And the amount of waste to be stored at the first repository was capped at 70,000 metric tons, as a compromise to ensure that not just one facility would be the recipient of the Nation's waste, knowing that much more than this amount would ultimately be required for final repose in the future.

But faced with political pressure, the Reagan Administration indefinitely postponed the search for an eastern second repository site in 1986, unraveling a key compromise of

the 1982 law. Then later in 1987, Congress dropped the scientific-based compromise process, it nullified the selection of an interim site at Oak Ridge, Tennessee, and arbitrarily designated Yucca Mountain as the sole site for a repository, despite strong opposition from the State of Nevada.

I ask you to put yourselves in the shoes of Nevadans. Imagine having nuclear waste sent to your communities without your input or without a fair process. That is why Nevadans have been united in the fight to ensure that not an ounce of nuclear waste makes it to Yucca Mountain.

Mr. Chairman, people often falsely think that Yucca Mountain is ready to receive waste. The Federal Government has spent \$19 billion with little to show in result. There are no waste disposal tunnels, there is no waste handling facilities there, there is no monitoring infrastructure, no containment infrastructure, there is no railroad infrastructure needed for transporting waste into the site. All that exists at Yucca Mountain now is a five-mile exploratory hole in the ground to study the geology and hydrology of the mountain,

Yucca Mountain is also a national security threat. The Nevada Test and Training Range, which is directly adjacent to Yucca Mountain, is home to 75 percent of Air Force live munitions testing, making it the largest air and ground military

training space in the Country. According to former Air Force Secretary Heather Wilson, if Yucca Mountain were to ever hold nuclear waste, it would directly impact the readiness of our military by harming the ability of our Nation's military to train for combat.

Yucca Mountain is a scientifically unsuitable site for a nuclear repository. It sits on fault lines. In 1996, a 5.6 magnitude earthquake damaged the Yucca Mountain project field operations center. Imagine what would happen if there was a stronger earthquake.

Numerous studies have also found that the groundwater around the repository is at risk of contamination, affecting communities across Nevada and California.

Mr. Chairman, all we are asking today is that Nevada is treated fairly, that it is treated the same as every other State. Congress should not and cannot shove nuclear waste down our throats. All States must be given parity in order to find a solution that works.

That is why Senator Rosen and I have introduced alternative legislation that guarantees every State has a seat at the table. Our bill, Senate Bill 649, the Nuclear Waste Informed Consent Act, would require the Federal Government to obtain the consent of potential host States before moving forward.



I would like to thank EPW Committee members Senators Booker, Gillibrand and Sanders for co-sponsoring our legislation. The current bill before this committee continues on an unworkable path that only delays the Country from finding a solution to our nuclear waste dilemma.

So why waste decades and billions of taxpayer dollars when we can work together to come up with a viable solution to our nuclear storage problem? I stand ready to work with the members of this committee and the rest of my colleagues in the Senate to find a sustainable solution that ensures all parties have a voice in this process. So I want to thank you for the opportunity to be here today.

I would also like to submit for the record an analysis by Bob Halstead, who works with the Nevada Agency for Nuclear Projects, and it is his overview and analysis of the discussion draft of the Nuclear Waste Policy Amendments Act of 2019 and the concerns that we have as the State of Nevada with the current draft.

Thank you.

[The prepared statement of Senator Cortez Masto and the referenced information follows:]

Senator Barrasso. Thank you very much, and without objection, that will certainly be submitted for the record.

Senator Rosen.

STATEMENT OF THE HONORABLE SENATOR JACKY ROSEN, A STATE SENATOR  
FROM THE STATE OF NEVADA

Senator Rosen. Thank you, Chairman Barrasso, Ranking Member Carper, everyone here on the committee.

I really appreciate the opportunity to testify here today, along with my senior Senator, Catherine Cortez Masto. Let me make one thing clear: Nevadans wholeheartedly oppose becoming the Nation's nuclear dumping ground.

For over 30 years, the State of Nevada and local communities have rejected the misguided Yucca Mountain project on safety, public health, national security and environmental grounds. In fact, the State has filed over 200 contentions against the Department of Energy's license application, challenging the adequacy of DOE's environmental impact assessments.

Nevada's full bipartisan delegation opposes this bill, as do the previous Republican Governor, Brian Sandoval, and the current Democratic Governor, Steve Sisolak. I would like to submit for the record Governor Sisolak's letter in opposition to Yucca Mountain, please.

Senator Barrasso. Without objection.

[The referenced information follows:]

Senator Rosen. Thank you.

As we have known for decades, numerous scientific studies have deemed Yucca Mountain unsafe, based on the fact that the site, as Senator Cortez Masto said, is seismically active and sits on an aquifer. Moreover, this particular legislation designating Yucca Mountain as the Nation's dumping ground would require transporting over 110,000 metric tons, 110,000 metric tons of radioactive waste. This number is 40,000 more metric tons than what was outlined in the original Nuclear Waste Policy Act, and much of it would travel by rail and road through the heart of Las Vegas and dozens of other major cities across this Country.

So let's put this in perspective. We are talking about shipping roughly one to three trains or one to two truck shipments across this Country every week for 50 years from 76 shipping sites. Every week for 60 years, three loads. That nuclear waste would be transported weekly through a total of 44 States, including many that are represented on this committee today, Wyoming, Oklahoma, West Virginia, Indiana, Iowa, Idaho, and all the rest.

It is hard to imagine that shipping over 5,000 truck casts of high-level nuclear waste over a span of 50 years won't result in at least radiological release somewhere in this Country.

Severe transportation accidents involving these shipments threaten the health and safety of tourists and individuals who live along the proposed routes all across this Country and would cost billions of dollars in cleanup costs and related economic losses.

So I ask the members here today, is this a risk you are willing to take? In addition, Yucca Mountain represents a serious challenge for our national security. The Yucca Mountain site is adjacent to the Nevada Test and Training Range. That is the crown jewel of our Air Force. This Air Force training site provides the largest air and ground military training space in the contiguous United States, without interference from commercial aircraft. It is also home to 75 percent of stateside Air Force live munitions.

Military leaders have said the Yucca Mountain Project can directly impact our Country's ability to defend itself. And there are no nuclear waste transportation routes across the training site that would not impact these training exercises. So does it really make sense to transport and store our Nation's nuclear waste right next to a military bombing range? Not only is this bill bad for the safety of millions of Americans and our national security, but this bill also proposes a radical change to our Nation's approach to nuclear waste management.

The original Nuclear Waste Policy Act from the 1980s calls for two repositories, one to ensure regional equity and the other to address technical redundancy. This bill does away with that by eliminating the current requirement for progress on the second repository, placing the entire burden on Nevada. And we don't even produce nuclear energy.

Finally, once again, this bill further takes away Nevada's voice by moving forward with the Yucca Mountain project without a consent-based process in place. Nevada does not want nor has ever wanted to store nuclear waste at Yucca Mountain. What this bill is taking away from us is our founding principle of State self-determination and liberty and sending us to a place where all States are not equal under the law.

As Senators, we are here to represent the voices of our constituents. I don't think any Senator would think it is okay for other Senators to take away the voice of their State.

So Nevada needs a voice in this process, period. This is nothing more than an attempt to take away Nevada's states' rights. So with all due respect, this committee's legislation ignores the environmental, safety, and security concerns of Nevadans who would be forced to store nuclear waste they had no role in creating.

I therefore urge the committee to stop wasting billions of

dollars of taxpayer money by resurrecting a project that has been dead for over 30 years, and instead identify viable alternatives for the long-term repository in areas that are proven safe and whose communities consent to that storage.

I really appreciate the opportunity to testify today.  
thank you.

[The prepared statement of Senator Rosen follows:]

Senator Barrasso. Well, thank you to both of you. We appreciate your attendance and your participation and your thoughtful testimony. You are welcome to stay for the hearing. I know you have busy schedules. Thank you very much for being here with us today.

I would like to now call our second panel of witnesses. That will be Mr. Tim O'Connor, the Chief Nuclear Officer of Xcel Energy; Mr. Anthony O'Donnell, the Maryland Public Service Commissioner on behalf of the National Association of Regulatory Utility Commissioners; and Mr. Geoffrey Fettus, who is the Senior Attorney for the Natural Resources Defense Council.

As you are coming up, I would like to point out that a majority of Nevada counties have passed resolutions in support of completing the Nuclear Regulatory Commission safety review of the Yucca Mountain site. Nye County is the host community for the repository. That county has a long record of support for the program. I ask unanimous consent to enter into the record a letter from Nye County, Nevada county commissioner Leo Blundo. The letter requests Congress support the completion of the Yucca Mountain licensing proceeding. Without objection, that will be submitted into the record.

[The referenced information follows:]



Senator Barrasso. So I welcome our witnesses. I would like to remind you that your full written testimony will be made part of the official hearing today. Please try to keep your statements to five minutes, so that we may have time for questions. I look forward to hearing your testimony. If we could start with Mr. O'Connor.

STATEMENT OF TIMOTHY O'CONNOR, SENIOR VICE PRESIDENT AND CHIEF  
NUCLEAR OFFICER, XCEL ENERGY

Mr. O'Connor. Chairman Barrasso, Ranking Member Carper and distinguished members of the committee, thank you for inviting me to testify before you today.

My name is Tim O'Connor, and I am the Senior Vice President and Chief Nuclear Office for Xcel Energy, a public utility holding company serving 3.6 million electric customers and 2 million natural gas customers. We are headquartered in Minneapolis, and we serve parts in eight western and midwestern States.

I welcome the opportunity to share with you nuclear energy's critical importance to the future of reliable, carbon-free generation and to discuss the importance of breaking the stalemate on used fuel policy, which has left used fuel stored at sites across the Country in violation of the Federal Government's obligation to take possession of the fuel for permanent disposal.

Xcel Energy operates two nuclear plant sites in Minnesota, a total of three reactors. Our plants are Prairie Island and Monticello, which produce a combined output of 1,771 megawatts. We operate one of our plants next to the Prairie Island Indian Community, our neighbors, who have a long, deep history in the

area and strongly oppose the continued presence of used fuel.

Mr. Chairman, with me today is Cody Whitebear, a member of the Prairie Island Community, who is here with me today for this hearing. We partner frequently with the Prairie Island Indian Community to advocate for public policy that will result in moving used fuel as quickly as possible. Our nuclear plants have excellent operational records due to the hard work and dedication of hundreds of men and women who work on site, including many veterans.

These units generate electricity 24 hours a day, seven days a week, through extreme weather conditions such as the recent polar vortex. I also take great pride in the fact that these plants operate without producing any greenhouse gas emissions and play a key role in Xcel Energy's carbon reduction strategy. We have already achieved a 38 percent system-wide reduction of carbon emissions from 2005 levels, but we aim to go much further.

Our CEO, Ben Fowke, recently announced that we will reduce our carbon emissions 80 percent by 2030, and to be a goal of 100 percent carbon-free by 2050. In order to do this while maintaining both affordability and reliability, we need zero carbon dispatchable resources like nuclear energy.

However, the continued political stalemate around nuclear

used fuel needlessly creates uncertainty about the future of this resource. While the nuclear energy industry has a long record of safely storing used fuel on site, this situation is not what was promised to the communities we serve. As required under the Nuclear Waste Policy Act, our customers paid into the Nuclear Waste Fund for decades a total of \$452 million. Now the Nuclear Waste Fund balance sits at \$41 billion, and customers nationwide, quite frankly, have received nothing.

The Federal Government has obligated to develop a permanent repository and begin moving fuel by 1998. As we all know, the Federal Government has not lived up to its end of the bargain. On top of this, court orders require the Federal Government to reimburse utilities for ongoing costs associated with storing used fuel on site. This adds to the federal liability of \$800 million a year for breaching its contractual obligation to take the used fuel. And as you said, that is an amazing \$2.2 million per day.

We urge Congress to appropriate the funding necessary to allow DOE and the NRC to adjudicate the licensing application for a permanent repository. DOE has demonstrated through comprehensive scientific environmental analysis that Yucca Mountain can safely serve as a permanent repository for used fuel. At the same time, we also support the development of

consolidated interim storage. A consolidated interim storage project could act as a temporary solution for communities and plants all across the Country that are currently storing used fuel.

Moreover, the transportation of used fuel is safe and again, is a well-established practice. In fact, it has been safely transported across the U.S. for over 50 years. Nonetheless, the industry is still doing more to repair it.

I am proud to announce that on May 21st, Xcel Energy will host an industry with NEI nuclear transport exercise at our Prairie Island facility that will discuss and validate the steps necessary to move fuel from a nuclear plant to an interim storage site. Organizations who are critical partners for the safe fuel transportation participate and demonstrate their role.

I can assure the members of this committee that spent fuel has been and will continue to safely be transported

We applaud the committee putting forward the discussion draft of legislation that would advance both permanent and interim storage. Not only would it restart the license application process for a permanent repository at Yucca Mountain, but it would simultaneously develop centralized interim storage. We strongly supported similar legislation when it was considered and approved by the House of Representatives

during the last Congress. This bill recognizes the financial contributions made by electricity consumers across the Nation and assures that the nuclear waste fee is not turned back on until a decision is made on the Yucca Mountain license.

We hope the committee will consider this legislation this year. To conclude, while nuclear fuel is safe and secure at our plant sites, the fact that it remains in Minnesota rather than stored at a permanent repository is a political, not a scientific or engineering failure, one that costs consumers and taxpayers millions of dollars every year.

It is long past time for Congress to act. Thank you again for this opportunity to testify. I will be happy to answer any questions.

[The prepared statement of Mr. O'Connor follows:]

Senator Barrasso. Thank you very much, Mr. O'Connor. We appreciate your thoughtful testimony. Thank you for being here.

Mr. O'Donnell.

STATEMENT OF ANTHONY J. O'DONNELL, COMMISSIONER, MARYLAND PUBLIC SERVICE COMMISSION

Mr. O'Donnell. Good morning, Chairman Barrasso, Ranking Member Carper, and members of the committee. Thank you for this opportunity.

I am Tony O'Donnell, Commissioner on the Maryland Public Service Commission. I also serve as the Chairman of the National Association of Regulatory Utility Commissioners, NARUC, Subcommittee on Nuclear Issues and Waste Disposal.

NARUC's member commissions ensure the safe, reliable and affordable delivery of essential electric utility service to your constituents here in D.C. and every U.S. State and territory. The success of the federal waste management program already funded by the consumers of electricity from nuclear power plants at 40 plus billion dollars is necessarily of keen interest.

At the outset, I want to point out the obvious. February marked 21 years since the Department of Energy defaulted on its obligation to begin disposing of spent nuclear fuel as per the Nuclear Waste Policy Act. Federal action is more than 20 years past due. Congress must act now.

Every year of inaction costs your constituents, the American taxpayers, between \$500 million and \$800 million from



the federal coffers in legal judgment payments. That works out to about \$2 million each and every day.

This discussion draft is a welcomed and positive step forward. NARUC applauds Chairman Barrasso and this committee for bringing it forward. We are pleased that it tracks the NARUC-supported H.R. 3053 that passed the House in a strong, bipartisan vote of 340 to 72 last year. I think that is important in this environment.

There are several changes to the current law and the draft that are long overdue and crucial to assure the integrity of the program and progress on a federal disposal program, including, one, Section 143's pathway for interim storage of nuclear waste and linkage of use of such a facility to a finding that a final permanent repository decision "is imminent." NARUC's 2018 resolution, appended to my testimony, endorses both concepts, suggesting that continued storage at permanently shut-down plants is unacceptable and that no interim storage should be allowed unless and until the review of the Yucca Mountain license application is underway.

Two, Section 501's requirements for a final Nuclear Regulatory Commission decision approving or disapproving the Yucca Mountain license before additional nuclear waste fund fees can be collected. The Country has invested in excess of \$15

billion in site characterization. The NRC evaluation reports endorses its safety and suitability. The proceeding to examine the validity of concerns to Yucca Mountain as a repository should be completed.

Three, Section 501's new mechanism that ensures any nuclear waste fund fees are not misdirected to unrelated government obligations and provides for the gradual return of the corpus of the fund. NARUC specifically endorses this requirement that no nuclear waste fund fees can be collected in a fiscal year that exceeds 90 percent of the congressional appropriation for the fiscal year during which such fees are collected.

There are a few potential changes to the draft that could improve the program referenced in my testimony, including one, clarifying that any Department of Energy fee adequacy study consider if the approximately \$1.5 billion in interest accruing annually to the nuclear waste fund is adequate to fund projected annual disposal expenditures without reinstatement of a fee. Two, incorporating the text of Section 504 of H.R. 3053 as introduced in the House on June 26th, 2017, as that section assured that certain percentages of the \$40 billion already collected from ratepayers are actually used for the program based on certain triggering events. And three, clarifying that a precursor for the approval of a particular interim storage

site is an evaluation of the cost and benefits that specifically considers the transportation costs and proximity to possible or likely permanent disposal sites.

I look forward to the committee's questions, and I applaud you for bringing this crucial legislation to the Congress.

[The prepared statement of Mr. O'Donnell follows:]

Senator Barrasso. Thank you very much, Mr. O'Donnell, for your testimony. We are grateful for your eight years of service in the United States Navy, your 22 years of service in the General Assembly of Maryland, and your leadership in the Environment and Transportation Committee, which is very similar to the committee that we have here. I know you have been a champion of the Chesapeake Bay, and this committee has done a lot of work in that effort as well. So thanks so much for being here and sharing your opinions.

Mr. Fettus.

STATEMENT OF GEOFFREY H. FETTUS, SENIOR ATTORNEY, CLIMATE AND  
CLEAN ENERGY PROGRAM, NATURAL RESOURCES DEFENSE COUNCIL

Mr. Fettus. Chairman Barrasso, Ranking Member Carper and members of the committee, thank you very much for the opportunity for me to present the views of the Natural Resources Defense Council on nuclear waste.

We thank the committee for what we hope can be a new beginning. With more than 80,000 metric tons in more than half the States in reactors moving to decommissioning, we need to reset the process. Respectfully, this discussion draft, however, will not solve the current stalemate and won't lead toward workable solutions.

For more than 50 years, Congress has offered, and even passed, bills that attempt to do what this bill would have us do: restart the eco-licensing process, or kick open a door in New Mexico for an interim storage site, when that State was promised repeatedly no such thing would ever happen. Efforts such as these failed in Tennessee, in Kansas, Nevada, Utah, and everywhere else.

Another such attempt restarts the litigation controversy. The likely result? Continued stalemate. Seven years ago, a bipartisan Blue Ribbon Commission keenly described why past attempts failed. That commission, and Ranking Member Carper,

wisely asserted that we can't keep doing the same thing. Congress must create a process that allows any potential host State to demonstrate consent, or for that matter, non-consent.

So rather than spend more of your valuable time on why this won't work, and spend more time talking past each other, as so often happens at these hearings, I put before you in my testimony today a doable, meaningful reset of how we manage and dispose of nuclear waste. The solution could be summed up simply: give EPA and the States power under well-established environmental statutes so that they can set the terms for how much and on what conditions they could host a disposal site.

Radioactive waste is stranded because the Atomic Energy Act treats it as a privileged pollutant. The Act preempts regulatory authority of EPA and the States, exempting radioactivity from hazardous waste law, sizeable portions of the Clean Water Act, et cetera. We don't need to do a statutory lesson today. It ignores the vital role States play in addressing other environmental pollutants.

Our government and the Senate is most aware of this, is that it is strongest when each player's role is respected. As an example, the years of wrangling over how clean is clean for contaminated nuclear weapons sites such as those in Washington and South Carolina is made exponentially worse by DOE's self-

regulatory status, which the Atomic Energy Act ordains with these exemptions.

The same is true with spent fuel from the commercial sector. State consent and public acceptance of potential repository sites will never be willingly granted -- we saw that from the Nevada Senators -- unless and until power on how, when and where is shared, rather than decided by federal fiat. There is only one way consent can happen, consistent with our cooperative federalism. Specifically, Congress must finally remove the Atomic Energy Act's exemptions from our bedrock environmental laws. Our hazardous waste and clean water laws must include full authority over radioactivity and nuclear waste facilities, so EPA, and most importantly, the States, can assert that direct regulatory authority.

It is true, removing these exemptions tomorrow will not magically solve this puzzle and create a final repository. But it will open a path forward that respects each State, rather than offering up the latest one for sacrifice. Because a State can say no or yes, and on what terms, and not necessarily be subject to hosting the entire burden or shipping all the waste across the Country through every congressional district, such a new regime would allow for a thorough technical review, unlike the years of fighting that has been the hallmark of every single

past process. Just as important, that fundamental sharing of power could result in public acceptance of solutions.

We have seen these bills before, but each has been a mirror of the last. It is time to try something that has a proven track record in addressing other controversial topics. It is time to regulate nuclear waste the same way as every other pollutant, with EPA and delegated States taking the lead under our foundational environmental statutes.

Thank you again for having me here. I look forward to answering your questions.

[The prepared statement of Mr. Fettus follows:]



Senator Barrasso. Thank you very much for joining the panel and for your thoughtful testimony today.

Prior to asking questions, I am asking first unanimous consent to enter into the record, number one, a Washington Post editorial entitled Put Yucca Mountain to Work: The Nation Needs It. Second, a Chicago Tribune editorial entitled Review Yucca Mountain: Illinois has More Nuclear Waste than Any Other State, All of It in Temporary Storage. And the third, an L.A. Times editorial entitled, There's No Great Answer for Nuclear Waste, But Almost Anything is Better Than Perching It on the Pacific.

[The referenced information follows:]

Senator Van Hollen. Mr. Chairman, I apologize, I missed the intro and I just wanted to welcome all the witnesses, but particularly Commissioner Anthony O'Donnell from the State of Maryland. He is serving on our Commission, but he also served with great distinction in the Maryland General Assembly, where we both served. I apologize for the interruption, I have been bouncing around between different hearings, and I thank you for the opportunity.

Mr. O'Donnell. You too, Senator, thank you for the welcome.

Senator Barrasso. We appreciate the comments, and eight years of naval service as well, the time that he spent in the legislature and on the environment and public works committee in the legislature. And then, Senator Van Hollen, I also pointed out his commitment to the Chesapeake Bay, an area that we on the committee, you and certainly Senator Cardin, the other Maryland Senator, have been focused on as well.

Mr. O'Connor, Xcel intends to eliminate all carbon dioxide emissions from its electricity generation by 2050. That is the stated goal. Would your company include advanced nuclear energy to achieve that goal, if it is cost-competitive? Is it part of the process?

Mr. O'Connor. Yes, Chairman Barrasso, we would. Our focus

is to be carbon-free by 2050, as you stated, and I stated. We would like to be 80 percent by 2030. To achieve that, we need our existing nuclear plants, and to achieve 100 percent, we think that maintaining a technology-neutral or open to all technologies, included advanced nuclear, provided it is affordable and provides the needs, it is dispatchable in the way that our grid needs it, would be useful.

Senator Barrasso. Will it be more difficult, though, to add advanced nuclear energy if Washington doesn't re-establish a waste program? Would that make it more difficult for you to do the things, your goal, that you are trying to achieve?

Mr. O'Connor. Yes, Chairman, I believe that not advancing fuel in any manner is probably going to create a block for nuclear being used as any kind of a form in terms of achieving that goal. I think that particularly to be true with some of the issues in Minnesota.

Senator Barrasso. Mr. O'Donnell, the Nuclear Regulatory Commission has accepted the Department of Energy's Yucca Mountain license application for review. They did that in 2008. The law required the Commission to approve or deny the application within four years.

The discussion draft amends the law to provide for an additional three years for the Commission to complete the

licensing process. Government Accountability Office reported the Commission could complete the process within this time frame.

Do you agree with these findings?

Mr. O'Donnell. Senator, I do. Mr. Chairman, the Government Accountability Office in 2017 took a very deep look at the cost to the American taxpayers, and took a very deep look at what it was costing us in terms of loss and aging out of our experience in these matters. So we are losing a lot of people from DOE that are involved and we are losing a lot of expertise from the NRC that is involved. To reset the clock is going to make it even worse.

So they extended three years, but they also say, we have to get moving on this licensing process. I would just add parenthetically that if our commission, as a commissioner speaking from Maryland, were to stop a licensing process right in the middle of a process for arguably political reasons, that is not a fair process for everybody. Both the opponents and the proponents deserve an answer.

Senator Barrasso. Any other reasons why we need a specific deadline for the Commission to make their final decision on the application?

Mr. O'Donnell. I think the fact that we are here today

with these amendments highlights why need a deadline. That reason is, failure of a deadline allows stuff to get kicked down the road for a long, long time. So it is essential.

Senator Barrasso. I am going to ask all three of the witnesses to respond to this. The discussion draft allows the Secretary of Energy to partner with private companies to store spent nuclear fuel on an interim basis. That interim storage program has to proceed at the same time as the Commission's review of the Yucca Mountain license application.

So I would like you to each respond, if you support a requirement that interim storage be connected to a tangible action on a permanent repository for nuclear waste. Mr. Fettus, we will start with you.

Mr. Fettus. Thank you, Chairman Barrasso. We certainly are supportive of the idea that if there is ever an interim storage movement to go forward, which we right now currently don't support what is currently on offer, but it would have to be tied to a repository.

In fact, in my written testimony, I suggested that there is one model of an interim storage solution that we would see as a pilot project that could be useful. That is storing at active reactor sites. You already have consent to manage the spent nuclear fuel. You already have the trained staff. You already

have the structural readiness to manage that fuel as well as an NRC license.

Rather than engender the kind of controversy that is certainly going to erupt in New Mexico, which is, I believe, as united as Nevada is now in opposition to a centralized interim storage site, I would strongly urge the committee to consider operating reactor sites. That also keeps the onus on the industry where it belongs. And we think that would be a functional way to go forward.

Senator Barrasso. Mr. O'Donnell, any thoughts on this?

Mr. O'Donnell. The Nuclear Waste Policy Act says the onus is on the Federal Government. That is the law.

Senator Barrasso. Mr. O'Connor.

Mr. O'Connor. Chairman, I think we believe that the Federal Government has to live up to its obligation under the law and remove the fuel. I think that being said, we are open to any and all venues that advance the fuel, whether that be interim storage or that be the Yucca or some combination.

I think the real message is simply moving it and not letting it stay status quo.

Senator Barrasso. Senator Carper.

Senator Carper. Thank you, Mr. Chairman. As we revisit this issue, I am reminded of some of the values that I try to

embrace as a human being, as a leader here, and guide me in the decision-making that I and my colleagues make. One of those is Golden Rule, treat other people the way you wanted to be treated. Probably the most important rule of all. Next is just to figure out in general what is the right thing to do. A lot of times when confronted with issues, people say, well, this would be easy or this would be expedient. But I say, what is the right thing to do. We have all maybe not come to agreement on what is the right thing to do.

I would love to figure that out, I studied economics in Ohio State and later on in graduate school. After the Navy, I did quite a few years in the Navy. Mr. O'Donnell, what did you do in the Navy?

Mr. O'Donnell. I was a technician and nuclear operator and an instructor in the naval nuclear power program.

Senator Carper. I was a P3 aircraft mission commander, chasing Russian submarines in all the oceans of the world.

Mr. O'Donnell. Thank you for your service.

Senator Carper. Thank you for yours. It is great to have you here.

One of the things I love to do is just try to figure out how to do we harness market forces in order to get to good public policy solutions. The other thing I often try to focus

on is to find out what works and do more of that. Find out what works and do more of that. They seem to have figured this out, maybe not entirely in France, but I mentioned this in my opening statement, they think they have figured out what to do. The approach that they use in France, what can we learn, what can we take from that as we are at this decision point, trying to figure out how to go forward? Mr. Fettus, please.

Mr. Fettus. Senator Carper, I was struck by your idea about prisons. Let me quickly respond on France. France actually doesn't have a waste program that is working any better. In fact, we would submit that it is probably going to be much more of a mess than our program is. The reprocessing of spent nuclear fuel, just as the Blue Ribbon Commission several years ago said, still requires a geologic repository. It creates a host of proliferation and security concerns by the creation of plutonium. France has no repository at current, they will not be able to do away with the MOX fuel, mixed oxide fuel assemblies they have waiting to burn in advanced reactors that will likely never be built, because they are not cost-competitive.

So I would actually be happy to work with your staff and talk to anyone on the committee about why reprocessing is not going to be a solution that is going to solve our problems. The



solutions, and I like that you said we are looking for things that actually work. Our environmental laws have worked in an extraordinary fashion over the last 50 years. What we have done with nuclear waste is taking it outside of that process.

The original Nuclear Waste Policy Act was a remarkable law that balanced powers. But it left out the States. And in so doing, what you have had is that lack of consent. And consent doesn't just mean a set of incentives, market incentives. It wasn't like Nevada wasn't offered the moon. Every committee member knows that.

The question is, is that no one would enter into a contract if they don't have some sort of power to exact terms for consideration. No one would enter into a contract. That is where we are left with nuclear waste.

So what I am trying to impress upon the committee is, and I think you are wisely, when you talked about prisons in your opening statement, I think that was, why are some places competing for them. Well, because those States or regions can actually set the terms by which they can look to their communities and say, we can do this safely, we can have these jobs and we can control the manner in which we are setting a way forward.

Nevada has none of that ability, nor would New Mexico.

Senator Carper. Thank you, very, very much, for your response. I want to ask Mr. O'Donnell and also Mr. O'Connor. Mr. O'Donnell, briefly, can you respond a little bit to what Geoff was saying?

Mr. O'Donnell. NARUC, I don't believe, has a position on that. I will check, sir. If we do, I will get back to the committee. Two, I will say that the States have been at the table through NARUC and through the Congress, actually. But through NARUC, we were brought to the table in 1982 as a crucial part of crafting the Nuclear Waste Policy Act. I think that is essential to say, to continue to hear that the States have been excised out of this process is not true.

Senator Carper. Okay, thank you. Mr. O'Connor, please, a response, if you will.

Mr. O'Connor. Could you repeat the question?

Senator Carper. Respond to what you heard from Mr. Fettus, here, especially, and also some thoughts if you have any on how do we incent other States to become repositories for spent fuel.

Mr. O'Connor. Well, I think that as far as consent, my view and our company's view and our customers view would be certainly, residents, communities and States should have their issues and their voice, and it should be heard. I don't know if one group is more important than another. I don't think so. I

think our many other States and communities, our Indian Community as an example, obviously did not give consent to the fuel being stored next to them. So I believe there are processes that we should use to vet those. I think they exist for us to be able to work through it and make prudent decisions.

As far as reprocessing, again, I think that is a possibility, as you said. There is a fair amount of energy that remains in the fuel and it could be used for new reactors or other types of venues. I think that is true. But without moving the fuel first, I don't see how reprocessing is a discussion yet. First, we have to advance it from where it currently is to a location that can be afforded, I will say, those opportunities to look at.

Senator Carper. All right, thank you all.

Senator Barrasso. Thank you, Senator Carper. Senator Braun.

Senator Braun. Thank you, Mr. Chair. I always listen carefully, because you answered a couple of questions along the way. I was hoping there might have been more enlightenment from France, since they have invested so heavily in nuclear energy. It sounds like they may not be too much farther down the trail than we would be when it comes to long-term solutions on waste.

Mr. Fettus. Respectfully, they are not, Senator.

Senator Braun. Okay, that is good to know, to discount that. And reprocessing, I was hoping, was something that there was better news with as well.

So I am going to, Mr. Fettus, I want to ask you this. You said geological repository. To me, implicit in that is that there are only a limited number of places that can actually store spent fuel, due to the geology of where you would store it. Is that true, or did I misinterpret that?

Mr. Fettus. You didn't misinterpret that, that a geologic repository has certainly been the consensus answer, I believe, from the environmental community to the industry for literally decades. The precise number of places that could potentially isolate the waste for the length of time it is dangerous, as Senator Cortez Masto described in her testimony this morning, that process, looking and trying to find all of those sites, was essentially sideswiped or done away with back in the mid-1980s, when I was in high school, long, long ago.

We haven't even really done the technical analysis nationwide for the potential technical sites that might be suitable.

Senator Braun. What would your best guess be, since it looks like other than maybe Nye County, Nevada, as being willing to do it, what percentage of our surface area in this Country,

would it be closer to 5 or 10 percent that would be geologically -- or do we not know that?

Mr. Fettus. Honestly, Senator, I would defer to, going back to look at the history of the geologic studies that were done in the 1980s, and starting at that point. I wouldn't hazard a guess right now.

Senator Braun. If that is information that any other panelist could give, I think that would be something that is important. If we are talking about a limited amount of options to begin with, and most of those options people not wanting it, we have, to me, a significant issue. So if you could glean that information, anyone, I think it would be good for me and other committee members to have.

So is there any other place, other than Nye County, Nevada, that has shown a willingness to consider it? I am assuming that is the county where Yucca Mountain is, is that true?

Mr. Fettus. That is the county in Nevada, Senator. If you take the time with my testimony that I hope you and your staff can do, one of the things, one of the things that we are trying to articulate is that right now, it is not about one place or, is there another site. If it is not Yucca Mountain, where can it go. That is not the question right now that I think the Senate should spend its time trying to find out.

The Senate can't find and pick a site. That is how we got into this mess in the first place. What we need to do is set up a structure where people can say yes, and they can do so consistent with any other environmental pollutant that they might take in their community. We have hazardous waste disposal sites around the Country. We can do this. But we can't do it without a process where people can set those terms and have direct regulatory authority. And that model is an environmental law.

Senator Braun. Good point. Final question would be, when it comes to using nuclear energy for electric power generation, and when it comes to the disposal of the waste, has anything changed technologically that you are aware of from, say, 25, 30 years ago to change the dynamic that it is kind of an inherently difficult form of energy due to all the risks associated with it? Has anything out there changed in France, other places where they use this more consistently than our shutting the industry down because we are befuddled by all the problems associated with it? Has anything changed?

Mr. Fettus. No. It is a profoundly --

Senator Braun. More than it is here?

Mr. Fettus. It is a challenge, that you have to try to find places that can isolate it for a million years. It is a

profoundly deep technical challenge.

Senator Braun. Thank you.

Senator Barrasso. Thank you, Senator Braun.

Senator Duckworth.

Senator Duckworth. Thank you, Mr. Chairman. Thank you for holding this hearing. Illinois is indeed home to more nuclear reactors than any other State in the Nation. Eleven operating, three decommissioned, 7,500 tons of spent fuel stored in pools, and another 900 tons in dry casks. Four more plants, pools, are running out of room. So we need to find a solution.

We are struggling to deal with the decommissioning of nuclear power plants that have become de factor interim storage sites for the stranded nuclear waste. Without consent or compensation, these communities and plants are paying the price for the Federal Government's failure to find a permanent solution to spent nuclear fuel.

Last Congress, I offered the STRANDED Act, to provide impact assistance and economic development incentives to communities burdened with storing stranded nuclear waste. My bill has three components. First, it establishes the federal task force to identify existing public and private resources and funding that could benefit affected communities. This policy is also included in today's bill.

Second, it creates economic impact grants that would provide financial assistance to offset the economic and social impacts of stranded nuclear waste and affected communities. Third, my bill extends tax credits that will bring investment to these stranded communities.

Of the three policies in my bill, the most critical component is the second. That is to compensate communities who are acting as interim storage sites for nuclear waste now. Mr. Fettus, do you agree that communities like Zion, Illinois, which is one of these sites, Zion, Illinois should be compensated now for storing waste?

Mr. Fettus. Yes.

Senator Duckworth. Thank you. Right now, my State has one decommissioned nuclear power plant, in a few years it could have even more, several actually. Would the kind of proposal you outlined in your testimony affect what happens in my State?

Mr. Fettus. We think it would. It would give the State much more control over the terms by which that nuclear waste is going to remain in your State, which by any measure, it is going to be in the State for a long time, especially as you have all the operating reactors that Illinois has.

Right now, States can essentially, as California sees in the San Onofre situation, they have no real authority to affect



that. What we outline could change that.

Senator Duckworth. So I look at these and, and even if we say, Yucca Mountain, magically, we are going to proceed with it, it is still going to be a matter of decades before this fuel could be moved.

Mr. Fettus. Yes.

Senator Duckworth. In the meantime, it sits there in Zion, Illinois. Nobody is building. It is in a lakefront on Lake Michigan, beautiful piece of property, and there is nothing they can do, and nobody wants to move there, nobody wants to buy a house in Zion. And yet there are very good jobs at the plant that is there, and people drive in to hold these jobs, but they drive from a long way away because nobody wants to buy property there.

So I think it is common sense that we would make these payments to the local community, since they are now stuck holding this nuclear fuel, that the Federal Government has failed to live up to in terms of dealing with it.

I think we can both agree, Mr. Fettus, that it is critical that our existing nuclear fleet operates also as safely as possible.

Mr. Fettus. Yes, that is NRDC's position.

Senator Duckworth. I have a bill that would fix a drafting

error that occurred in the Energy Policy Act of 2005. It clarifies that whistleblower protection rights for DOE and NRC employees may be enforced as Congress intended. Do you agree that whistleblower protections, which are disputed at DOE, are of critical importance to the nuclear industry?

Mr. Fettus. Yes, I do.

Senator Duckworth. Do you want to elaborate a little bit more on what you were saying about the consent piece? I like what you said about the fact that we need to change the model from forcing this fuel onto someone to compensating the people who are already holding it, and coming up with a way for people to say yes.

Mr. Fettus. Figuring out a pathway forward, Senator, I do appreciate the conundrum Congress is confronted with. I think this is one of the first paragraphs, in almost every testimony I have written on nuclear waste, this is a devilish challenge, a technical challenge, to science alone. Then you put the interplay of politics on top of it and it gets turned into a hot potato that makes Chairman Barrasso's job, or Ranking Member Carper's job, extremely difficult, and in fact, every member of the Senate.

But to keep trying to force a square peg into a round hole simply won't work. To give you a sense of scale, when you said,

if we magically had Yucca Mountain be licensed and go forward, it would still be decades for fuel across the Country to get moved at various times. That is not going to happen, though. The licensing process, if this bill were to become law, would go forward, and then there would be contentious litigation for, we submit, despite any deadline, decades. And if they truncated the litigation, they would simply open themselves up to legal challenge on that issue.

So we can't urge strongly enough, there is a better way to do this that is consistent with our environmental laws.

Senator Duckworth. Thank you, Mr. Fettus. Thank you, Mr. Chairman.

Senator Barrasso. Thank you.

Senator Capito.

Senator Capito. Thank you, Mr. Chairman. Thank all of you.

I represent one of the six States that prohibits nuclear power generation. I live in West Virginia, within its borders. Pending a final permanent federal waste storage solution, so West Virginia conditions approval of a nuclear power plant on making economic sense for the taxpayers. I don't see this in the future, since we have a lot of natural gas development in our State as well.

So I don't have the first-hand knowledge, although I have toured the nuclear plant in Michigan, on nuclear energy, but I do believe we need to keep nuclear energy as part of our energy mix. I think it is absolutely essential for our baseload generation and have been very supportive of that.

I wanted to ask a question first of all, off of what Senator Braun said to Mr. O'Connor and Mr. O'Donnell. I think Mr. Fettus sort of answered the question. I wanted to see consistency here, asking, since the Act was first passed in 1982 and Yucca was designated in the late 1980s, the technology of actually storage, according to what I understood Mr. Fettus to say, has not technically changed over that period of time. Could you talk about that a little bit? Is it going to get any easier, is my question.

Mr. O'Connor. Senator, are you referring to canister methodology of storing fuel at this point?

Senator Capito. I am just saying, has the technology changed. I went to the reprocessing plant in France, I have been there. But are we advancing in the technology so we can find a solution to this and make it easier? Or is it pretty much the way it was 30 years ago?

Mr. O'Connor. I would agree that the canisters and the storage that we currently do today is not significantly

different. Canisters have become a little bit, I would say, different in design, but fundamentally they are principally the same.

Senator Capito. Mr. O'Donnell?

Mr. O'Donnell. Thank you, Senator. I have nothing really to add on that. I think it is essentially the same.

Senator Capito. That is my understanding. I just wanted to make sure I had that correct.

I also serve on the Senate Appropriations Committee, and another source of consternation with regard to nuclear waste storage policy is how it affects the Energy and Water Appropriations bill. The funds coming into the waste fund are mandated by law to be paid by utilities generating nuclear power, are mandatory, but their disbursement is treated as discretionary. This is getting into the technicalities that you would understand as a former member of the legislature, how convoluted this can become. And so it is competing with other programs like the Corps of Engineer programs, and our national lab systems and the Energy and Water Appropriations bill.

So this discretionary hook is also why a handful of Senators can block this. Meanwhile, the judgement fund, which Commissioner O'Donnell, you spoke about this, represents \$2 million in payments by the taxpayers per day to compensate

utilities for the Federal Government doing nothing. And it remains mandatory spending.

So with all of that screwball accounting that could probably only occur in Washington, I would like to ask Commissioner O'Donnell and Mr. O'Connor, since it is your ratepayers footing the bill, with nothing to show for it, do you have a view on this state of affairs in terms of the funding? Mr. O'Connor, do you have a comment?

Mr. O'Connor. Our customers continue to foot the bill for storage. As I said before, there isn't anything that is happening.

One unique thing about Minnesota is that in addition to just the cost for the actual storing of the fuel, there is added cost that our customers pay per cask at each facility. It is \$500,000 per cask at Prairie Island and \$350,000 at Monticello.

Senator Capito. Is that the purchase price or is that the storage price? Is that every year?

Mr. O'Donnell. That is just an every year storage cost that we provide the State and a renewable development fund. And our customers pay for that. That is \$32.5 million per year right now. That is unacceptable, in my mind. So that means we must move things forward.

Senator Capito. Right. Mr. O'Donnell, do you have a

comment on that?

Mr. O'Donnell. The only thing I would say, Senator, is that the customers have paid for this time and again. They paid for the original storage, they paid to re-rack the spent fuel pools, they paid to build the interim storage, the SCs on site. They continue to pay, not the least of which is the \$41 billion, \$40 billion in the Nuclear Waste Fund.

Senator Capito. Yes, with nothing changed. And the map that you see of where everything is being stored now, it is pretty compelling in terms of not just footing the bill, but it is still sitting there and accumulating, I would imagine, at the same time.

Thank you very much, Mr. Chairman.

Senator Barrasso. Thank you, Senator Capito.

Senator Markey. Thank you, Mr. Chairman.

The Commonwealth of Massachusetts contains more than 700 metric tons of spent nuclear fuel. Some of that radioactive waste sits in 16 dry casks in Rowe. They are remnants of the Yankee Atomic Plant that stopped operations in 2007. After the Pilgrim Nuclear Power Station completes its decommissioning process, which is set to begin at the end of this month, there will be 61 dry casks full of nuclear fuel sitting in Plymouth, Massachusetts.

Dry casks are more secure than spent fuel pools, which are a disaster, waiting to happen. That is why I have repeatedly introduced the Dry Cask Storage Act, an effort joined by Senator Gillibrand and Senator Sanders.

Mr. Fettus, should we ensure that all decommissioned plants move their spent fuel in dry casks as soon as the fuel has cooled enough to do so?

Mr. Fettus. Yes.

Senator Markey. Excellent answer. The Pilgrim decommissioning process and the proposed Nuclear Regulatory Commission decommissioning rule both ignore the need for environmental impact analysis. The nuclear industry is just running roughshod over transparency and environmental protections.

While the discussion draft of this bill does not focus on onsite nuclear waste storage, it builds upon the NRC's refusal to seriously consider the environmental and health concerns of spent fuel. This draft does not address environmental and safety criteria in its proposal for interim storage facilities, and it blocks key parts of the environmental review for Yucca Mountain.

Mr. Fettus, shouldn't the environmental and public health impacts of storing nuclear waste be at the forefront of our



considerations?

Mr. Fettus. Yes.

Senator Markey. Now, the Pilgrim decommissioning plan as presented to the Nuclear Regulatory Commission, assumes that all spent fuel will be fully removed from the site by 2062. That is the date being used for all cost estimates. So if that deadline isn't met, and the decommissioning process will break its budget, potentially leaving the towns to foot the bill, Mr. Fettus, how likely is it that the spent fuel from Pilgrim would be moved to Yucca Mountain by 2062?

Mr. Fettus. I think it is very unlikely that it will be moved to Yucca Mountain, because I would suggest it is never going to be moved to Yucca Mountain for the reasons Senators Cortez Masto and Rosen outlined today.

Senator Markey. And I agree with you, one hundred percent. So Mr. Fettus, by attempting to move us deeper into the Yucca Mountain fantasy land, do you think this discussion draft brings us further away from a permanent storage solution for nuclear waste than that which would allow us to actually move waste out of these closed plant sites?

Mr. Fettus. Yes. In fact, I would suggest, Senator, and I appreciate this line of questioning, that the outline of the concepts that I have in my testimony today would potentially get

us farther faster than the 2048 deadline that the Energy Department has been bandying about for several years.

Senator Markey. So the NRC has refused to answer my questions about whether the Commonwealth or surrounding towns might be left footing the bill for decommissioning costs, like storage, if the licensee can't pay. Mr. Fettus, what could it mean for costs to the town or to taxpayers if we don't develop a real plan to address nuclear waste storage?

Mr. Fettus. I think those costs could be significant, and if anything were to ever go wrong, they could be astronomical.

Senator Markey. They can be astronomical. Mr. Fettus, have the towns and taxpayers in the Commonwealth provided consent to have nuclear waste stored indefinitely in their home town?

Mr. Fettus. Not that I am aware of.

Senator Markey. No. It is a decision made by the Federal Government. We don't want every decommissioned nuclear site to become a permanent repository for radioactive waste. We don't want to be left holding an ongoing endless bill for storage costs, emergency response costs and radiological monitoring costs. Continuing to pretend as though Yucca Mountain is a real, viable option for the permanent storage of nuclear waste from Massachusetts and every other community where this type of

waste currently resides only makes it more likely that it will be these communities which will be left holding radioactive receipts. We need a real, honest dialogue about nuclear waste storage, and that conversation won't lead us to Yucca Mountain.

Moreover, and this will be my final question, if I may, Mr. Chairman, this discussion draft pursues the development of interim nuclear waste storage sites, which leads to two dangerous potential outcomes. First, if we don't get a real long-term solution, the interim sites could become de facto permanent repositories, an unacceptable outcome. Second, if we do eventually develop a permanent repository, interim storage means we will have to move dangerous radioactive waste twice. That is twice as much risk that something could go wrong along the way.

Mr. Fettus, do you think the transportation and safety issues should be considered as part of any nuclear waste management plan?

Mr. Fettus. Yes.

Senator Markey. And do you think that communities that might be exposed to a transportation-related nuclear waste accident should be consulted as part of a consent-based nuclear waste management process?

Mr. Fettus. Absolutely.

Senator Markey. Otherwise, twice we will be putting mobile Chernobyls out on the highways of America, driving nuclear waste across our Country, through communities that will not have given consent, and without proper security that has been put in place.

Thank you, Mr. Chairman.

Senator Barrasso. Thank you very much. Before turning to Senator Cramer, I note in today's USA Today front-page story, in terms of nuclear power for the future, Some 2020 Dems Warm Up to Nuclear, Clean Energy Option Finds Unlikely Support. This is the future that we are talking about, and without objection, I will submit this for the record.

[The referenced information follows:]

Senator Cramer. Thank you, Mr. Chairman. Thanks to all of the witnesses. I apologize for being so late. Wednesday is my day, the day that I have the great honor and privilege of presiding over the Senate. So I have to remind myself often that the inconvenience is worth it. But thank you all for being here today.

I want to follow up a little bit on something that Senator Markey was referencing, as he was referencing the fantasy of Yucca Mountain. Do we forget that the Nuclear Waste Policy Act is the law of the land? There is a law that was passed, and we have been neglecting for a few decades. I will use that opportunity to slide into some more North Dakota specific stuff, Mr. O'Connor, because I know you are familiar with this. I was a utility regulator for nearly ten years in North Dakota. Xcel Energy is our largest utility in North Dakota, and our ratepayers have been paying in for decades.

Mr. O'Connor. Yes, we have.

Senator Cramer. I was on the commission, along with Commissioner Tony Clark at the time, when the lawsuit succeeded and we had to redirect several million dollars to North Dakota ratepayers for their burden of paying into something for which they were getting nothing. So I remember that redirection. Since leaving the commission and coming to Congress, I think we

have probably redirected double that much again. This is no way to run an organization, not your organization, but our much-larger organization.

So I am quite familiar with the fund, and the broken promises, the bill of goods that the ratepayers have been given over the last several decades, and am anxious to get to not the fantasy of storage, but hopefully a conclusion one day that makes some sense. And I hope that we can come to it soon.

There is all the talk, of course, in this town and throughout the Country, about clean energy. Xcel Energy certainly has been committed to that. You have invested lots of money in my State and other places in renewable fuels. But if we are going to get to the type of goals that many people aspire to, Mr. O'Connor, can you do that at Xcel without your nuclear fleet? And again, North Dakotans enjoy the reliability of it.

Mr. O'Connor. No.

Senator Cramer. No. Right. So I want us to continue to have the discussion. I don't believe that it is a fantasy.

You have invested lots of money in wind and solar and other renewables. What percentages, I don't know the answer to this, what percentage of your generation is renewable?

Mr. O'Connor. I believe the renewable portfolio is around 15 percent at this point. We are planning, obviously, as you

are aware, to replace our coal facilities with renewables, and using nuclear as, I will call it, a backbone for that transition. Our intent is to be up into the 50, 60 percent in renewable resources.

Senator Cramer. And nuclear being the main baseload, then, where we probably can't have gas?

Mr. O'Connor. Nuclear at this point needs to be part of that component. I think we are open to all other technologies that could be dispatchable that are carbon-free. In the meantime, I think the reality is gas would still probably be part of that equation.

Senator Cramer. I am going to resist spending a lot of time on ground that has no doubt been plowed in my absence, Mr. Chairman, and I don't think it is necessary to repeat it, other than to again, make my North Dakota illustration and my point. But I would remind my colleagues and others, last year in the House, when I was in the House, we did pass the Nuclear Waste Policy Amendments Act, 340 to 72. That is pretty good bipartisan action. A number of Republican and Democratic co-sponsors of the legislation, of course, I was on the Energy and Commerce Committee and was a co-sponsor of that.

I want us to be more aspirational than to think this is somehow a fantasy. This isn't a fantasy, this is really

important stuff. It is important to the ratepayers, the taxpayers, to the environment. It is important to the economy. And with that, again, thank you all for your appearance, and I yield back.

Senator Barrasso. Thank you very much, Senator Cramer.

Senator Carper.

Senator Carper. I am up here reading the USA Today article that the Chairman referenced.

[Laughter.]

Senator Carper. It reminds me, I live in Delaware, I have the privilege of representing Delaware. We are the lowest-lying State in America. Our State is sinking, fortunately not too fast, but we are sinking. The oceans, and our neighboring Marylanders know about this, the oceans are rising around us, and it is not a good place to be. So we take the issue of climate change and global warming very, very seriously. I think it is the most serious threat we face on this planet.

So the idea, if we could somehow create our electricity without producing more carbon dioxide or have technology to actually suck carbon dioxide out of the air, we are trying to do those kinds of things, that would be a good thing. But as helpful as nuclear energy is in terms of not making climate change any worse, in fact it is helping us on that problem, huge



problem, we have this problem with the disposal of the spent fuel.

It is not often we have a second chance in life, to get stuff right. We didn't get it right back in the 1980s. I think given the reality of climate change, the threat it poses literally to our planet, we have a chance to get it right, and if we are smart about it, provide economic opportunity for communities where they like to have that kind of opportunity with the kinds of protections that they need and help preserve our planet.

President Macron from France was here about a year ago, he spoke at a joint session of Congress. One of the things he mentioned was that this is the only planet we are going to have. There is no Planet B. And so we are trying really hard to figure out how to get it right this time, and we appreciate very much your presence here and providing some great guidance for us. I appreciate the leadership that the Chairman is showing in trying to restart the conversation, hopefully with a better ending.

One question for Mr. Fettus to close out, and then I am going to ask all three of you to sort of give me a recommendation on the federal commission that has been recommended by a Blue Ribbon panel a couple of years ago. Mr.

Fettus, back to you, consent-based approach. It is my understanding that previous mechanisms for finding voluntary sites for nuclear spent fuel have been successful in this Country. One of those is a place down in New Mexico, Waste Isolation Pilot Plant. Hasn't gotten a lot of attention. There is an acronym for it called WIPP, I will not use that.

Mr. Fettus. I am familiar with WIPP, Senator.

Senator Carper. I am sure you are. However, that was for a different type of facility than what we are talking about here today.

My understanding is, I don't know a lot about this facility, but I understand that it takes mid-level defense waste, is that right?

Mr. Fettus. Transuranic defense waste, yes, Senator. Kind of like silver at the pump.

Senator Carper. Okay. And in fact, to my understanding, the State of New Mexico and the community agreed to the facility with the understanding that it would not accept high-level nuclear waste in the future.

Just very briefly, would you provide any takeaways from the New Mexico experience on what we can replicate in a consent-based approach for a high-level, high-level spent fuel repository, and any cautions on maybe what cannot be replicated,

please. Just very briefly.

Mr. Fettus. Very briefly, Senator. Thank you for the question.

To the extent that there is public acceptance of the WIPP facility in New Mexico after all these years, crucial to that is the existence of the State's hazardous waste permitting authority for the hazardous waste portion of the waste at the site. The State still has no regulatory authority over the radioactivity, but they have authority over the hazardous waste portion.

So the State has some measure of control, and it can, after the explosions and fires of 2014, the State can require a shutdown and protect its citizens, unlike in other nuclear facilities, where States have no regulatory authority. So if there is something to replicate that is at the root of our suggestions, it is that. It is expanding that.

Senator Carper. Thank you. And for the entire panel, the Department of Energy's record overall has not inspired a whole lot of trust in our Nation's nuclear waste management program. For years, I have heard, maybe you have too, calls from various stakeholders, including those in the nuclear industry, for a new federally-chartered organization and incorporation to be created that is dedicated solely to dealing with our nuclear spent fuel.

The creation of a new nuclear waste, federal organization, I think was one of the recommendations that came out of the Blue Ribbon Commission on Nuclear Waste launched during the Obama Administration. Just very briefly from each of you, we will start with you, Mr. O'Connor, if you would, briefly, we would like to hear your thoughts on that idea that I just described. Could taking nuclear waste out of DOE's hands insulate the issue from the political process and improve the consent-based approach, should Congress consider taking a step? Mr. O'Connor?

Mr. O'Connor. Senator, I think that recommendation is one that should be explored, or at least considered. I think have dedication towards advancing used fuel can only be a good thing.

I also believe that if it provides the dedication, I think it can help probably work through many of the items that were discussed here today, or at least maybe assist in processes to make that happen.

One caution, though, is that another agency can tend to grow very quickly and become expensive. So what I would probably offer is, controls or mechanisms to not let it become not that much different than we currently have today.

Senator Carper. Thank you. Mr. O'Donnell?

Mr. O'Donnell. Thank you, Senator. I would just say this. It is clear that the defunding of the Office of Civilian

Radioactive Waste Management was crippling to DOE's ability to carry out this mission. So on one hand, the law says under the Nuclear Waste Policy Act, here is what you have to do, DOE. But then beginning in 2008, we defunded the program, crippling it. You can't have it both ways. You can't have a mandate to do something and then cripple them by taking the money.

NARUC is not opposed to creating a new agency, essentially. But what is crucial is that we act soon so that the Federal Government does not age out its crucial scientific knowledge in these matters. That is what is happening. I would implore you to do something quickly.

Senator Carper. All right, thank you.

Mr. Fettus. I don't disagree with my colleagues here. I think it is an idea worthy of exploring. But I think we would have to get the consent right first.

Senator Carper. Good. Thank you.

Senator Barrasso. Thank you, Senator Carper.

Thanks to all of you for being here. We are grateful for your time and your testimony. Other members of the committee may submit questions for the record, so the hearing record will remain open for two weeks. But I want to thank you for being here, thanks for your time, thanks for your thoughtfulness on this very important topic.

This hearing is adjourned.

[Whereupon, at 11:33 a.m., the hearing was adjourned.]