

**LEGISLATIVE HEARING ON A DISCUSSION DRAFT
BILL, S. ___, NUCLEAR WASTE POLICY AMEND-
MENTS ACT OF 2019**

HEARING

BEFORE THE

**COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS**

UNITED STATES SENATE

ONE HUNDRED SIXTEENTH CONGRESS

FIRST SESSION

MAY 1, 2019

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COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

ONE HUNDRED SIXTEENTH CONGRESS
FIRST SESSION

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

WEDNESDAY, MAY 1, 2019

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
Washington, DC.

The Committee met, pursuant to notice, at 10:05 a.m. in room 406, Dirksen Senate Office Building, Hon. 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: Senators Cortez Masto and Rosen.

**OPENING STATEMENT OF HON. JOHN BARRASSO,
U.S. 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 life saving 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 contract 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.

**OPENING STATEMENT OF HON. THOMAS R. CARPER,
U.S. 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 not going to harvest 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 8 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.

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 HON. CATHERINE CORTEZ MASTO,
U.S. 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 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 opposed 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 5 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 test-

ing, 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 follows. The other referenced information was not received at time of print.]

Witness Testimony of
Senator Catherine Cortez Masto
Before the U.S. Senate Committee on Environment and Public Works
Legislative Hearing on a Discussion Draft Bill, the Nuclear Waste Policy
Amendments Act of 2019
May 1, 2019

Good Morning Chairman Barrasso, 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 2007, almost 12 years ago, as the Attorney General for the State of Nevada. At the 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 opposed 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.

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 pressures, the Reagan Administration indefinitely postponed the search for an Eastern second repository site in 1986 – unravelling a key compromise of the 1982 law.

Later, in 1987, Congress dropped the scientific-based compromise process, 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.

Why did Congress reconsider after having reached a historic compromise only five years earlier? Because Nevada had, two first-term senators, Chic Hecht and Harry Reid, that proponents of the “Screw Nevada” bill thought could not stop their cunning motives.

This historical context is key to understanding that political opportunism was used to scapegoat the State of Nevada. It is unconscionable. I ask you to put yourselves in the shoes of Nevadans. Imagine having nuclear waste sent to your communities without your input, without a fair process. I know you would not stand for this or any other attempt to trample over your state's right to say no. Most of you do not like when the federal government tries to interfere in local state issues, so why would you be in favor of treating Nevada any different? I cannot allow this. That is why I will continue to 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. That is far from the case. The federal government has spent \$19 billion with little to show in result. There are no waste disposal tunnels. No waste

handling facilities. No monitoring infrastructure. No containment infrastructure. No railroad infrastructure needed for transporting waste into the site. All that exists at Yucca Mountain is a hole in the ground.

And in order for Yucca Mountain to be operational, it would need to use Nevada's underground water supply through a state issued permit, and we will never issue one.

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. Yucca sits on active fault lines. In 1996, a 5.6 magnitude earthquake damaged the Yucca Mountain Project field operations center. Imagine what would happen if there is 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 be 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 have 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, S.649, the Nuclear Waste Informed Consent Act would require the federal government to obtain the consent of a potential host state before moving forward. We thank members of this committee – 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 working to the members of this committee and the rest of my colleagues in the Senate in finding a sustainable solution that maintains that all parties have a voice in this process.

Thank you.

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

Senator Rosen.

**STATEMENT OF HON. JACKY ROSEN,
U.S. 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 was not received at time of print.]

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 OK 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:]

**Testimony of Senator Jacky Rosen on Opposition to the
Nuclear Waste Policy Amendments Act of 2019
Committee on Environment and Public Works Hearing:
May 1, 2019**

Chairman Barrasso, Ranking Member Carper, and members of the Committee, thank you for the opportunity to testify at today's hearing. Once again, I am here to make one thing clear: Nevadans wholeheartedly oppose becoming the nation's dumping ground for nuclear waste.

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 (DOE) 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 Governor's Sisolak letter in opposition to the Yucca Mountain project for the record.

As we have known for decades, numerous scientific studies have deemed Yucca Mountain unsafe, based on the fact that the site is seismically active and sits above an aquifer.

Moreover, under this particular legislation, designating Yucca Mountain as the nation's dumping ground would require transporting over 110,000 metric tons of radioactive waste -- this number is 40,000 metric tons *more* 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 the country.

Let's put this in perspective: we are talking about shipping roughly 1 to 3 trains or 1 to 2 truck shipments across the country per week, every week for 50 years, from 76 shipping sites. That nuclear waste would be transported weekly through a total of 44 states including many represented on this committee today: Wyoming, Oklahoma, West Virginia, Indiana, Iowa, Idaho and many other states. It is hard to imagine that shipping over 5,000 truck casks of high-level nuclear waste over a span of 50 years, won't result in at least one radiological release somewhere in this country.

Severe transportation accidents involving these shipments threaten the health and safety of tourists and individuals who live along proposed transportation routes, and would cause billions of dollars in cleanup costs and related economic losses. I ask the Members who are listening to our testimonies 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 (NTR), the "Crown Jewel" of the 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 could directly impact our country's ability to defend itself. There are no nuclear waste transportation routes across the training site that would not impact their training exercises. Does it really makes 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, this bill also proposes a radical change in the nation's approach to nuclear waste management. The original Nuclear Waste Policy Act from the 1980s calls for two repositories, to ensure regional equity and address technical redundancy. This bill does away with that by eliminating the current requirement for progress on a second repository - placing the entire burden on Nevada, which does not even produce nuclear waste.

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

As Senators, we are sent here to represent the voice 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. Nevada needs a voice in this process. PERIOD. This is nothing more than an attempt to take Nevada's state rights away.

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 that they had no role in creating. I therefore urge the Committee to stop wasting billions of taxpayer dollars by resurrecting a project that's 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 storage.

Thank you for giving me the opportunity to testify today.

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:]

Pahrump Office
Nye County Government Center
2100 E. Walt Williams Drive
Suite 100
Pahrump, NV 89048
Phone (775) 751-7075
Fax (775) 751-7093



**Board of County
Commissioners
Nye County, Nevada**

Tonopah Office
Nye County Courthouse
William P. Beko Justice Facility
PO Box 153
Tonopah, NV 89049
Phone (775) 482-8191
Fax (775) 482-8198

April 30, 2019

The Honorable John Barrasso
Chairman, Committee on Environment and
Public Works
410 Dirksen Senate Office Building
United States Senate
Washington, DC 20510

The Honorable Thomas R. Carper
Ranking Member, Committee on
Environment and Public Works
456 Dirksen Senate Office Building
United States Senate
Washington, DC 20510

Dear: Chairman Barrasso and Ranking Member Carper:

On behalf of the Nye County Commission, along with eight other Nevada counties (out of a total of seventeen) I strongly urge you to support the Senate bill to jump start the licensing hearing for the Yucca Mountain Nuclear Waste Repository. This position is in accordance with the law, supports the objective scientific studies on the safety of the repository and has the support of local governments in Nevada. It is the right thing to do.

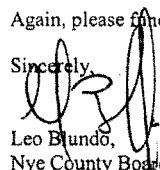
As you know, funding for the license process has been denied for nine years on purely political grounds. The overwhelming body of scientific studies done on the proposed repository have demonstrated that it can be built and operated safely. This includes the safety reviews done by the professionals at the Nuclear Regulatory Commission (NRC). Further, the funding we are requesting will be used to conduct further scientific reviews by the NRC. The opponents of the repository will have every opportunity to show that the repository is unsafe, if they can make that case based on facts.

Despite the claims by the State of Nevada that everyone in the State opposes the license proceeding, nine of the rural counties that surround Yucca Mountain favor the resumption of the license proceeding. Nye County -- the site county -- has favored a full and fair review of the science by the NRC for years. We want decisions to be made on Yucca Mountain to be based on facts and science and not empty rhetoric and fear mongering.

As long as Yucca Mountain is stalled, nuclear waste is gathering at existing and closed nuclear power plants all over the country. It is far better for the American public to have the waste stored safely in a remote desert mountain than to be in locations near population centers, lakes and rivers.

Again, please find the resumption of the license proceeding for Yucca Mountain.

Sincerely,


Leo Brundo,
Nye County Board of Commissioners
Nuclear Waste issues representative

LB/

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 5 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 onsite, including many veterans.

These units generate electricity 24 hours a day, 7 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 onsite, 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 onsite. 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 will participate and demonstrate their role.

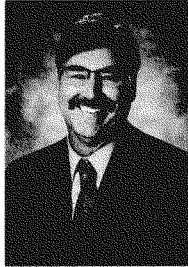
I can assure the members of this Committee that spent fuel has been and will continue to safely be transported.

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:]



Tim O'Connor
Senior Vice President and Chief Nuclear Officer
Xcel Energy

Tim O'Connor is senior vice president and chief nuclear officer for Xcel Energy. He is responsible for the Xcel nuclear strategic direction, business plans, finance, and operations in the various operating jurisdictions for the company. Currently that includes corporate, the operations of the Monticello and Prairie Island nuclear generating plants, as well as the decommissioning and nuclear fuel storage outside of Minnesota.

O'Connor joined Xcel Energy in 2007 as site vice president at the Monticello plant. Between 2007 and 2012, the site was recognized by the Institute of Nuclear Power Operations for exemplary plant operations. In June 2012 he was appointed vice president of corporate engineering/nuclear regulatory compliance and licensing for the nuclear fleet.

He has over 34 years of commercial nuclear experience with both boiling water and pressurized water reactors. He has served as site vice president at Constellation Energy Group's Nine Mile Point station in New York, and has held vice presidential roles at the Public Service Enterprise Group (PSEG) for the Hope Creek and Salem plants. Other roles he held were with Exelon as plant manager at the LaSalle station, operations manager at the Dresden and Zion plants, and other senior management positions in maintenance, operations, and engineering. O'Connor held a position with the Institute of Nuclear Power Operations (INPO) as a nuclear plant evaluation team manager on a reverse loaned assignment.

O'Connor received his mechanical engineering degree from Marquette University in Milwaukee and has completed executive business programs with the Chicago Kellogg School of Business. O'Connor serves on the USA board of directors, chairman of EPRI and NEI industry high level waste management (nuclear fuel) committees, and the board of directors for the Monticello community Economic Development group.

**STATEMENT OF
TIM O'CONNOR
SENIOR VICE PRESIDENT AND CHIEF NUCLEAR OFFICER
XCEL ENERGY, INC.
BEFORE THE
U.S. SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
HEARING ON
THE NUCLEAR WASTE POLICY ACT AMENDMENTS ACT OF 2019
MAY 1, 2019**

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 Senior Vice President and Chief Nuclear Officer for Xcel Energy, a public utility holding company serving 3.6 million electric customers and 2 million natural gas customers through four utility subsidiaries. Headquartered in Minneapolis, we serve parts of eight Western and Midwestern states, including Minnesota, Colorado, North Dakota, South Dakota, Wisconsin, Michigan, the Texas Panhandle and Southeastern New Mexico.

I have 34 years of commercial nuclear experience at utilities across the country. I have a degree in mechanical engineering from Marquette University and currently serve as chairman of the Nuclear Energy Institute's Nuclear Strategic Issues Advisory Committee, chairman of the Used Fuel Working Group and a member of the Industry High Level Waste Management Committee.

Xcel Energy is also a member of the Nuclear Waste Strategy Coalition, which represents the collective interests of member state utility regulators, state consumer advocates, radiation control officials, tribal governments, local governments, electric utilities, and other public and private sector experts on nuclear waste policy matters.

I want to thank the members of the Committee for holding this hearing on an incredibly important topic for Xcel Energy, our customers, and our communities. I welcome the opportunity to share with you the value of nuclear energy on our system, its critical importance to our carbon reduction strategy, and how solving the used fuel challenge will help facilitate our vision for a reliable electric grid entirely run by clean energy.

1. Xcel Energy's nuclear fleet.

We operate three nuclear units on two plant sites in Minnesota, though all of our customers across the Upper Midwest portion of our service area benefit directly from the emissions-free power produced at these facilities.

The first is the Prairie Island Nuclear Generating Plant, which has two pressurized water reactors with a total output of 1,100 megawatts. These units, which began operation in 1973 and 1974 respectively, have Nuclear Regulatory Commission (NRC) licenses to operate until 2033 and 2034.

At Prairie Island, we are neighbors with the Prairie Island Indian Community, which has a long and deep history in the area. I will discuss our partnership with the PIIC, particularly with regards to used nuclear fuel, in more detail below.

Our second facility is the Monticello Nuclear Generating Station, located 40 miles northwest of the Twin Cities. Monticello's single boiling water reactor has a capacity of 671 megawatts and is licensed through 2030.

I am proud to report that these facilities have stellar operational performance due to the hard work and dedication of hundreds of men and women that work on site. The units generate electricity 24 hours a day, 7 days a week (except during refueling), even during the recent cold snap in the Upper Midwest when temperatures reached 30 degrees below zero.

2. Xcel Energy's nuclear plants are critical to our carbon vision.

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% 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% by 2030 and we were the first utility in the nation to announce a vision for a completely carbon-free system by midcentury.

However, even as we become increasingly carbon-free, we must continue to provide our customers with affordable and reliable electricity. In order to do this we need the ability to provide zero carbon, dispatchable and firm resources like nuclear energy. Without our Prairie Island and Monticello nuclear plants it would be impossible to even achieve our 2030 emissions reduction goals. These facilities avoid 13 million tons of carbon emissions annually, which is the equivalent of removing two million cars from the roads.

The continued availability of our nuclear facilities is key to a carbon reduction strategy that protects reliability and assures an affordable energy system. Our aggressive emission reduction targets would be prohibitively expensive without the continued operation of zero carbon, dispatchable resources. We cannot reduce carbon effectively if we simultaneously have to replace our nuclear fleet.

3. The nuclear energy industry has a long record of on-site used fuel safety performance.

One of the greatest challenges we face with continued operations of our nuclear plants is the spent fuel that is currently being stored on-site. This is not a question of safety. On-site storage is highly regulated and continuously monitored, and the Nuclear Regulatory Commission has confirmed on-site storage can be done safely for several decades if needed. The fuel is stored in heavy-duty steel and concrete containers that have been tested under extraordinary conditions. Our plants and on-site storage facilities also follow a “defense-in-depth” approach, meaning there are several independent layers of safety designed into processes, procedures and equipment. Those safety designs and oversight are backed up by our committed team of nuclear professionals. At Xcel Energy our workforce has a strong culture of safety, which is reinforced by the discipline and rigor our many military veteran employees carry with them. We execute a state-of-the art safety and security program that includes rigorous, continuous training. This Committee should feel confident in the safety of on-site storage as the nuclear energy industry has a long, proven track record of safely storing used fuel at our plants.

4. The failure of the federal government to accept our spent fuel is costing our customers hundreds of millions of dollars.

Despite this comprehensive safety regime, the fact remains that the federal government has not lived up to its obligation under the law to remove nuclear spent fuel from our facilities. As laid out in the Nuclear Waste Policy Act, our customers paid into the Nuclear Waste Fund for decades and in exchange, the federal government had the obligation to remove the spent fuel from the sites and properly dispose of it. Our customers lived up to their end of the bargain. Our Upper Midwest customers have contributed \$452.1 million over time. But the 1998 deadline for the Department of Energy to begin to take title to the fuel came and went. That was 21 years ago and customers have received nothing in return for the \$41 billion that sits in the Nuclear Waste Fund. Today we have about 1,500 metric tons of fuel being stored in concrete and steel casks.

Additionally, under a Minnesota statute, our customers pay a fee to store spent nuclear fuel on site- \$500,000 per cask per year at Prairie Island and \$350,000 per cask per year at Monticello totaling \$32.5 million in 2018. These payments, which were only supposed to be of limited

duration until the DOE removed the fuel, go into a statewide renewable development account, and have cost our customers \$360 million to date.

And it's not just nuclear customers that are on the hook. All federal taxpayers now have substantial liability as well. Federal courts require the government to reimburse utilities for breaching its contractual obligation to take the spent fuel. This reimbursement is supposed to help offset the substantial costs of continually storing fuel on site. Taxpayers now pay up to \$800 million annually, or almost \$2.2 million per day. Xcel Energy alone received approximately \$15 million from this fund last year. It is my understanding that this is one of the single largest liabilities out of the Department of Justice's Judgment Fund. This is mandatory spending, adding to the deficit, that is not subject to annual congressional appropriations.

The costs of inaction are staggering, and yet spent fuel remains in Minnesota and 39 other states.

5. Local communities near the existing spent fuel storage installations are also concerned about the presence of spent fuel in their backyard.

There is, of course, another cost to the continued political stalemate over spent nuclear fuel. You have heard about concerns from communities in Nevada regarding the Yucca Mountain site, and it is important to consider those concerns as we go forward. However, the federal government should also recognize that other communities have interest in the fate of spent fuel. Those communities are near our current plant sites, and see the fuel in their back yard every day.

As I mentioned earlier, one of our nuclear facilities is located adjacent to the Prairie Island Indian Community. The tribe is our neighbor and an important stakeholder and partner on a number of important local issues, not the least of which is used fuel. They oppose the continued presence of used fuel near their community. We want to be a good neighbor and respect their wishes by removing the fuel, but the continued stalemate in Washington makes that impossible. Attached to my written testimony you will find a joint letter that Tribal Council President Shelley Buck and I sent to members of the Minnesota congressional delegation urging action on this issue.

6. Congress should allow the Yucca Mountain licensing process to proceed.

I applaud this Committee for focusing on this issue to break the stalemate and solve the problem once and for all. We urge Congress to implement the law and appropriate the funding necessary to allow the Department of Energy and the Nuclear Regulatory Commission to adjudicate the license application for a permanent repository at Yucca Mountain. At the same time, we should also move forward with consolidated interim storage (CIS).

Xcel Energy, like the Nuclear Energy Institute and the rest of the utility industry, is a strong supporter of completing the licensing process and opening Yucca Mountain. After billions of dollars, thousands of hours of review, and a comprehensive scientific, environmental and safety analysis, it is clear that Yucca would be a safe, permanent repository for the nation's spent fuel.

At the very least, by allowing the licensing process to proceed, Congress would allow the state of Nevada and Nevada stakeholders to put forward their technical and policy concerns to the agency most capable of evaluating them: the Nuclear Regulatory Commission. Under the Nuclear Waste Policy Act, Nevada would have every opportunity to adjudicate the contentions that have been filed at the NRC. The NRC has the authority and the expertise to evaluate them and balance those concerns against competing concerns arising from inaction.

The NRC process is the best path to a well-reasoned, technically sound decision on the Yucca site. Based on my years of experience in the nuclear business, I support Yucca Mountain because the DOE has demonstrated that it is a safe, permanent solution to the problem of spent fuel. It is not clear to me that throwing out the current law and reopening the entire process of finding a permanent repository site, and losing many more years in the process, would yield a more appropriate site than Yucca Mountain itself.

7. Congress should also encourage the development of interim storage sites.

While moving forward on permanent storage, Xcel Energy believes that the time has come to also develop consolidated interim storage. A CIS project could act as a temporary solution for communities and plants that are currently storing fuel on concrete pads spread across the country, and allow the possible redevelopment of those sites. It would also allow the nation to

fulfill its commitment to electricity consumers while it awaits the opening of a permanent repository.

Two such projects, near our Xcel Energy electric service territory in Texas and New Mexico, already have NRC applications pending. Their developers are undertaking a rigorous process to ensure their safety and financial viability, and like any CIS proposal, will be subject to NRC oversight. We encourage the NRC to stay on track with the licensing process which will allow the facilities to open and accept fuel in just a matter of years.

In addition, we encourage Congress to take steps to authorize interim storage facilities and fund them from the Nuclear Waste Fund, which is accumulating \$1.5 billion per year in interest annually. We want a policy that moves fuel without delay.

8. The transportation of spent fuel is safe.

Moreover, the transport of this fuel is a safe and well-established practice. Used nuclear fuel has been safely and routinely transported across the U.S. for 50 years on railroads, barges, and trucks under the strictest of safety regulations. There have been over 3,000 shipments covering nearly 2 million miles. In all of this experience, there has never been a release of radioactive material to the public.

Xcel Energy has experience moving spent fuel ourselves; under a contract with General Electric, we moved 1,000 fuel assemblies from our Monticello plant to a facility in Morris, Illinois in the 1980s. We have also shipped used fuel from Colorado to Idaho.

These rail shipments were done safely and without issue, and Xcel Energy is taking a leadership role to ensure we do so again when the time comes to move fuel again. We are exploring the latest railcar and cask technologies, and working with the scientific community, federal, state, and local regulators, and our industry peers to develop best practices.

Additionally, on May 21, Xcel Energy will host an NEI nuclear transportation table top exercise that would simulate shipping casks across the country to an interim storage site. We have the participation of organizations that will be critical in partnering on safe fuel transportation, including utilities, the Nuclear Regulatory Commission, public utility commissions as well as the Prairie Island Indian Community to name a few. Just this week we had a dry run, and I can tell

you that I am most impressed with the professionalism and preparation of everyone involved. I can assure the members of this Committee that spent nuclear fuel has been and will continue to be safely transported.

9. Chairman Barrasso's discussion draft legislation is an important step forward in addressing the problems of spent fuel policy.

Consistent with the principles outlined above, we appreciate the Committee's consideration of this discussion draft put forward at the hearing today. Like the Nuclear Waste Policy Amendments Act of 2018 that passed the House of Representatives by a wide bipartisan margin last year, the discussion draft would restart the license application process for a permanent repository at Yucca Mountain. By providing funding for the adjudication process, the draft would enable the NRC to finish its job and complete the review of the facility. We also support the bill's approach to withdrawal of land for the Yucca Mountain project.

The bill recognizes the contributions made by electricity consumers across the nation and wisely takes action to ensure the nuclear waste fee isn't turned back on until a decision is made on the Yucca Mountain license application. The bill also respects the Standard Contracts between the nuclear generators and the federal government, which establish the terms and conditions under which the DOE will make available used fuel disposal services.

The draft legislation includes important provisions to reach out to the community near the Yucca Mountain facility. The interests of those communities are important, and it is critical that Congress balance those interests with those of other communities, such as the Prairie Island Indian Community, concerned about spent fuel stored near operating plants.

Together, these provisions would enable the NRC to fulfill its obligation to both the industry and nearby communities to assure that Yucca Mountain is safe, reliable, and available for spent fuel disposal.

We also appreciate the draft legislation's approach to interim storage moving in parallel to a permanent repository. By directing the Department of Energy to contract with a non-federal entity to develop a CIS facility, the bill would help enhance this important step in the fuel management process. As I previously mentioned, there are two sound CIS proposals in our

backyard in the Southwest. This bill would help enable the development of those facilities as a first step toward a permanent spent fuel solution.

To conclude, while nuclear spent 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 that is costing consumers and taxpayers millions of dollars every year. Our communities are ready for the fuel to move and our electricity consumers alone have paid almost a billion dollars into the Nuclear Waste Fund. It is time for Congress to act.

Thank you again for the opportunity to testify. I would be happy to answer your questions.

Attachments:

Letter from Prairie Island Indian Community and Xcel Energy

Tim O'Connor biography



November 16, 2018

The Honorable Amy Klobuchar
US Senate
302 Hart Senate Office Building
Washington, DC 20510

The Honorable Tina Smith
US Senate
309 Hart Senate Office Building
Washington, DC 20510

Dear Senators Klobuchar and Smith:

We are writing to you today as the elected representatives of the Prairie Island Indian Community (PIIC) and representatives of Xcel Energy to express our mutual support for immediate Congressional legislative action to resolve the Nation's spent nuclear fuel impasse.

The Prairie Island Indian Reservation is located with the ancestral homeland of the Mdewakanton Dakota in southeastern Minnesota. The Reservation is located primarily on an island off of the Mississippi River, which is also called Prairie Island. The Mdewakanton, "those who were born of the waters," have lived on Prairie Island for countless generations.

Xcel Energy owns the Prairie Island and Monticello nuclear plants and the Prairie Island plant is immediately adjacent to the Prairie Island Indian Community. Xcel Energy has been storing used nuclear fuel at the plants in Minnesota since they began operating in the early 1970s. When the Nuclear Waste Policy Act (NWPA) was passed, it was envisioned that the federal government would begin accepting the used nuclear fuel at a national repository in 1998. As you know, that date has come and gone, with no future date on the horizon. To keep the plants operational, it was necessary for Xcel Energy to begin storing the used fuel in dry storage containers starting in 1995. Xcel Energy is currently storing used fuel in the fuel pools and in 44 dry storage containers at the Prairie Island plant and 28 dry storage containers at the Monticello plant. Without a permanent or interim storage location, spent nuclear fuel will be indefinitely stranded at both sites.

We strongly support bipartisan efforts in Congress to advance both a permanent repository and a Consolidated Interim Storage (CIS) location. This legislation should reaffirm the commitment of the federal government to proceed with the review and determination of the Yucca Mountain repository.

We encourage the Nuclear Regulatory Commission (NRC) to complete its review of the Department of Energy (DOE) license application for the repository. Adequate funds must be appropriated to both agencies to complete their review and adjudication of the Yucca Mountain license application, as required by the NWPAA.

The Nation's electric utility customers have already paid for the disposal of the used nuclear fuel through a \$.001/kWh of nuclear-generated electricity fee into the Nuclear Waste Fund (NWF). Those customers have paid over \$40 Billion (including interest) and Minnesota customers have paid in \$940 Million, yet very little of the NWF has been used for the purpose for which it was collected. We support the approach that provides access to the NWF for the used fuel management program.

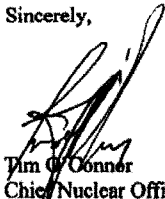
It is imperative that we continue progress on used fuel transportation, which is needed regardless of whether the fuel is moved to Yucca Mountain, a Consolidated Interim Storage (CIS) facility or both. We would like to see additional funding for DOE to build, test and certify rail cars and license transportation casks and components. Allocating consistent financial and technical resources to tribal, state and local governments to prepare for the transportation activities is vital.

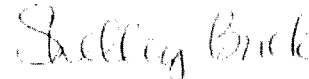
We believe it is a critical time for the federal government to remove the used nuclear fuel from the plant sites, as mandated by the NWPAA. It has been over 20 years since we passed the NWPAA-mandated removal date of 1998. Nuclear fuel is piling up at communities across the United States including the Prairie Island Nuclear plant which is just 600 yards away from PIIC. There is no other community in the United States as close to a nuclear spent fuel storage facility than PIIC. The reasons why spent fuel should be moved away from the tribe are self-evident.

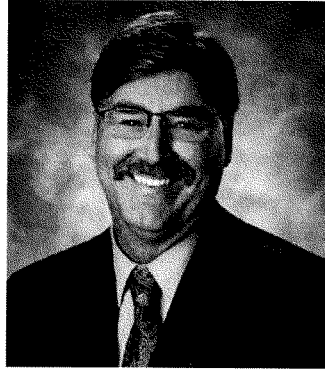
In summary, we believe it is important to support the legislation that makes progress toward resolving the Nation's used nuclear fuel issue. The NWPAA is still the law of the land and we urge the Congress to act accordingly.

As always, we would welcome any opportunity to further discuss our position.

Sincerely,


 Tim O'Connor
 Chief Nuclear Officer
 Xcel Energy
 414 Nicollet Mall
 Minneapolis, MN 55401


 Shelley Buck
 Tribal Council President
 Prairie Island Indian Community
 5636 Sturgeon Lake Road
 Welch, MN 55089



Tim O'Connor
Senior Vice President and Chief Nuclear Officer

Tim O'Connor was appointed senior vice president and chief nuclear officer for Xcel Energy in 2012. He is responsible for the Xcel nuclear strategic direction, business plans, finance and operations in the various operating jurisdictions for the company. Currently that includes corporate, the operations of the Monticello and Prairie Island nuclear generating plants as well as the decommissioning and nuclear fuel storage.

O'Connor joined Xcel Energy in 2007 as site vice president at the Monticello plant. During the period of 2007 to 2012 the site was recognized by the Institute of Nuclear Power Operations for exemplary plant operations. In June 2012 he was appointed vice president of corporate engineering/nuclear regulatory compliance and licensing for the nuclear fleet. In September 2012 he was named acting Senior Vice President and Chief Nuclear Officer and then made permanent in February 2013.

He has over 34 years of commercial nuclear experience with both boiling water and pressurized water reactors. O'Connor, over that period, held a variety of leadership positions in very complex situations.

He served as site vice president at Constellation Energy Group's Nine Mile Point station in New York; vice presidential roles at the Public Service Enterprise Group (PSEG) for the Hope Creek and Salem plants. Other roles were with Exelon as plant manager at the LaSalle station and operations manager at Dresden and Zion plants as well as other senior management positions in maintenance, operations, and engineering. O'Connor held a position with the Institute of Nuclear Power Operations (INPO) as a nuclear plant evaluation team manager on a reverse loaned assignment.

O'Connor received his mechanical engineering degree from Marquette University in Milwaukee, WI and has completed several executive business programs with the Chicago Kellogg School of Business and GAP International. O'Connor serves on the USA Board of Directors, is Chairman of the NEI NSIAC and a member of the Industry High Level Waste Management (Nuclear Fuel) Committees. O'Connor is on the executive advisor group for the DOE - Light Water Reactor Sustainability program. O'Connor also serves as a Board of Directors member for the Minneapolis St. Paul Jeremiah charitable organization.

Senate Committee on Environment and Public Works
Hearing entitled, “Legislative Hearing on a Discussion Draft Bill, S.____, Nuclear Waste
Policy Amendments Act of 2019”
May 1, 2019
Questions for the Record for Mr. O'Connor

Chairman Barrasso:

1. Please briefly describe the regulations and safety precautions governing the transportation of spent nuclear fuel.

A: The transportation of spent nuclear fuel is governed under NRC’s regulations at 10 CFR Part 71. These regulations require used nuclear fuel to be transported in robust containers called casks, which are designed to prevent the release of radioactive material. For every ton of used fuel, transport casks typically use about seven tons of material for protective containment, radiation shielding, and impact absorption. Transport casks are designed, tested and licensed by the federal government to withstand potential punctures, fires, water immersion and drops. These precautions have resulted in the safe completion of over 1,300 spent fuel shipments in the U.S. over the past 50 years.

- a. Section 603 of the discussion draft authorizes Nuclear Waste Fund money to assist in transportation of spent nuclear fuel to the repository. Would this provision improve public confidence in transporting spent nuclear fuel?

A: Yes. This assistance would better enable state and regional entities to maintain a well-trained workforce of used fuel transportation experts. It is always a positive for the public to have local authorities in whom they can trust to help assure the safety of these activities.

2. The discussion draft prohibits the Secretary of Energy from restarting the nuclear waste fee until the Commission approves or denies the Yucca Mountain license application. Do you support this provision? If so, why?

A: Yes I support this provision. Until there is a decision on a repository, there is no need to restart the fee. The nuclear waste fund balance currently sits at \$41 billion and earns over a billion and a half dollars per year in interest. This amount is more than sufficient to provide for the shipment of spent fuel to interim sites until a decision on a repository can be made.

3. Section 604 of the discussion draft establishes a fixed-term for the Director of the Office of Civilian Radioactive Waste Management. Do you support legislation that would increase continuity in the management of a nuclear waste program?

A: Absolutely yes. One of the biggest problems this Office has faced in the past is that it is charged with a very long term mission, yet its leadership and direction can change significantly with every election. It is virtually impossible to successfully execute a project over a decades-long scale – as would be the case with any repository – without stable and consistent leadership.

4. The discussion draft reforms the financing mechanism to limit fee collections to an amount not greater than 90 percent of what is appropriated from the Nuclear Waste Fund. This will assure fees are only collected if Congress appropriates money for a nuclear waste program.

- a. How will this provision impact your ratepayers?

A: This provision would help protect our customers from unnecessary future fees being imposed on the cost of electricity. Electricity customers nationwide have already contributed to a \$41 billion balance in the nuclear waste fund. This provision would prevent customers from having to continue to pay into the fund without getting a return on their investment.

- b. Do you support this provision? If so, why?

A: I strongly support this provision for reasons set forth above.

5. The number of operating nuclear power plants is expected to drastically decrease in the next four years. What will happen if Congress and the Department of Energy further delay reconstituting a nuclear waste program and a significant number of power plants shut down?

A: There have already been too many years of delays; the federal government needs to honor its legal commitment and move fuel to a repository. I believe that nuclear energy is key to transitioning toward a carbon-free electric grid that is affordable and reliable. Further delays in solving the used fuel challenge makes that vision more difficult to achieve.

6. Title IV of the discussion draft authorizes the Secretary of Energy to negotiate a benefits agreement with the State of Nevada, as well as counties. Do you support providing state and local benefits for hosting an interim storage facility or repository?

A: Yes, any locality hosting one of these facilities should benefit economically from doing so. This is a key reason that 9 of 17 Nevada counties support continuing with the Yucca Mountain licensing process.

7. Section 202 of the discussion draft amends the existing deadline in the Nuclear Waste Policy Act for the Nuclear Regulatory Commission (NRC) to complete the review of the Yucca Mountain license application. Do you support updating this statutory deadline? Is so, why?

A: Yes. The NRC missed the original deadline so a new one must be set. Deadlines inspire progress. The NRC should have a mandated deadline that is realistic based on the current status of the license process. Section 202 would provide an achievable targeted for the NRC process.

Ranking Member Carper:

Please provide a response to each question, *including each sub-part*.

8. In 2012, the last time the EPW Committee discussed this issue, I was surprised to hear that the nuclear industry was using various canister designs to store their nuclear waste in dry cask storage. The storage canisters being used were fine for temporary storage on-site, but in many circumstances would have to be changed for any future travel may not be able viable for an interim or permanent storage location. At the time, the NRC and industry were working on standards and designs that would address this issue.

- a. Would you give us an update on this issue?

A: All of the canister designs meet NRC's stringent safety regulations and the vast majority of them are designed for both storage and transportation. Every canister on Xcel Energy's plant sites is capable of being safely transported to an interim or permanent storage location.

- b. Is there anything the federal government can do now to help provide more certainty for industry and ensure our nuclear waste can be easily transferred to permanent sites when a repository is ready to receive the waste?

A: First of all, the Federal Government needs to execute the program currently authorized by law. This will require that both the Yucca Mountain license application and DOE's efforts to provide for transportation be funded. Secondly, Congress should also authorize and fund interim storage so fuel can begin moving in parallel with the Yucca Mountain licensing and construction processes. What gives industry certainty is demonstrated assurance that the federal government will begin meeting its obligation to remove spent fuel from reactor sites sooner rather than later.

9. In Mr. Fettus's testimony, he called for the establishment of up-front generic radiation and environmental protection standards for the management of high-level nuclear waste and for a stronger role for states, local governments and Indian Tribes in the siting of a permanent high-level repository. Do you have concerns with these suggestions? If so, please explain why.

A: A thorough, impartial review by the Nuclear Regulatory Commission (NRC) scientific staff found that a repository at Yucca Mountain would meet all Environmental Protection Agency requirements and safely isolate nuclear waste for more than 1 million years. The potential impacts of natural phenomena at Yucca Mountain, including earthquakes and volcanoes, were studied extensively. The NRC concluded that such phenomena pose no significant challenge to public health and safety now or in the future. Having strong stakeholder input and participation should be part of any plan moving forward. We believe that the current NRC environmental standards and stakeholder process are appropriate to

assure protection of both the environment and the interests of local communities. We do not support providing additional authority to U.S. EPA in the siting and permitting process. EPA's enhanced involvement would expand the barriers to the ultimate approval of a storage site with little or no additional benefit.

10. Are there aspects of a consent based process – including incentives -you think would be critical for success in siting a new location for a permanent high-level nuclear waste repository?

A: It is important that we listen to all stakeholders and develop a process that allows for input. However at the end of the day we need Congress to live up to their commitment for a permanent high level waste repository. We need to balance the views of the repository host location along with those communities around the country, including those of the Prairie Island Indian Community, who also did not give consent to store fuel indefinitely.

11. Would you oppose if the nation decided to pursue multiple permanent high-level waste repositories across the country – rather than one central location? If so, why? If not, why not?

A: I think having options is good, and we would not oppose the creation of multiple sites. But pursuit of multiple sites should not serve as a reason to delay opening the first site. The nation needs to complete the Yucca Mountain licensing process – this will prove instructive for whatever repository options we pursue in the future. Also we must be cognizant of the difficulty and cost of siting multiple repositories. Studies have shown that Yucca Mountain can safely handle all of the waste that the current fleet of reactors is expected to produce. So we should only pursue options as a complement to, not a substitute for, the process already called for by law.

12. Some have suggested that the Department of Energy should no longer have authority over our nation's permanent high-level nuclear waste repository. Do you agree with that view, and, if so, who should have the authority? If you feel a federal corporation should have the authority, what guardrails are needed to ensure that safety and states' rights are preserved in the siting of a permanent high-level waste repository?

A: I think in the long-term there may very well be management models that can more effectively run the program than the Department of Energy (DOE) without being subject to electoral politics as described above. However, an important first step will be to re-establish the DOE Office of Civilian Radioactive Waste Management as called for by existing law. Once that is up and running, improved management models can then be considered. If a federal corporation is established, it should be accountable to a board of directors that is representative of all stakeholders – including the industry customers it serves and the affected state and local governments.

13. Are there examples that we can learn from the high-level waste management experiences of other countries – such as Sweden and Finland – that could help us with our nuclear waste issues in this country?

A: Yes. Finland is the best example. They have licensed and are constructing a deep geologic repository for used nuclear fuel. What Finland teaches us is that the technology of disposal works and that once decisions are made and established as a matter of law, they should be adhered to. Sweden, Switzerland, France, Belgium, and Canada are also making notable progress. The United States is the only major nuclear nation with no used fuel disposal program whatsoever.

14. Nuclear waste policy has divided this country for far too long. Having listened to others on the witness panel during the hearing, would you provide this Committee with one course of action where there is agreement among the panel members?

A: There is global scientific consensus that deep geologic disposal is the solution to this problem. No one testifying on the panel opposed this solution. In fact, deep geologic disposal is the preferred solution globally. I also believe that all witnesses agreed that 1) fuel can be safely packaged and transported to a disposal site; 2) interim storage can provide important support to existing plants by moving fuel offsite; and 3) the importance of the interests of the communities where fuel disposal occurs. The best way for the committee to move forward is to pass legislation that reflects these points of agreement. I believe the discussion draft represents a good path forward that is broadly consistent with this consensus.

Senator Braun:

15. Our energy industry should be responsive to market pressures and incentives. As in all industries, the government should not be picking winners and losers. There are obvious reasons that I support nuclear energy. I believe it is a critical element of an "all of the above" energy strategy.

But "all of the above," does not imply that we should be pursuing technologies that are not viable in the private market. On Monday, the Wall Street Journal noted that nuclear facilities in Pennsylvania and Ohio are asking for state subsidies to improve their balance sheets, so they can remain in operation.

How much of a balance-sheet liability does the storage of nuclear fuel on-site create for these utilities?

A: Industry-wide, most of the costs are covered by the lawsuits and settlements with the federal government. Because the government's obligation to dispose of used fuel is an unambiguous matter of contract and law, the utilities have never lost one of these lawsuits. But because of this, the taxpayers are paying \$2.2 million per day for the consequences of the government's non-performance. As my testimony discusses, under a Minnesota statute, our customers pay a fee to store spent nuclear fuel on site—\$500,000 per cask per year at Prairie Island and \$350,000 per cask per year at Monticello totaling \$32.5 million in 2018. These payments, which were only

supposed to be of limited duration until the DOE removed the fuel, have cost our customers \$360 million to date. This is not recoverable from DOE and is an added expense to our customers.

- a. If the long-term storage issue were solved tomorrow, would this reduce a barrier to the introduction of new nuclear facilities?

A: Yes. Investment capital for new nuclear facilities is constrained in part by the uncertainties that the current used fuel impasse creates.

- 16. Northwest Indiana consumes around 80 percent of the electricity from the D.C. Cook nuclear power plant. Our ratepayers have paid to build Yucca Mountain, and they have not gotten anything in return for that yet. Even worse, because Congress has failed to act, taxpayers are paying legal costs associated with on-site waste storage, a bill estimated to be in excess of \$36 billion. Now, because of Congressional gridlock, Hoosiers paid for a storage solution that never materialized.

Do you believe that the federal government has a responsibility to follow through on this policy, and to invest the taxes it collected for a permanent storage solution?

A: Yes.

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:]



Anthony J. O'Donnell
Commissioner
Maryland Public Service Commission

Anthony J. O'Donnell was appointed to the Maryland Public Service Commission in August 2016. Prior to his appointment, he served in the Maryland House of Delegates since January 1995. He represented Calvert and St. Mary's Counties, and was the longest serving member of the House of Delegates representing Calvert in that county's entire history. Delegate O'Donnell served in a variety of leadership roles in the Maryland House including senior minority member of the Environment and Transportation Committee (2015-16), House Minority Whip (2003-06), and House Minority Leader (2006-13).

During his 22 annual sessions in the General Assembly, Delegate O'Donnell worked and served on a broad array of public policy issues. His work included a focus on agriculture, civil and criminal law, energy, environment, ethics, land use and real property, natural resources, state government and budget appropriations, and matters related to transportation. He served as a member of the standing policy committees of Judiciary, Appropriations, and Environment and Transportation. He also served on the more ministerial related committees of the House including the Legislative Policy Committee, the Spending Affordability Committee, and the Rules and Executive Nominations Committee.

During his time in the legislature, Delegate O'Donnell became a widely recognized legislative champion of efforts to restore oysters to Chesapeake Bay and its tributaries. He was formally appointed to both the statutorily-created Maryland Aquaculture Coordinating Council (2006-16) as well as the Oyster Advisory Commission (2007-16). He received the lifetime achievement recognition award from his peers on the Maryland Aquaculture Coordinating Council in 2014 for his long time efforts in oyster policy.

Commissioner O'Donnell worked for 15 years at the Calvert Cliffs Nuclear Power Plant in Lusby, Maryland. He served in various capacities supporting safe and reliable electrical power generation including as a Nuclear Instrumentation and Controls Technician, as a Nuclear Maintenance Supervisor, as a Nuclear Maintenance Engineering Analyst, and as the Director – Emergency Preparedness. He was certified by the Institute of Nuclear Power Operators (INPO) as both a nuclear qualified maintenance control technician and first line supervisor.

Prior to working at Calvert Cliffs, Commissioner O'Donnell served for over eight years in the United States Navy. Enlisted in 1979, he completed basic training and electronics technician school in his first year. He then completed Nuclear Propulsion School and went on to successfully complete hands-on training and qualifications at the nuclear training facility operated by the GE-Knowles Atomic Power Laboratory (KAPL). Following this two year training period, he reported to assignment onboard U.S.S. South

Carolina (CGN-37), where he was a technician, a reactor plant operator, and a supervisor. His shipboard service included deployment and cruises to the Mediterranean, a North Atlantic cruise, a South American cruise, and other local Atlantic and Caribbean operations. After his sea tour, O'Donnell was assigned as an instructor at KAPL where he completed his military service. While still on active military duty, Commissioner O'Donnell earned a B.S. degree (1985) from the University of the State of New York, Regents College (now known as Excelsior).

He serves as Chair of the Subcommittee on Nuclear Issues–Waste Disposal and as a member of the Committee on Electricity for the National Association of Regulatory Utility Commissioners (NARUC). Commissioner O'Donnell lives in Lusby, Maryland. He and his wife have three grown children and three grandchildren.

Testimony on behalf of the
National Association of Regulatory Utility Commissioners

by

The Honorable Anthony J. O'Donnell
Commissioner, Maryland Public Service Commission
Chairman, NARUC Subcommittee on Nuclear Issues-Waste Disposal

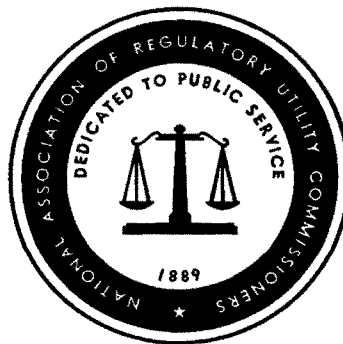
before the

United States Senate
Committee on Environment and Public Works

hearing on

“S. ___, the Nuclear Waste Policy Amendments Act of 2019”

May 1, 2019



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Good morning Chairman Barrasso, Ranking Member Carper, and members of the Committee on Environment and Public Works. Thank you for the opportunity to testify today on the “Nuclear Waste Policy Amendments Act of 2019.” My name is Tony O’Donnell, and I am a 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 – Waste Disposal.

At the outset, I want to point out the obvious.

February marked 21 years since the U.S. Department of Energy (DOE) defaulted on a “standard contract” with the nation’s reactor operators to begin disposing of spent nuclear fuel as required by the Nuclear Waste Policy Act of 1982 (NWPA).

This discussion draft is a welcome and positive step forward and NARUC applauds Chairman Barrasso and this Committee for bringing it forward and holding this hearing today.

But action is more than 20 years past due. Congress must act now. Every year of inaction costs your constituents, the American taxpayers, between 500 and 800 million dollars from the federal coffers in legal judgement payments. That works out to about 2 million dollars each and every day.

NARUC is a non-profit organization founded in 1889. Our members are the public utility commissions in all 50 States, the District of Columbia, and the U. S. territories. NARUC’s mission is to serve the public interest by improving the quality and effectiveness of public utility regulation. Our members regulate the retail rates and services of electric, gas, water, and telephone utilities. We are obligated under the laws of our respective States to assure the establishment and maintenance of essential utility services as required by public convenience and necessity and to

ensure that these services are provided under rates, terms, and conditions of service that are just, reasonable, and non-discriminatory.

State economic utility regulators are responsible for ensuring the safe, reliable, and affordable delivery of essential electric utility service in every State across the country. The success of the federal nuclear waste management program, funded by the consumers of electricity generated from the nation's nuclear power plants, is necessarily of keen interest. Both NARUC and its member commissions have dedicated tremendous resources to ensure that electricity consumers receive the services they have paid for.

In this case, it is clear the ratepayers have not.

NARUC's State Commission members were at the table in the negotiations that led to the NWPA. State regulators have always agreed that ratepayers that benefit from electricity generated by nuclear plants should pay for waste management and disposal, and they have. More than \$40 billion in direct payments and accrued interest languish in the U.S. Nuclear Waste Fund (NWF). Yet so far, ratepayers – and the country – have almost nothing to show for it.

This is a frustration I know many members of this Committee, including Chairman Barrasso, share.

Thirty five years have passed since Congress passed the NWPA. Almost twenty years since the project site - Yucca Mountain (which I have personally visited) - was approved by Congress for licensing in 2002. Since then efforts to block funding to complete the license review, in tandem with the U.S. Department of Energy's illegal refusal to pursue the license application at the NRC under the prior Administration, ground this nation's program to a standstill. A good case can be made that we are in a worse situation on spent nuclear fuel management and disposal than when the NWPA was passed. Today, there is no nuclear waste

program worthy of the name despite over three decades of trying and an investment of over \$11 billion in the Yucca Mountain repository.

In addition to the \$40 plus billion in payments and interest languishing in the NWF, according to a September 2014 DOE audit of the NWF, \$4.5 billion in damages have been paid out of the US Treasury Department's Judgement Fund – which is supported by federal income tax dollars – as a result of federal government inaction. The Judgement Fund payments are taken out of ALL taxpayer's bank accounts (not just those who use nuclear energy.) DOE estimates the total liability for the federal government's disregard for the law will be about \$27 billion, but that estimate includes the ridiculous assumption that DOE can begin to accept used nuclear fuel in 2021. Industry estimates almost double that projection. Even former President Obama's Blue Ribbon Commission (BRC) estimated that every year of delay in accepting used nuclear fuel will increase this liability by approximately \$500 million. All told, we are facing damages in the tens of billions of dollars. The Bipartisan Policy Center estimated that, in 2015, the tab for the federal government's disregard for the law of the land on this issue is significant for each American adult on an annual basis, and that tab has only gone up since then. This only gets worse for your constituents going forward.

First, the consumers paid for the original waste storage at the facilities through their rates. Second, they paid into the NWF, as already mentioned. Third, the consumers paid to rerack, or consolidate, used fuel pools, again through their rates, because the federal government failed to remove the waste by statutory deadline. Finally, they had to pay for on-site, out-of-pool dry cask storage, again through rates, again due to federal failure. The costs of those last two payments is covered by every American taxpayer – as they fund the Judgment Fund disbursements covering damages caused by the federal government's inaction.

NARUC welcomes the “Discussion Draft” as a positive step forward to correct unanticipated, but serious, structure flaws in the nation’s nuclear waste disposal policy framework. We are pleased that it tracks in large measure NARUC-supported legislation (H.R. 3053) that passed the House by an overwhelmingly bipartisan vote of 340 - 72 last Congress.

NARUC has not taken a position on all of the provisions in this draft, but it is obvious that the bulk of the proposals are very likely to result in concrete action towards a permanent repository (and possible consent-based siting of non-federally owned NRC licensed storage facilities).

Electricity consumers have a multibillion dollar investment expended to characterize the Yucca Mountain site. We are very pleased that the draft aggressively addresses the threshold issue of licensing. In Section 501, the draft requires a final Nuclear Regulatory Commission (NRC) decision approving or disapproving the Yucca Mountain License before any additional NWF fees are collected. NARUC’s February 2018 policy resolution¹ continues NARUC’s staunch support for expeditious completion of the license review. We commend the Committee for making progress contingent on some decision on the license.

Concerning what many NARUC members believe to be the most important issue - funding and fees, the draft clearly attempts to fix one major flaw that has severely hampered progress on waste disposal: fee disbursement.

In our February resolution, NARUC pointed out that:

To avoid misdirecting NWF fees to unrelated government obligations and provide for the gradual return of the corpus of the fund, Congress should mandate that no NWF fees can be collected in a fiscal year that exceed 90 percent of the Congressional appropriations for the fiscal year during which such fees are collected.

¹ *Resolution Regarding Guiding Principles for Management and Disposal of High-Level Nuclear Waste* (February 2018), online at: <https://pubs.naruc.org/pub/DF7BD644-ADF8-0E04-C123-AF1D951F363F>.

NARUC welcomes the draft's incorporation, in Section 501, of this requirement.

We are also pleased that the Discussion Draft in Section 504 addresses the ongoing problems of adequate appropriations for a nuclear waste disposal program and budgetary scoring. However, Congress could improve this legislation by appending the text of Section 504 of H.R. 3053 as introduced in the House on June 26, 2017.² As introduced, Section 504 of H.R. 3053 assured that certain percentages of the amounts in the waste fund on the date of enactment must be available to the Secretary on certain trigger dates. The provision that those funds be made available "without further appropriations" was an excellent way to assure both confidence and progress in the program. That section also assured any fees collected going forward are immediately available to the Secretary for waste related activities without additional appropriations. If the NWF fee is restarted, this provision is crucial.

² *Section 504 of H.R. 3053 as introduced in the House on June 26, 2017:* Availability of certain amounts. Section 302 of the Nuclear Waste Policy Act of 1982 (42 U.S.C. 10222) is amended by adding at the end the following: (f) Availability of certain amounts.—(1) IN GENERAL.—Notwithstanding any other provision of this section, for the purposes described in subsection (d) that are specified in subparagraphs (A) through (E) of this paragraph, the following amounts from the Waste Fund shall be available to the Secretary without further appropriation:

(A) An amount equal to 1 percent of 2017 Waste Fund amounts, on the date on which high-level radioactive waste or spent nuclear fuel is received at the Yucca Mountain site, and in each of the 25 years thereafter, for costs associated with construction and operation of a repository or facilities at the Yucca Mountain site.

(B) An amount equal to 1 percent of 2017 Waste Fund amounts, on the date on which high-level radioactive waste or spent nuclear fuel is received at the Yucca Mountain site, to make payments under a benefits agreement entered into under section 170 with the State of Nevada concerning a repository.

(C) An amount equal to 0.1 percent of 2017 Waste Fund amounts, on the date that is one year after the date on which high-level radioactive waste or spent nuclear fuel is received at the Yucca Mountain site, and in each year thereafter until closure of the repository, to make payments under a benefits agreement entered into under section 170 with the State of Nevada concerning a repository.

(D) An amount equal to 20 percent of 2017 Waste Fund amounts, on the date on which monitoring of the repository during the decommissioning period commences, for waste package and drip shield fabrication activities.

(E) An amount equal to the amount of any fee collected pursuant to subsection (a)(3) after the date of enactment of the Nuclear Waste Policy Amendments Act of 2017, on the date on which such fee is collected, for costs associated with construction and operation of a repository or facilities at the Yucca Mountain site.

(2) 2017 WASTE FUND AMOUNTS.—For purposes of this subsection, the term '2017 Waste Fund amounts' means the amounts in the Waste Fund on the date of enactment.

Laudably, the discussion draft language does contain some fiscally responsible mechanisms. It assures DOE continues to complete a fee adequacy study to demonstrate the need for additional revenues to support the program before re-instituting a NWF fee that must be borne by ratepayers. Any properly conducted assessment of the need for additional revenues should first consider if the approximately \$1.5 billion in interest accruing annually on the NWF is adequate to fund projected annual disposal expenditures without reinstatement of a fee. After all, it makes little sense for the Secretary to reinstate the NWF fee unless and until program expenditures actually exceed annual investment income. If the Discussion Draft's Section 501 amendments to 42 U.S.C. §10222(a)(4) make this clarification, it would strengthen the bill and increase confidence in the program.

This discussion draft also provides a pathway for interim storage of nuclear waste. Significantly, it also links use of such a facility to a finding that a final permanent repository decision "is imminent."

NARUC's 2018 resolution also 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."

NARUC also supports the idea of a cost-benefit analysis as a pre-requisite for progress on interim storage facilities. The draft could be improved by including, as a fiscally prudent prerequisite to any approval of an interim facility, an evaluation of the costs and benefits of a particular interim storage site that specifically considers the transportation costs and proximity to possible or likely permanent disposal sites.

NARUC has also joined others in seeking a different management structure for the program. The Draft also makes some progress on this point in section 604 by making the Director of the Office of Civilian Radioactive Waste Management "responsible for carrying out the functions of the Secretary under this Act" and

giving that Director a 5-year term. NARUC has not spoken directly to this framework by resolution, but the Committee may wish to consider increasing the term length to provide greater stability in the program across administrations.

Mr. Chairman, thank you for inviting me here today to testify on behalf of NARUC. We are pleased you have provided legislative language in draft form and we look forward to working with you, your staff and the other members and staff on this Committee as the drafting of this legislation continues.

Senate Committee on Environment and Public Works
Hearing entitled, "Legislative Hearing on a Discussion Draft Bill, S. ___, Nuclear Waste
Policy Amendments Act of 2019"
May 1, 2019
Questions for the Record for Commissioner O'Donnell

Chairman Barrasso:

1. The discussion draft conditions interim storage on concluding the Nuclear Regulatory Commission's (NRC) licensing process of the Yucca Mountain site. Would this structure provide surety that ratepayers would see a return on investment?

O'Donnell response:

NARUC strongly supports this provision in the discussion draft.

The lack of progress on Yucca Mountain is a roadblock for nuclear power. As you pointed out in a recent editorial, at least eight states have passed laws against building new nuclear plants until the federal government demonstrates it will dispose of spent fuel. If the U.S. is serious about climate change, it must address disposal issues. Sixty percent of America's carbon-free energy comes from nuclear power. That's over three times the energy produced by wind and more than 18 times that produced by solar. It's true, that current reactor-site spent fuel storage is safe, but retaining spent fuel indefinitely at working reactor sites was never intended and is, frankly, inefficient and unacceptable. Continued storage at permanently shutdown plants is also unacceptable. It imposes costs on ratepayers without equivalent benefits and prohibits economic reuse of the site.

I don't know if I can/would use the term "surety" to describe anything about this nation's high-level nuclear waste disposal program and/or its finances, other than now the only "surety" is that the federal government has our money and we still have the waste. But, in the sense that ratepayers would at least get the benefit and knowledge inherent in the billions invested in the currently proposed permanent repository site, yes, actually following the law and completing the license proceeding is the minimum return ratepayers deserve.

GAO did a report in April of 2017 documenting the significant costs to the American taxpayer of the last administration's illegal shutdown of the license review and NRC waste program office. Between 1983, when the NWPA became law, and 2008, when DOE submitted its license application for Yucca Mountain, DOE spent at least \$15 billion to investigate developing a repository and building expertise - expertise that is eroding each day that the review is postponed. Step two of the four key steps highlighted by that GAO report highlight this unquantified cost of continued delay. It specifies that DOE and the NRC will have to rebuild organizational capacity – including "as needed, recruiting personnel to recreate DOE's, NRC's, and nonfederal parties' project offices"

The longer that Congress permits this delay, the more retirements of NRC and other experts will continue to inflate the overall costs of completing the license review. And that is on top of the estimated \$2.2 million dollars a day that delay is costing the American taxpayer.

That is why this requirement must be included in any legislative "fix" for programmatic progress. The fact is there will be difficulty with locating an interim storage site unless there is some permanent storage solution on the horizon. Providing an interim storage solution without progress on a permanent repository is irresponsible. This is simply kicking the cask down the road for future generations to address while absolutely guaranteeing that the overall cost of disposal will increase significantly.

2. Section 603 of the discussion draft amends the Nuclear Waste Policy Act to use the Nuclear Waste Fund for safety activities associated with transporting spent nuclear fuel to the repository. Do you support this provision? If so, why?

O'Donnell response:

NARUC does not have a position on this provision. However, transportation planning, including selecting routes and associated safety activities were always contemplated as part of the program under the NWPA. As such, NARUC has supported the basic provisions of the NWPA.

3. Title I of the discussion draft requires the Department of Energy (DOE) go through a step-by-step process to inform its interim storage program. The steps include determining the need for an interim storage program, a request for information, and a request for proposal prior to entering into a contract for interim storage.
 - a. What are the key issues DOE must address as part of any interim storage program?
 - b. Do you agree it is important for DOE to have a developed interim storage program prior to entering into a contract with a private entity? If so, why?

O'Donnell response:

a. As noted in my response to question 1, it is irresponsible to proceed until the review for a permanent program license application is underway. That must be addressed as a precursor to any progress on an interim storage program. Not only is it the fiscally responsible thing to do, but it will unquestionably facilitate the siting of interim storage. Today, the nation already has approximately 121 interim storage sites in 39 states. That is unacceptable. The license application process for a permanent storage facility must be restarted.

b. It is crucial that DOE conduct a cost-benefit analysis before taking additional steps. It seems possible that for shut down locations, the net benefits and savings in duplicative security and monitoring costs could outweigh the potential additional costs of transporting

the waste twice – first to interim storage and later to a permanent repository. The Blue Ribbon Commission on America's Nuclear Future report cites a study that suggests the savings from consolidated storage for this stranded spent fuel might be enough to pay for the cost of the storage facility.

4. Approximately \$15 billion has been spent to-date on the Yucca Mountain project. If the law is amended to abandon the Yucca Mountain site and restart the search for a new repository, how would you expect those costs would compare to what has been spent thus far on Yucca Mountain?

O'Donnell response:

Changing the law to abandon the Yucca Mountain site without completing the license application is simply irresponsible. It would be an extraordinary waste of money and resources. Restarting the process would obviously cost more in today's dollars, how much more is anyone's guess.

There has to be linkage between progress on the YM License and any interim storage option. After all, the additional and not insignificant expense to taxpayers of an interim storage option, including the duplicative transportation costs, might not have been necessary if the Yucca Mountain license review had been allowed to proceed in 2008.

Both practically and as a matter of simple fairness, there has to be linkage.

Electricity ratepayers in at least 39 States, have invested literally billions in characterization of the Yucca Mountain site – including the release of the Safety Evaluation Reports that indicate the site is suitable. Ratepayers deserve a hearing on their investment. But they are not alone. Those that support the siting of the facility – both in Nevada and around the country – as well as those that have claim the site is unsuitable also should have an opportunity to make their case before a neutral and apolitical arbiter. The logical next step for anyone is to let the science and the license process determine the fate of Yucca Mountain.

Practically, speaking, any interim storage facility will face many of the same siting issues that have been raised with respect to Yucca Mountain. No movement on Yucca would likely turn debate on an interim facility into a debate on a de jure permanent repository.

5. The discussion draft prohibits the Secretary of Energy from restarting the nuclear waste fee until the Commission approves or denies the Yucca Mountain license application. Do you support this provision? If so, why?

O'Donnell response:

NARUC strongly supports this provision.

First, under no conditions should the fee be restarted until the Yucca Mountain license proceeding is complete.

Second, a new DOE fee adequacy study that demonstrates the need for reinstatement is a necessary prerequisite for restarting the fee and must consider if the approximately \$1.5 billion in interest accruing annually on the nuclear waste fund (NWF) is adequate to fund projected annual disposal expenditures without reinstatement of a fee. The fee should not be reinstated until program expenditures actually exceed annual investment income.

Finally, Congress should mandate that no fees can be collected in a fiscal year that exceeds 90 percent of the Congressional appropriations for the fiscal year during which such fees are collected. The ratepayers have done their part already: contributing over \$40 billion, including interest, to this program and thus far have nothing to show for it – other than additional expense. This check on any necessary reinstitution of the fee is crucial to assure ratepayer's money isn't again diverted by Congress.

6. Title IV of the discussion draft authorizes the Secretary of Energy to negotiate a benefits agreement with the State of Nevada, as well as Nevada counties. Do you support providing defined benefits to state and local governments for hosting an interim storage facility or repository?

O'Donnell Response:

NARUC supports a negotiation of benefits with Nevada and Nevada counties as a necessary aspect of the permanent repository licensing process. Certainly, the use of the NWF to provide benefits to affected States and localities are necessary incentives to host a repository and should advance the siting process.

As for using NWF for interim storage activities, NARUC's 2018 resolution notes that: "The BRC Report recommendations for consolidated interim storage represent a new use for the NWF that should be authorized only after a careful consideration of the costs and benefits involved." It seems likely if a progress on a permanent repository is underway, the need and the quantum of any benefits package for an interim storage site would be considerably diminished. Further, the model for the more recent interim storage facilities are intended to be "for profit" enterprises, which should be taken into consideration when providing benefits to the host communities. The provision of defined benefits to state and local governments is at least partly premised on assuaging opposition from local governmental entities.

7. The discussion draft reforms the financing mechanism to limit fee collections to an amount not greater than 90 percent of what is appropriated from the Nuclear Waste Fund. This will assure fees are collected only if Congress appropriates money for a nuclear waste program.
 - a. How will this provision impact your ratepayers?

- b. Do you support this provision? If so, why?

O'Donnell response:

NARUC strongly supports this provision.

Once enacted, this innovative proposal may be the most significant positive policy change since the Nuclear Waste Policy Act was signed into law.

It will unquestionably protect future ratepayer investments – blocking payments to the federal government for a program that the federal government never funds. If the budgeted dollars are not appropriated the fee is suspended and the new ratepayer burden is lifted.

The proposal also provides for a de minus return every year the fee is assessed of 10% of the corpus of the NWF. While NARUC has not taken a specific position on this – in my personal opinion, the provision could be improved by increasing that to 25% or higher return of the corpus, i.e., limiting the fee assessment to 75% of the amount actually appropriate to the program each year.

8. The Nuclear Waste Policy Act provides for nuclear waste from national defense activities to be disposed in a single repository with commercial spent nuclear fuel. This policy allows the costs to be shared between ratepayers who pay for commercial spent nuclear fuel disposal and taxpayers who pay for disposal of defense waste. Section 204 of the discussion draft prohibits DOE from spending money on a defense-waste only repository until there is a final decision on the Yucca Mountain license.
- a. Do you support this provision? If so, why?
- b. How does developing a single repository for both commercial and defense material will simultaneously protect our military and protect ratepayers?

O'Donnell response:

NARUC supports this provision. Any other approach is economically inefficient and wastes taxpayer dollars. Section 204 makes certain that defense and commercial waste remain dependent upon the same program. This comingling of defense and commercial waste provides for economies of scope and scale along with a sharing of costs. This is a better deal for ratepayers, a better deal for taxpayers, and a better deal for the military. Moreover, a consolidated repository will allow the military to focus on their primary mission. Finally, given the history of failure with this program, there is a high likelihood that allowing DOE to divert resources to focus on a defense-only repository will impede if not eliminate progress on development of a commercial waste repository.

9. Senator Rosen's testimony states the discussion draft eliminates the current requirement for progress on a second repository.

- a. Does the Nuclear Waste Policy Act require any action on a second repository?
- b. If so, does the discussion draft amend that provision?

O'Donnell response:

a. *The NWPB does not require a second repository. It does permit consideration of a second repository. 42 U.S.C.A. § 10172a (a), which addresses the siting of a second repository, is available online at: <https://www.govinfo.gov/content/pkg/USCODE-2017-title42/pdf/USCODE-2017-title42-chap108.pdf>. That section specifies that the Energy "Secretary may not conduct site-specific activities with respect to a second repository unless Congress has specifically authorized and appropriated funds for such activities." Section 10172a (b) required the Secretary to report to Congress on the need for a second repository by January 2010. " That recommendation, filed in 2008, is available online at: https://www.energy.gov/sites/prod/files/edg/media/Second_Repository_Rpt_120908.pdf. There the Energy Secretary recommended that: "consistent with legislation that the Administration proposed in 2007, Congress act promptly to remove the statutory limit of 70,000 MTHM for the Yucca Mountain repository, thereby permitting a deferral of a decision regarding the need for a second repository." Seven years later, in 2015, after – as the courts later found – DOE illegally refused to prosecute the license review process for the proposed Yucca Mountain repository, based on other NWPB provisions, the President found that a separate repository for defense-related radioactive waste was required and DOE announced plans to build two repositories, one for defense waste and another for commercial spent nuclear fuel and residual defense waste. The next year, in 2016, the National Defense Authorization Act for Fiscal Year 2017 denied funds for a defense-only repository. According to the GAO, the President's FY 2018 "budget request included \$120 million for the resumption of the license review for the repository at Yucca Mountain and for interim storage of nuclear waste, which reflected a change in policy and effectively terminated DOE's plans to build a separate defense waste repository." Congress did not provide this funding." The GAO Nuclear Waste Disposal is online at: https://www.gao.gov/key_issues/disposal_of_highlevel_nuclear_waste/issue_summary.*

b. *The draft does not prohibit consideration of a second repository but, recognizing the inefficiency and duplicative costs for separate repositories for defense and civilian waste – it does, in Section 204, limit consideration of a second defense-only repository "until the Commission issues a final decision on an application for a construction authorization for a repository under section 114(d)(1) of the NWPB."*

10. The number of operating nuclear power plants is expected to drastically decrease in the next four years. What will happen if Congress and the Department of Energy further delay reconstituting a nuclear waste program and a significant number of power plants shut down?

O'Donnell response:

Commercial nuclear power is already facing challenges with uneconomic units.

Further increasing the costs of nuclear power by requiring the construction of additional onsite storage capacity because the federal government has not disposed of its waste in a permanent repository, as required by law, will only exacerbate the economic pressures on the units still running. While the percent of zero-emission electricity on the grid fluctuates by season and month, the US grid hit its record for percent of zero-emission megawatt hours in April of 2018 (40.1 percent.) In March of this year that percentage was around 38.4 percent. Therefore, with less nuclear generation running the US will have little chance of meeting and/or sustaining 40 percent or more zero-emission electricity on the grid in the foreseeable future. Long term – if it becomes necessary to restart the NW fee - the costs of the disposal facilities will be imposed on a smaller and smaller subset of ratepayers. That means the costs to jurisdictions that are serious about reducing their carbon footprint will go up.

A first step to reversing the trend is making sure there is a waste disposal solution. Speaking on my own behalf, and not NARUC, personally I think any thinking person would have agree to agree with climatologist James Hansen 2015 statements that:

“To solve the climate problem, policy must be based on facts and not prejudice. Alongside renewables, Nuclear will make the difference between the world missing crucial climate targets or achieving them.”

Look - it is a fact that every plant that is shutdown results in increased greenhouse gas emissions. Nuclear has to be part of the equation. I believe that is why lawmakers in the state legislatures of New York, Illinois, Connecticut and New Jersey have all moved to provide subsidies to keep in-state nuclear plants open and operational.

11. Section 103 of the discussion draft authorizes funding for a pilot interim storage program. The funding is authorized from the general treasury fund, not from the Nuclear Waste Fund. What is NARUC’s position on funding an interim storage program from the Nuclear Waste Fund?

O'Donnell response:

NARUC believes that consolidated interim storage represents a potential new use under certain conditions. The new use for the NWF should be authorized only after a careful consideration of the costs and benefits involved. Additionally, any analysis of the costs and benefits of interim storage should consider transportation costs and proximity to possible or likely permanent disposal sites. Finally, no interim storage unless and until the review of the Yucca Mountain license application is underway.

12. Your testimony notes support for the funding mechanism contained in H.R. 3053, as passed by the House Energy & Commerce Committee in 2017. Please provide additional detail how the annual Congressional appropriations process inhibits a durable nuclear waste management program.

O'Donnell response:

The simple answer is currently there is no effective appropriations process for this issue and hasn't been for many years. In fact, the House Committee on Appropriations on May 21, 2019 voted against appropriating any dollars to restart the licensing process. The Senate process is no better as we have heard there will be no dollars added during the Energy and Water markup.

The law is clear, the initial science on safety and suitability of the current proposed repository site is clear, and the Nevada county hosting the site wants the facility open and operational if it is safe. The only problem is the appropriations process – which has for years been the Achilles heel of the program.

That is why I suggested in my testimony that Section 504 of H.R. 3053 as introduced in 2017 should be included in the discussion draft. With that language, funds collected from ratepayers to fund the program could be made available "without further appropriations." That provision, above all others, would provide "surety", confidence and progress in the program.

Ranking Member Carper:

Please provide a response to each question, *including each sub-part.*

13. In Mr. Fettus's testimony, he called for the establishment of up-front generic radiation and environmental protection standards for the management of high-level nuclear waste and for a stronger role for states, local governments and Indian Tribes in the siting of a permanent high-level repository. Do you have concerns with these suggestions? If so, please explain why.

O'Donnell response:

NARUC has not taken a position on Mr. Fettus' new proposals. But, the country does have general radiation and environmental protections in place for the siting of any repository. Mr. Fettus' career indicates he is clearly not a proponent of nuclear power. NARUC is concerned that much of what he is advancing is strategically designed to raise additional "roadblocks" and make nuclear power less appealing. Certainly diverting yet again from what the current law requires will unquestionably make siting a permanent repository more difficult than it already is, if that's possible.

14. Are there aspects of a consent based process – including incentives -you think would be critical for success in siting a new location for a permanent high-level nuclear waste repository?

O'Donnell response:

NARUC has no position on this issue other than we believe States and local governments should be engaged in a more collaborative manner that can be guided by a negotiated consent agreement among the involved parties, whether for storage or disposal facilities.

Aside from incentives, the strong support of the host county is a pre-requisite. My understanding is that Nye County Nevada – where Yucca Mountain is located – and each of the neighboring counties, has the support of local officials and citizens as long as the licensee proceeding finds the site to be safe.

15. Would you oppose if the nation decided to pursue multiple permanent high-level waste repositories across the country – rather than one central location? If so, why? If not, why not?

O'Donnell response:

NARUC has not specifically addressed this idea in resolutions. But, it seems premature to discuss multiple permanent repository sites. The federal government ought to complete the licensing process for the current proposed location to take advantage of the information to be gleaned from the process. That process will inform efforts to site a second repository. Simultaneous investigation of multiple permanent sites seems inefficient.

16. Some have suggested that the Department of Energy should no longer have authority over our nation's permanent high-level nuclear waste repository. Do you agree with that view, and, if so, who should have the authority? If you feel a federal corporation should have the authority, what guardrails are needed to ensure that safety and states' rights are preserved in the siting of a permanent high-level waste repository?

O'Donnell response:

The management of federal responsibilities for used fuel management would be more successful if assigned to a new organization with a new approach to siting and better access to financing. Whether DOE was unable to achieve its NWPA responsibilities due to mismanagement or factors beyond its control can be debated, but the Blue Ribbon Commission (BRC) made a sound case for creating a new organization, outside of DOE, with the sole responsibility to manage nuclear waste. NARUC supports this concept.

The new organization should be charged to engage with States and local governments in a more collaborative manner that can be guided by a negotiated consent agreement among the involved parties, whether for storage or disposal facilities. The NWPA already has provisions for use of the Nuclear NWF to provide benefits to affected States and localities as an incentive to host a repository that could be amended if a benefits agreement is negotiated that advances the siting process. We agree with the BRC recommendation that a public utility commissioner be appointed to an oversight board having responsibility to evaluate the adequacy of the fees.

17. Are there examples that we can learn from the high-level waste management experiences of other countries – such as Sweden and Finland – that could help us with our nuclear waste issues in this country?

O'Donnell response:

NARUC has not taken a position on the relative merits of other country's approaches. However, it always makes sense to learn from other's successes and failures. But, the fact is, the United States should complete the license process for the disposal facility design that was passed by Congress and signed into law before changing process design parameters.

18. Mr. O'Donnell, as I mentioned during the hearing, I try to live my life by the Golden Rule – and treat others the way I want to be treated. This means often putting myself in another person's shoes and thinking about how I would feel in their situation. As Commissioner on the Maryland Public Service Commission, I would like for you to think about how your counterparts in Nevada and other states may feel about the nation's current federal nuclear waste policy.
- a. If an independent company wanted to pursue a NRC license to safely store nuclear waste on an interim or permanent basis in the State of Maryland, what do you believe would be your constituents' response to that idea?
 - b. In your mind, what steps must the federal government take for Marylanders to ever support the idea of more nuclear waste coming into their state and being stored long-term?

O'Donnell response:

Senator Carper, as you know from your time as a Governor, sometimes decisions are made by State officials (or federal officials for that matter) that prove wildly unpopular though they need to be made regardless – using eminent domain for a road improvement or to site a transmission line for instance. These are not easy and we try to be guided by what is best for the public good. We make the decisions based upon the best information and science that we have available. In some cases we look at all the information, science, cost, benefits, safety, necessity, and yes politics. Yet, after all the analysis we still end up hoping we made the right decision. But, even after all that, sometimes the decision comes down to having to follow the rule of law over all else. Congress has determined the law in this instance. Sir, I would follow the rule of law.

19. Nuclear waste policy has divided this country for far too long. Having listened to others on the witness panel during the hearing, would you provide this Committee with one course of action where there is agreement among the panel members?

O'Donnell response:

I think the only obvious consensus on my panel was that doing nothing is not an option. Congress must act.

Senator Braun:

20. Our energy industry should be responsive to market pressures and incentives. As in all industries, the government should not be picking winners and losers. There are obvious reasons that I support nuclear energy. I believe it is a critical element of an "all of the above" energy strategy.

But "all of the above," does not imply that we should be pursuing technologies that are not viable in the private market. On Monday, the Wall Street Journal noted that nuclear facilities in Pennsylvania and Ohio are asking for state subsidies to improve their balance sheets, so they can remain in operation.

- a. How much of a balance-sheet liability does the storage of nuclear fuel on-site create for these utilities?
- b. If the long-term storage issue were solved tomorrow, would this reduce a barrier to the introduction of new nuclear facilities?

O'Donnell response:

With regard to (a), that would really be a unit by unit answer because of all the variables involved, including but not limited to whether the unit was decommissioned or is still running. With regard to (b), yes, it would reduce one of the barriers.

21. Northwest Indiana consumes around 80 percent of the electricity from the D.C. Cook nuclear power plant. Our ratepayers have paid to build Yucca Mountain, and they have not gotten anything in return for that yet. Even worse, because Congress has failed to act, taxpayers are paying legal costs associated with on-site waste storage, a bill estimated to be in excess of \$36 billion. Now, because of Congressional gridlock, Hoosiers paid for a storage solution that never materialized.

Do you believe that the federal government has a responsibility to follow through on this policy, and to invest the taxes it collected for a permanent storage solution?

O'Donnell response:

Unequivocally YES! It is the right thing to do. It is the responsible thing to do, and it is the law. It will without question save taxpayers and ratepayers money.

Senator BARRASSO. Thank you very much, Mr. O'Donnell, for your testimony. We are grateful for your 8 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 RE-
SOURCE 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, sizable 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:]



Geoffrey H. Fettus
Senior Attorney
Natural Resources Defense Council

Fettus both litigates and testifies before Congress for NRDC's Energy & Transportation program, where he focuses primarily on issues relating to the beginning and end of the nuclear fuel cycle—including issues associated with uranium mining and the disposal of radioactive waste. A graduate of Haverford College and the University of

Wisconsin Law School, he worked as an attorney for a public-interest law firm and served as an assistant attorney general for New Mexico before he joined NRDC in 2001. He is based in Washington, D.C.

Statement of

**Geoffrey H. Fettus
Senior Attorney
Natural Resources Defense Council**

**“Statement for Legislative Hearing on a Discussion Draft Bill, S. __,
Nuclear Waste Policy Amendments Act of 2019.”**

Before the

**Congress of the United States
United States Senate
Committee on Environment & Public Works
Room 406, Dirksen Senate Office Building**



May 1, 2019

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I. Introduction & Summary.

Mr. Chairman, Mr. Ranking Member and members of the Committee, thank you for providing the Natural Resources Defense Council, Inc. (NRDC) this opportunity to present our views on the Discussion Draft, S. ___, Nuclear Waste Policy Amendments Act of 2019. We appreciate that the Committee sees the need to commence work again on solving our national nuclear waste dilemma and we hope to work with all of you on a constructive process.

NRDC is a national, non-profit organization of scientists, lawyers, and environmental specialists, dedicated to protecting public health and the environment. Founded in 1970, NRDC serves more than three million members, supporters and environmental activists with offices in New York, Washington, D.C., Los Angeles, San Francisco, Chicago, Bozeman, Montana, and Beijing. We have worked on nuclear waste matters since our founding and continue to do so.

In our years of appearing before this Committee and others, NRDC almost always begins with a straightforward introduction that highlights our key observations and then proceeds to map out precisely what we think about the bill in question, section by section, and in detail. But we are cognizant of the long history of this matter, the veritable tsunami of legislative history detailing objections or support to similar pieces of legislation as the one before us today. Indeed, we've contributed to that wealth of testimony.¹ And we are keenly aware that our time before you is valuable and we don't want to waste a moment of your important attention.

Therefore, in a more summary fashion than is our usual wont, we make the following points. Title I of the Discussion Draft attempts to clear the legal obstacles to allow New Mexico or Texas to receive sizable portions of the nation's nuclear waste at a consolidated interim storage site that has not been licensed, has significant legal and technical challenges, and is opposed by

¹ See, e.g., Hearing Before The Subcommittee On Environment Of The Committee On Energy And Commerce, House Of Representatives, 115th Congress, First Session April 26, 2017, Serial No. 115-26, online at <https://www.govinfo.gov/content/pkg/CHRG-115hhrg25996/pdf/CHRG-115hhrg25996.pdf>; see NRDC's submission at 136 (pdf page 140 of 172); or NRDC's 2015 Testimony Before the House Energy & Commerce Committee; see <https://www.nrdc.org/experts/matthew-mckinzie/nrdc-testifies-house-representatives-nuclear-waste>.

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the entire New Mexican Congressional delegation and Governor.² Title II of the Discussion Draft sets the abandoned, defunct Yucca Mountain licensing process back in motion, but with an even more truncated environmental review, and with a set of new potential sources of state funding. Nevada issued its notice of disapproval of Yucca Mountain on April 8, 2002 and has repeatedly stated its opposition, seemingly to no avail. Last, the other titles set forth various matters such as an expansion of the use of the Nuclear Waste Fund in ways that place ever more burdens on taxpayers and fewer on the industry.

Respectfully, but bluntly, enacting Titles I and II into law would immediately precipitate a welter of controversy and litigation from the potential recipient states, which would result in no progress toward a solution and more states firmly objecting. Witness, as a keen example, the Private Fuel Storage interim nuclear waste storage site in Utah, which was licensed in 2006 but has not – and will not – ever receive waste due to the state’s steadfast resistance. The result of enacting Titles I and II would also continue all the attendant frustrations that come with nuclear waste in pools or dry storage at Nuclear Regulatory Commission (NRC) licensed reactors around the country. Seven years ago, then Chairman and now Ranking Member Carper rightly noted that consent-based siting, with meaningful partnerships and open communication among federal, state, local, and tribal leaders, is a most important step toward establishing a geologic nuclear waste repository. This Discussion Draft does not adhere to that wise observation, and rather than spend your valuable time repeating arguments in the record on these matters, we turn to explaining two things – first, the fundamental flaw in the Nuclear Waste Policy Act (NWPA) that Congress must fix – namely, removing the Atomic Energy Act’s (AEA) exemptions from environmental law – and second, why the removal of those environmental exemptions can result in nuclear waste repositories that are both scientifically defensible and publicly accepted.

² This is notable as there is a nod toward “consent” in the text of the legislation, *see* Section 143(a)(2), Conditions for MRS Agreements, and it would therefore seem that the New Mexico consolidated interim storage site could be dispensed with now and any plans abandoned. There is no such similar provision for the repository process in Title II.

II. How Did We Get Here?

A. Today's Impasse Has Many Causes.

After more than 50 years of effort, the federal nuclear waste program in this country has failed to deliver a final resting place for highly toxic, radioactive waste that will be dangerous for millennia. Over the years, there have been numerous efforts to attribute the failure of the repository program to certain Senators, to Nevada Governors of both parties, to NRC Commissioners, and even to the public for failure to accept its part in disposing of nuclear waste. All of this is wrong.

Failure cannot be laid at the feet of any one person or entity or the public, and this defeat has many causes. Several agencies (including the U.S. Environmental Protection Agency (EPA), the U.S. Department of Energy (DOE), the NRC, and the U.S. Department of Justice (DOJ)) and Congress repeatedly distorted the process established in the NWPA, including for developing licensing criteria for a proposed repository. In each instance, such action weakened environmental standards rather than strengthening them, and always to ensure the site would be licensed, no matter the end result. These actions both precipitated and gave traction to ferocious resistance from Nevada, Tennessee, New Mexico, Washington, Texas, Louisiana, Mississippi, Utah, Georgia, Maine, Minnesota, New Hampshire, North Carolina, Virginia, Wisconsin, and Indian tribes. But even those actions are not the reason we remain locked in a virtual *cul de sac*, witness to repeated attempts to try and force the same the result by the same fashion – *i.e.*, transferring the entirety of the nation's nuclear waste to an above ground parking lot in a resistant New Mexico, or to the technically inadequate attempt at a repository in Nevada.

B. Science & Politics Are Both Necessary.

Nuclear waste remains a third rail of American politics for a singular reason – **a deep misunderstanding of federalism and the necessary role of states in the process of solving this challenge.** If you take one message from our appearance before you today, it is that there is

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another way to try and cut this Gordian Knot, but it must be done in a fashion that respects the extraordinary history of cooperative federalism in environmental law.

We urge the Committee to appreciate the metamorphosis of Congressman Mo Udall's (D-AZ) NWPA, the organic subject of today's hearing. Indeed, NRDC views the original incarnation of the NWPA as a remarkable, nearly visionary piece of legislation that contained one tragic, fatal flaw: a deep misunderstanding of federalism and the necessary role of states. And that flaw is the single clear conclusion that we have drawn from the history of failures associated with nuclear waste.

As the Committee is aware, the enacted 1982 NWPA set forth obligations and duties for EPA, DOE and NRC, with Congressional oversight and checkpoints along the way. The law attempted to place science in the forefront and balance political power in a way that might allow for this fraught, difficult process of finding and developing disposal sites for nuclear waste. But, importantly, the NWPA never challenged or altered in any way the AEA's provision for exclusive federal jurisdiction over radioactive waste. Despite this baked-in oversight, the NWPA's attempt at the legal balancing act was unprecedented at the time and that observation remains true today. And as we all know, the balancing act was upset as the NWPA was repeatedly altered and the process was finally abandoned by the previous administration in 2009.

But why the repeated derailments? A myriad of answers get offered, generally suggesting that "not in my backyard" (NIMBY) sensibilities and associated politics are responsible for the failure to license and open Yucca Mountain. But as noted at the outset – this is wrong. The deep misunderstanding of federalism and the necessary role of states at the heart of the NWPA just kept getting lost over the years. The federal exclusivity over nuclear waste regulation was simply presumed *a priori*, without consideration as to whether that might be at the root of the problem.

So how is the misunderstanding of federalism at the root of the problem? The relationship of the federal government to the governments of the 50 states that comprise our republic is the fundamental fact of American politics. Our political system has never easily digested or durably

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solved profound national problems like voting rights, health care, gun control, carbon restrictions, or the disposal of nuclear waste, by either federal fiat or, conversely, by turning matters over to the states entirely.³ And in every instance of national decision making on these and other complex issues, heavily compromised laws or regulations have taken into account the needs and perspectives of states.

Bedrock environmental laws reflect this fact. With the notable exceptions of the AEA (the organic act for nuclear power) and its progeny, the NWPA, there is federalist intention at the heart of environmental statutes and a role expressly reserved for the states. As examples, the Clean Water Act, Clean Air Act, and Resource Conservation & Recovery Act (RCRA) allow states authority to implement those air, water, and waste programs, respectively, in lieu of a federal program. States that obtain “delegated” authority from the federal government must meet minimum federal standards (and the federal government retains independent oversight and enforcement authority). And generally, depending on state law, those delegated states can impose stricter requirements or different, but no less protective regulatory mandates that meet the needs of the state in question. Nuclear waste should be no different, but under the AEA and the NWPA, it is different.

So, where do these observations leave us? It is NRDC’s firm conclusion that Congress is right to take up these matters, that new nuclear waste legislation must be written, and that a new process must be created. Consistent with the expressed statements of Ranking Member Carper and former Senate Energy & Natural Resources Committee Chairman Bingaman, whatever results must be “consent based,” concordant with President Obama’s bipartisan Blue Ribbon Commission (BRC),⁴ and take into account the needs of the industry and their federal

³ For perspective on the ever-present interplay of the constitutional principles of federalism and equal sovereignty of the states and the extraordinary controversies that still attend such matters, see the 2013 landmark (5 votes to 4 votes) Voting Rights decision and its vigorous dissent, *Shelby County, Ala. v. Holder*, 133 S. Ct. 2612 (2013).

⁴ President Obama’s “*Blue Ribbon Commission on America’s Nuclear Future - Report to the Secretary of Energy, January 31, 2012*” (hereafter “BRC” or “*Final Report*”); see online at https://www.energy.gov/sites/prod/files/2013/04/f0/brc_finalreport_jan2012.pdf.

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champions. But this time, any new legislation must also take into account the fundamental need for public and state acceptance and there is only one way to do that, as we explain next.

C. It Is Past Time to Normalize the Treatment of Nuclear Waste Under Environmental Law.

State consent and public acceptance of a nuclear waste solution will never be willingly granted unless and until power to make such a decision as to how, when and where such waste is disposed of is shared rather than decided by federal fiat. There is only one way that can happen consistent with the protective, cooperative federalism at the heart of environmental law. Specifically, Congress must finally end the AEA's exemptions from environmental law. Our hazardous waste and clean water laws must have full authority over radioactivity and nuclear waste facilities so that EPA and – most importantly – the states can assert direct regulatory authority. This will necessarily alter the federalism oversight that has been central to the failure of the NWPA.

The NWPA's (and AEA's) misunderstanding of the importance of federalism is at the heart of the repository program's failure. If we don't find a way to give EPA and the states regulatory power over nuclear waste – and that is accomplished only by doing away with the environmental exemptions in the AEA – we will not solve this dilemma. Lack of consent from an unwilling host state selected in an expedient demonstration of legislative and administrative power over the (statutorily defined) powerless is a recipe for inaction and, ultimately, disaster in this country, whether the issue is nuclear waste or any other great public concern.

III. NRDC's Prescription & How To Get This Right.

A. Five Recommendations to Get the Nuclear Waste Program Back on Track.

We can dispose of nuclear waste and do so in a fashion that is both scientifically defensible and publicly accepted, but we cannot do so if we keep trying the approach that has failed for over 50 years. To that end, NRDC urges Congress to – (1) recognize that geologic repositories must

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remain the focus of any legislative effort; (2) create a coherent legal framework before commencing any geologic repository or interim storage site development process; (3) arrive at a consent-based approach for nuclear waste storage and disposal via the fundamental change in law we described above; (4) address storage in a phased approach consistent with the careful architecture of former Senator Bingaman's S. 3469 (introduced in 2012); and (5) exclude delaying, proliferation-driving and polarizing closed fuel cycle and reprocessing options from this effort to implement the interim storage and ultimate disposal missions.

Importantly, our view on each area is premised on a single overarching caution: in order to avoid repeating the mistakes of the last four decades, Congress must create a transparent, equitable process incorporating strong public health and environmental standards insulated from weakening repository performance standards in order to ensure, at the conclusion of the process, the licensing and operation of a suitable repository site (or sites).

1. Recommendation 1 - Deep Geologic Repositories Are The Solution For Nuclear Waste And Must Remain The Focus.

NRDC concurs with the long held, consensus recognition that our generation has an ethical obligation to future generations regarding nuclear waste disposal. Adherence to the principle of deep geologic disposal as the solution to this obligation is consistent with more than 60 years of scientific consensus. The decision to isolate nuclear waste from the biosphere implicates critical issues, including: financial security, environmental protection, and public health, and no other solutions are technically, economically, or morally viable over the long term. This is why NRDC strongly supports development of a science-based repository program that acknowledges the significant institutional challenges facing nuclear waste storage and disposal. Thus, in whatever legislation moves forward, we urge explicit adherence to the first purpose of the NWP, 42 U.S.C. § 10131(b)(1), "to establish a schedule for the siting, construction, and operation of repositories that will provide a reasonable assurance that the public and the environment will be adequately protected from the hazards posed by high-level radioactive waste and such spent nuclear fuel as may be disposed of in a repository."

2. *Recommendation 2 – Create A Coherent Legal Framework That Ensures The “Polluter Pays” Before Commencing Any Repository Or Interim Storage Site Development.*

To avoid repeating failures of past decades and consistent with the bipartisan BRC recommendations, both the standards for site screening and development criteria must be in final form before any sites are considered. Generic radiation and environmental protection standards must also be established prior to consideration of sites. To give this recommendation explicit and simple context, Senator Bingaman’s 2012 legislative effort (S.3469, specifically in Sections 304, 305 and 306) set in place some of the necessary structures that could avoid repeating the failure of the Yucca Mountain process. Specifically, the bill would have directed EPA to adopt, by rule, broadly applicable standards for the protection of the general environment from offsite releases of radioactive material from geologic repositories. The bill also directed NRC to then amend its regulations governing the licensing of geological repositories to be consistent with any relevant standard adopted by EPA. Further, embedded in Senator Bingaman’s bill was the requirement that the polluters pay the bill for the contamination created. This bipartisan concept has long history as bedrock American law and must remain in full force in any legislation.

These requirements and this phasing of agency actions in Senator Bingaman’s bill were appropriate (*i.e.*, first EPA sets the standards and then NRC ensures its licensing process meets those standards) – and in the next recommendation we’ll expand on how this coherent legal framework must be improved. But it is key that a coherent legal framework be in place before siting decisions get made. Unfortunately, recent iterations of nuclear waste legislation, including this Discussion Draft, ignore this wise sequencing, thus ignoring BRC’s recommendation that new, applicable rules be in *final* form before site selection.

Congress should also direct that standards for site screening and development criteria be based on careful characterization of the radiation sources and resulting doses. The chief sources of radiation in high-level nuclear waste forms are the beta-decay of fission products like Cs-137 and

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Sr-90 and the alpha-decay of actinide elements like Uranium, Neptunium and Americium. Beta-decay is the primary source of radiation during the first 500 years of storage, as it originates from the shorter-lived fission products. Then alpha-decay becomes the dominant source after approximately 1,000 years. These radiation sources and doses must be considered to ensure a scientifically defensible legal framework for site selection.

3. *Recommendation 3 – Develop A Consent-Based Approach For Nuclear Waste Disposal Through A Fundamental Change In Law.*

a. *The BRC Failed To Define Consent & Thereby Did Not Point The Way Forward.*

For all its laudable qualities, the 2012 BRC report did not accurately portray the fundamental problem facing how to finally solve our nuclear waste disposal challenges. The BRC should have explicitly stated – and we do so here today – that Congress, with its firm understanding of federalism, should legislate a role for EPA and the states in nuclear waste disposal by amending the AEA to remove its express exemptions of radioactive material from environmental laws.

State, local and tribal governments *must* be central in any prescription for a successful repository and waste storage program. Senator Carper wisely observed as much many years ago and we hope that this remains his position today. Regrettably, current law has treated these relationships as dispensable afterthoughts, preempted from any meaningful power and authority over radioactive waste disposal sites. And the current effort at draft legislation suffers the same malady.

Rather than address this problem head on, seven years ago the BRC chose to carefully skirt the matter in its report, while still noting that federal and state tensions are often central in nuclear waste disputes. We think this failure to squarely address the matter provides the continued impetus to ignore this elephant in the room. The BRC's Final Report states in pertinent part:

We recognize that defining a meaningful and appropriate role for states, tribes, and local governments under current law is far from straightforward, given that

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the Atomic Energy Act of 1954 provides for exclusive federal jurisdiction over many radioactive waste management issues. Nevertheless, we believe it will be essential to affirm a role for states, tribes, and local governments that is at once positive, proactive, and substantively meaningful and thereby reduces rather than increases the potential for conflict, confusion, and delay.

BRC Final Report at 56 (citation omitted).

The first sentence above both makes an observation and states a fact. The observation is that defining a meaningful and appropriate role for states, tribes, and local governments under current law is far from straightforward. The fact is that the AEA provides for exclusive federal jurisdiction over many radioactive waste management issues. According to the BRC, the difficulty of defining a meaningful and appropriate role for states is a “given” because of the fact of exclusive federal jurisdiction.

So what did the BRC suggest Congress do about this? Do away with the explicit federal jurisdiction? Increase the exclusivity of the federal jurisdiction? Somehow argue that the problems can be addressed without altering the exclusive federal jurisdiction in some fashion? There is nothing so clear or direct in the text. Rather, the BRC’s very next sentence is simply an aspiration, without any explicit recommendation addressing the “given” (*i.e.*, exclusive federal jurisdiction) that makes the process so difficult. The BRC simply noted that it is “essential to affirm a role for states, tribes, and local governments that is at once positive, proactive, and substantively meaningful.” NRDC agrees with the aspiration, but plainly the BRC missed an important opportunity to address the fundamental roadblock to solving our nuclear waste problem.

Without fundamental changes in our current, non-consent based law that explicitly address what the BRC termed, “federal, state and tribal tensions,” we will never approach closure and consent on transparent, phased, and adaptive decisions for nuclear waste siting. We now explore in more detail this decades-overdue change in the law.

b. NRDC's Prescription For Ensuring States' Authority – Remove The AEA's Exemptions From Environmental Law.

As we stated at the outset (*supra* at 2), a meaningful and appropriate role for states in nuclear waste storage and disposal siting can be accomplished in a straightforward manner by amending the AEA to remove its express exemptions of radioactive material from environmental laws. The exemptions of radioactivity make it, in effect, a *privileged pollutant*. Exemptions from the Clean Water Act and RCRA are at the foundation of state and, we submit, even fellow federal agency distrust of both commercial and government-run nuclear complexes. Removing the exemptions would make the treatment of radioactive waste consistent with every other bedrock environmental law.

As the Committee is aware, most federal environmental laws expressly exclude “source, special nuclear and byproduct material” from the scope of health, safety and environmental regulation by EPA or the states, leaving the field to DOE and NRC. In the absence of clear language in those statutes authorizing EPA (or states where appropriate) to regulate the environmental and public health impacts of radioactive waste, DOE retains broad authority over its vast amounts of radioactive waste, with EPA and state regulators then only able to push for stringent cleanups on the margins of the process. The NRC also retains far reaching safety and environmental regulatory authority over commercial nuclear facilities, with agreement states able to assume NRC authority, but only on the federal agency’s terms.

States are welcome to consult with NRC and DOE, but the federal agencies can, and do, assert preemptive authority where they see fit. This has happened time and again at both commercial and DOE nuclear facilities. This outdated regulatory scheme is the focal point of the distrust that has poisoned federal and state relationships involved in managing and disposing of high-level radioactive waste and spent nuclear fuel, with resulting significant impacts on public health and the environment.

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If EPA and the states had full legal authority and could treat radionuclides as they do other pollutants under environmental law, clear cleanup standards could be promulgated, and the Nation could be much farther along in remediating the toxic legacy of the Cold War nuclear weapons production complex. Further, we could likely avoid some of the ongoing legal and regulatory disputes over operations at commercial nuclear facilities. Indeed, the BRC Report discusses New Mexico's efforts to regulate aspects of the Waste Isolation Pilot Plant under RCRA as a critical positive element in the development of the currently active site (BRC Final Report at 21). Any regulatory change of this magnitude would have to be harmonized with appropriate NRC licensing jurisdiction over facilities and waste, and harmonized with EPA's existing jurisdiction with respect to radiation standards; but such a process is certainly within the capacity of the current federal agencies and engaged stakeholders. Some states would assume regulatory jurisdiction over radioactive material as delegated programs under the Clean Water Act or RCRA, and others might not. In any event, substantially improved clarity in the regulatory structure and a meaningful state oversight role would allow, for the first time in this country, consent-based and transparent decisions to take place on the matter of developing nuclear waste storage sites and geologic repositories.

Ending the anachronistic AEA exemptions does not guarantee a repository will be sited in the next few years. Indeed, expecting fast progress on nuclear waste seems a fool's errand in light of the history. But ending these exemptions and providing RCRA authority for nuclear waste solves the most crucial matter for consent – the opportunity for meaningful state oversight over nuclear waste. Any such statutory change bars the substantial likelihood of Congressional terms and modifications exacted from states (that might be willing to host a repository) years into a good faith negotiation on a site. Indeed, while it would be theoretically possible for a future Congress to revisit the AEA and re-insert exemptions from environmental law, it would have to do so in a manner that would remove jurisdictional authority from all states (or Congress would have to single out one state for special treatment). The difficulty of prevailing over the interest of all 50 states rather than simply amending legislation that affects the interests of just one state should be apparent. It is past time to normalize nuclear waste with the rest of environmental law and NRDC sees this as the key to developing a durable consent-based approach.

4. Recommendation 4 – Address Storage In A Phased Approach Consistent With The Careful Architecture Of 2012’s S. 3469.

Efforts to initiate a temporary away-from-reactor storage facility – that are now, unfortunately, in process – must be inextricably linked with development of a permanent solution. This linkage, which is a crucial guard against a “temporary” storage facility becoming a permanent one, or essentially dictating the choice of a nearby site, should guide the legislative process. Consistent with the BRC’s findings, a case can only be made for interim storage if it is an integral part of the repository program and not as an alternative to, or *de facto* substitute for, permanent disposal.

Specifically, the only way in which NRDC could see merit in a pilot project is in a hardened building,⁵ located at one of the currently operating commercial reactor sites. These potential volunteer sites – operating commercial reactors – already have demonstrated “consent” by hosting spent nuclear fuel for years or decades. Far less of the massive funding that would be necessary in the way of new infrastructure would be required, and the capacity for fuel management and transportation is already in place, along with the consent necessary for hosting nuclear facilities in the first instance. Further, Congress would avoid entirely the ferocious fight that is sure to ensue with New Mexico and Texas citizens (and as happened with Utah and Tennessee) if they continue down the road with the DOE and the existing license applications in those states.

Rather than prematurely bypassing a careful, consent-based process that can arrive at protective, publicly accepted and scientifically defensible solutions, NRDC urges NRC and industry to focus spent fuel storage efforts on ensuring that all near-term forms of storage meet high standards of safety and security for the decades-long time periods that interim storage sites will be in use.

⁵ An example of such a hardened building is the Ahaus facility in Germany.

5. Recommendation 5 – Exclude Unsafe, Uneconomic Closed Fuel Cycle And Reprocessing Options From This Effort.

Both the BRC Recommendations and all the subsequent legislative iterations have, for the most part, wisely resisted inclusion of support for reprocessing, fast reactors, or other closed fuel cycle options as a corollary to new nuclear waste policy. We agree with relevant BRC findings, that there are “no currently available or reasonably foreseeable” alternatives to deep geologic disposal.⁶ As Senator Bingaman noted at the 2012 Energy & Natural Resources Committee hearing, “even if we were to reprocess spent fuel, with all of the costs and environmental issues it involves, we would still need to dispose of the radioactive waste streams that reprocessing itself produces and we would need to do so in a deep geologic repository.” At no point should this evolving nuclear waste process include support for closed fuel cycle options.

IV. Conclusion.

On one thing I hope we can all agree; the history of the federal nuclear waste program has been dismal. But decades from now others will face the precise predicament we find ourselves in today if Congress again tries to push through unworkable solutions contentiously opposed by states, lacking a sound legal and scientific foundation, and devoid of wide public acceptance and consent. Efforts to quickly restart the abandoned Yucca Mountain licensing process or fast track an interim storage facility will not work, lead to years of litigation, and thus derail needed efforts to find disposal sites. Unless and until Congress fundamentally revamps how nuclear waste is regulated and allows for meaningful state oversight by amending the AEA to remove its express exemptions of radioactive material from environmental laws, we’re doomed to repeat this dismal cycle until a future Congress gets it right.

We deeply appreciate the opportunity to testify today and I am happy to answer any questions.

⁶ BRC Final Report at 100.



Senate Committee on Environment and Public Works
Hearing entitled, "*Legislative Hearing on a Discussion Draft Bill, S. ____, Nuclear Waste Policy Amendments Act of 2019*"

May 1, 2019

Questions for the Record for Mr. Fettus (in italics)
Responses from Mr. Fettus Timely Filed June 6, 2019

Chairman Barrasso:

1. *The Nuclear Regulatory Commission (NRC) issued the Yucca Mountain Safety Evaluation Report in 2015. To complete the licensing process for the Yucca Mountain repository, the NRC's Atomic Safety and Licensing Board must adjudicate contentions raised by parties of the licensing proceeding. Is there value in completing the NRC's independent regulatory process to build public confidence in the robustness of the licensing process?*

Answer from NRDC:

Respectfully Mr. Chairman, there is no value in resuming the NRC's long-abandoned licensing process. A few of the reasons why we believe restarting the licensing process would not be valuable were detailed in my testimony, but I will briefly expand on those here.

Over the last thirty years, the process of developing, licensing, and setting environmental and oversight standards for the proposed Yucca Mountain repository was essentially rigged or dramatically weakened to ensure that the site could be licensed, rather than provide for safety over the length of time that the waste remains dangerous to public health and the environment. The process itself has thus always been compromised and continuing along this track would not build public confidence. How the Yucca Mountain site was selected and how the environmental standards were originally set and then repeatedly weakened are examples that illustrate this observation.

A. Site Selection

First, barely 4 years after the 1982 passage of the Nuclear Waste Policy Act (NWPA), 42 U.S.C. §10101, *et seq.*, the Energy Department (DOE) and then the Congress corrupted the site selection process within the NWPA. The original strategy contemplated DOE choosing the best four or five geologic media, then selecting a best candidate site in each media alternative, then narrowing the choices to the best three alternatives, and finally picking a preferred site for the

first of two repositories. And while dozens of sites in dozens of states were initially under consideration, the site selection guidelines were strongly criticized as DOE was accused of selecting sites that they had previously planned to pick. And in an act that illustrated support for this jaundiced but unfortunately accurate view, in May of 1986 DOE announced that it was abandoning a search for a second repository, and it had narrowed the candidate sites from nine to three, leaving in the mix the Hanford Reservation in Washington (in basalt), Deaf Smith Co., Texas (in bedded salt), and Yucca Mountain in Nevada (in unsaturated volcanic tuff).

What little equity remained in the site selection process was jettisoned entirely in 1987, when the Congress, confronted with a potentially huge cost of characterizing three politically chosen sites, amended the NWA of 1982, directing DOE to abandon the two-repository strategy and to develop only the Yucca Mountain site. The abandonment of the NWA site selection process led directly to the loss of support from the State of Nevada, substantially diminished Congressional support (except to ensure that the proposed Yucca site remains the sole site), and decreased public support for the Yucca Mountain project. The situation with respect to Yucca Mountain has only deteriorated since that time.

b. Radiation Standards

Radiation standards, the second track of the NWA process has, if possible, fared worse. Section 121 of the NWA of 1982 directs the Environmental Protection Agency (EPA) to establish generally applicable standards to protect the general environment from offsite releases from radioactive materials in repositories, and further directs the NRC to issue technical requirements and criteria. Unfortunately, it has been clear for years that the projected failures of the geologic isolation at Yucca Mountain are the determining factor in EPA's standards.

EPA repeatedly issued standards that are concerned more with licensing the site than establishing protective standards. EPA's original 1985 standards were vacated in part because the EPA had failed to fulfill its separate duty under the Safe Drinking Water Act, 42 U.S.C. §300h, to assure that underground sources of water will not be "endangered" by any underground injection. *Natural Resources Defense Council v. Environmental Protection Agency*, 824 F.2d 1258 (1st Cir. 1987).

EPA's second attempt at setting standards that allow for a projected failure of geological isolation was again vacated, this time by the United States Court of Appeals for the D.C. Circuit. The D.C. Circuit found that EPA's Yucca Mountain rule (and the corresponding NRC standard), which ended its period of required compliance with the terms of those rules at 10,000 years, was not "based upon or consistent with" the recommendations of the National Academy of Sciences ("NAS") as required by the 1992 Energy Policy Act and therefore must be vacated. *Nuclear Energy Institute, Inc., et al. v. EPA*, 373 F.3d 1251 (2004).

However, giving significant deference to the agency, the D.C. Circuit did not vacate EPA's strangely configured compliance boundary for the Yucca Mountain site. See the map of EPA's compliance boundary, NRDC Attachment 1, at the end of the document. Inside the oddly drawn line, the repository need not protect water quality and radiation is permitted to leak in any amount. The dramatically irregular line that represents the point of compliance has little

precedent in the realm of environmental protection, and its shape is perhaps more reminiscent of gerrymandered political districts. Rather than promulgate protective groundwater standards, EPA pieced together a “controlled area” that both anticipates and allows for a plume of radioactive contamination that will spread several miles from the repository toward existing farming communities that depend solely on groundwater and perhaps through future communities closer to the site.

EPA’s next proposed and revised rule, issued in 2005, retained the groundwater standards and 15 millirem/year radiation standard for the first 10,000 years, but then for the period after 10,000 years it did away with the groundwater standard entirely and established a 350 millirem/year radiation standard. This two-tiered standard fails to comply with the law and fails to protect public health, especially if the repository’s engineered barriers were compromised earlier than DOE predicts. On October 15, 2008, EPA published the final version of its revised Yucca Mountain rule in the Federal Register (“2008 Yucca Mountain rule,” 73 Fed. Reg. 61255-61289). The 2008 Yucca Mountain rule’s two-tiered individual protection annual dose standard establishes an initial 15 millirem first-tier limit, but weakens that limit to 100 millirem in the period after 10,000 years, when EPA projects peak dose to occur. Again, peak dose could occur significantly earlier if engineered barriers fail earlier than DOE and EPA have projected.

In any event, the final status of EPA’s most recent two-tiered rule remains fundamentally uncertain. In an action pending in the District of Columbia Circuit (*State of Nevada v. Environmental Protection Agency*, No. 08-1327, consolidated with No. 08-1345), Nevada has challenged EPA’s 2008 Yucca Mountain rule as once again failing to honor EPA’s statutory duty to protect public health and safety, and to proceed consistently with the National Academy of Science’s recommendations.

C. Current Status & Why The Licensing Proceeding Should Not Be Resumed.

The current status of the repository can best be described as a stalemate. The Obama Administration long ago decided that the project is unworkable and implemented the Blue Ribbon Commission for America’s Nuclear Future (BRC) process from 2009 to 2012 to start the way down another – consent based – road. Such a path will, however, take legislation and a substantial reworking of the NWP. In our testimony before this Committee just last month, NRDC proposed a set of meaningful legislative guideposts consistent with the bipartisan and careful recommendations of the (heavily weighted toward industry interests) BRC.

Whatever course the Trump Administration takes on these matters, and at more than two years into the term without aggressive policy suggestions beyond attempting to garner the authority to reclassify high level radioactive waste in the state of Washington, we remain perplexed as to why we are here addressing the Yucca Mountain project, which was rightly abandoned a decade ago.

And on a final, practical note, we urge the Committee to carefully consider our observation that restarting the Yucca Mountain process would be at best problematic, and likely waylay the process of developing a repository for years, if not forever. Without remotely straying into hyperbole, there are *dozens* of issues likely to be litigated at enormous length. One in particular is premised entirely on DOE’s design for titanium drip shields that are supposed to sit over each

of the thousands of waste canisters in Yucca Mountain's underground tunnels to keep out corroding water. Although DOE included the drip shields as part of the repository design, and NRC has accepted them for license-review purposes, there is no plan to design, license, pay for, and much less install the shields until at least 100 years after the waste goes in. This unacceptable state of affairs is detailed by former NRC Commissioner Victor Gilinsky.¹ Quite simply, Yucca's likely repository configuration doesn't come close to meeting NRC requirements.

This and other issues are anticipated to be vigorously litigated by the State of Nevada, which has filed more than 200 contentions challenging DOE's license application for Yucca Mountain. To put such a hearing process in perspective, NRDC concluded five years of a NRC licensing proceeding where not one party – not industry seeking the license, not NRC Staff, nor the environmental intervenors – had any interest or took any steps to functionally prolong or delay the proceeding beyond the rare extension of a short period of time for filing a pleading (something all parties found appropriate and necessary at various points).² And in the more than five years of this proceeding, *only three contentions* were fully litigated on their merits, not the more than 200 likely to be litigated for the Yucca license if the process were commenced. Any suggestion the Yucca licensing proceeding could easily restart and quickly move to a successful conclusion for permanent disposal is a fallacy. And when that inevitable litigation rightly waylays yet another effort at nuclear waste disposal, the damage to the nation's prospects of ever developing a repository may be permanent.

2. *Title IV of the discussion draft authorizes the Secretary of Energy to negotiate a benefits agreement with the State of Nevada, as well as counties. Do you support providing state and local benefits for hosting an interim storage or repository?*

Answer from NRDC:

NRDC strongly supports a broad range of appropriate items that could constitute a benefits package for the locations where the spent nuclear fuel and high-level radioactive waste (HLW) will ultimately be disposed of for the next several thousand years. However, we do not necessarily see the need for the development of such a package with Nevada as we do not believe the Yucca Mountain repository will ever be licensed for the reasons we articulated above and at the hearing. And further, NRDC supports a benefits package for the locations where the spent nuclear fuel is currently held, at operating and decommissioning reactor sites. The draft legislation offered by Senator Duckworth on this matter is an excellent starting point in the conversation of how to support the reactor communities that benefitted from the power generation and jobs, but will continue to host the waste generated there for years to come.

But turning to the larger point, while we believe that a benefits package is appropriate, far more important is altering the law as suggested in our testimony to provide the EPA and the relevant

¹ See *Yucca Mountain Redux*, Victor Gilinsky, Bulletin of the Atomic Scientist, November 5, 2014 (accessed July 29, 2016) <http://thebulletin.org/yucca-mountain-redux7800>.

² *In the Matter of Strata Energy, Inc.*, (Ross In Situ Recovery Uranium Project), Docket No. 40-9091-MLA, ASLBP No. 12-915-01-MLA.

states the direct regulatory authority over the waste, consistent with environmental law. State consent and public acceptance of a nuclear waste solution will never be willingly granted unless and until power to make such a decision as to how, when, and where such waste is disposed of is shared rather than decided by federal fiat. There is only one way that can happen consistent with the protective, cooperative federalism at the heart of environmental law. Specifically, Congress must finally end the Atomic Energy Act's (AEA) exemptions from environmental law. Our hazardous waste and clean water laws must have full authority over radioactivity and nuclear waste facilities so that EPA and – most importantly – the states can assert direct regulatory authority. This will necessarily alter the federalism oversight that has been central to the failure of the NWPA.

3. *The number of operating nuclear power plants is expected to drastically decrease in the next four years. What will happen if Congress and the Department of Energy further delay reconstituting a nuclear waste program and a significant number of power plants shut down?*

Answer from NRDC:

Your question suggests a correlation where there is none; to wit, suggesting that the failure of the nuclear waste program is somehow related to the impending closure of uneconomic nuclear reactors. The domestic nuclear waste program has had a consensus position since at least 1957, when the National Academies first stated that geologic repositories were necessary and the best solution. NRDC concurs with the finding of the National Academies. During all those decades (from 1957 to the current day) – a time period that includes the construction of more than 100 domestic commercial reactors built in this country – there has been no solution for nuclear waste. What was true in 1957 remains true this day. The glaring and unwise lack of a solution for nuclear waste has not halted or substantially perturbed the construction or operation of nuclear reactors in the United States.

By contrast, what has perturbed and halted reactor construction in the United States (and globally) are the gigantic up-front costs of building nuclear reactors and a distinct lack of economic competitiveness in modern energy markets. As of now, with decades of subsidies and protections such as the federal assumption of liability in the case of an accident and the waste burden that is the subject of this hearing, nuclear power represents approximately 19 percent of all U.S. electricity production (and 11% of production worldwide), and the U.S. nuclear plant fleet comprises 98 reactors at 61 facilities across 30 states. Most of the plants were designed and constructed in the 1960s and 1970s and almost all reach the end of their 60-year operating licenses in the 2030s and 2040s. A portion of these reactors are at risk of closing before their license end dates because they are no longer economical, perhaps with looming safety issues, and cannot compete in the marketplace, often because of the low price of natural gas and renewable energy and in some cases due to the need to replace expensive major components. The delays and failures of the waste program have little to no bearing on the market failures of the nuclear industry.

4. Is nuclear energy a key component to reducing carbon dioxide emissions?

Answer from NRDC:

To the extent the current domestic fleet operates safely and economically, we believe those reactors will continue to play a role in producing low carbon electricity for some indeterminate period of time, but we do not see new reactors playing a key role in the near future for our massive need to reduce carbon with all speed.

We concur that nuclear power's beneficial low-carbon attributes are important to consider in a warming world, but we must take seriously the significant safety, global security, environmental, and economic risks that this technology imposes on society. This reality demands stringent regulation of the complete nuclear fuel cycle, beginning with the mining and milling of uranium and ending with the final disposal of radioactive wastes. The 2011 Fukushima nuclear disaster in Japan, the worst since Chernobyl, illustrates some of these risks. Until these risks are properly mitigated, expanding nuclear power will not be a leading strategy for diversifying America's energy portfolio and reducing carbon pollution. More practical, economical, and environmentally sustainable approaches to reducing U.S. and global carbon emissions are available, including the widest possible implementation of energy efficiency throughout the economy, and the adoption of policies to accelerate the commercialization of clean, flexible, renewable energy technologies.

Next, and going directly to the point of the question on the need to reduce carbon emissions, we don't see the nuclear industry as producing an increasing share of our low carbon needs. This is because perennial talk of a "nuclear renaissance" by industry advocates has repeatedly been hollow. Indeed, the nuclear sector has been plagued by poor economics and renewed concern about nuclear safety following the Fukushima disaster.

There are currently only two nuclear reactors under construction in the U.S., both at the troubled Vogtle project in Georgia. The costs of that project keep increasing, and are now estimated to top \$28 billion, in part because of delays in construction tied to the bankruptcy of nuclear supplier Westinghouse. Southern Co., the plant's primary owner, scrambled to avoid having its partners withdraw from the project in late October and had to accept greater responsibility for any future cost overruns. A similar project under construction in South Carolina, V.C. Summer, was scrapped by that state last year as costs skyrocketed. No other applications are pending to build a new reactor.

Thus, at best, the future of nuclear energy in the United States is uncertain. The existing and aging reactors are in decline, not economically competitive in many instances, and unlikely to be replaced by nuclear options in any near-term scenario. More pointedly, entrepreneurial projects promoting alternate reactor designs such as small modular, molten salt, liquid metal, high-temperature gas-cooled, and pebble bed reactors currently lack data from a design prototype by which to rigorously evaluate their safety, reliability, and economics. The recent fate of the nuclear start-up company Transatomic Power is a cautionary tale: this alternate reactor design,

once heralded as an important tool to mitigate climate change, was instead exposed as based on engineering miscalculations, and the company folded.³

To the extent that new nuclear reactor design projects go forward with public money, NRDC has five prescriptions for such federal programs: give priority to solving the nuclear waste problem; learn from mistakes in recent nuclear construction; consistently apply a nuclear weapons proliferation test to advanced nuclear designs; consider the full impacts of the nuclear fuel cycle associated with advanced nuclear reactors, including severe accidents; and get clarity on the economic competitiveness for advanced nuclear designs early on.

5. *Does a Federal government nuclear waste management program increase public confidence in nuclear energy generally?*

Answer from NRDC:

NRDC respectfully suggests that attributing the failures of the federal nuclear waste management program to certain Senators, to Nevada Governors of both parties, to NRC Commissioners, and even to the public for failing to accept its part in disposing of nuclear waste, does not increase confidence in nuclear energy. As we detailed in our testimony, the failure here has many parents, and chief among them were efforts to weaken environmental standards rather than strengthen them, and always to ensure the site would be licensed, no matter the end result. These are actions that decrease public confidence in nuclear energy and its attendant harms.

Altering the current unsound legal framework to ensure that the nuclear industry complies with strong, protective, and comprehensive environmental laws as laid out in our testimony (NRDC May 1 Testimony, at 6-14), would undoubtedly assist the public perception of nuclear energy.

Ranking Member Carper:

Please provide a response to each question, *including each sub-part*.

6. *During the hearing, we talked briefly about the successful siting of the Waste Isolation Pilot Plant, WIPP, in New Mexico, which today accepts mid-level defense waste. You mentioned that the state was able to maintain control of the site by using its authorities under the Resource Conservation and Recovery Act (RCRA).*
- Please elaborate why RCRA authority helped the state and local community to be willing to accept WIPP?*
 - Today, could a state with a site designated as a high-level waste depository have the same authority under RCRA as New Mexico has with WIPP?*
 - What changes to current law, if any, would be needed to allow a state to have such authority?*

³ Temple, J. "Nuclear Energy Startup Transatomic Backtracks on Key Promises." (2017).

NRDC Answer:

Answer to a. *Please elaborate why RCRA authority helped the state and local community to be willing to accept WIPP?*

As a starting point to answer your multi-part question, as we are sure you are aware, most federal environmental laws expressly exclude “source, special nuclear and byproduct material” from the scope of health, safety, and environmental regulation by EPA or the states, leaving the field to DOE and NRC. In the absence of clear language in those statutes authorizing EPA (or states where appropriate) to regulate the environmental and public health impacts of radioactive waste, DOE retains broad authority over its vast amounts of radioactive waste, with EPA and state regulators then only able to push for stringent cleanups on the margins of the process.

Specifically, this means states have exerted what control they can over DOE cleanups and nuclear waste sites (such as the Hanford site in Washington or WIPP in New Mexico) via their RCRA authority, pursuant to which states can control the regulation of the hazardous component of mixed radioactive and hazardous wastes. 42 U.S.C. §6901 *et seq.* RCRA allows states to apply for EPA authorization to administer a hazardous waste program. 42 U.S.C. § 6926(b). In order to receive this authorization, a state hazardous waste program must be “equivalent” to the RCRA Subtitle C (42 U.S.C. §§ 6921–6939e) program established by EPA, must be “consistent” with the federal and state programs applicable in other states, and must provide for “adequate enforcement.” *Id.* The state-issued requirements authorized by EPA operate in lieu of equivalent federally-issued requirements in the federal program, and the authorized requirements become requirements of RCRA Subtitle C. 42 U.S.C. § 6926(b); 40 C.F.R. pt. 271. States may adopt requirements that are more stringent than federal law. 42 U.S.C. § 6929.

EPA has authorized the State of New Mexico to administer its hazardous waste program in lieu of RCRA,⁴ but this is an area with a long history of fraught litigation. We need not recite it all, but succinctly, the State of New Mexico was only able to establish its RCRA authority over the WIPP site in the mid-1990s after ferocious litigation. *See, New Mexico v. Watkins*, 969 F.2d 1122 (DC. Cir. 1992). And to the extent there is any meaningful public acceptance of the continuance of WIPP operations (especially after the fire and explosion of 2014),⁵ it is via the state’s ability to halt operations and shut the site down for cleanup operations to protect workers and the environment, pursuant to the powers listed in the paragraph above. Indeed, the 2012 BRC Report discusses New Mexico’s efforts to regulate aspects of WIPP under RCRA as a critical positive element in the development of the currently active site (BRC Final Report at 21).

⁴ It should be noted, however, that Section 9(a) of the WIPP Land Withdrawal Act, Public Law 102-579, as amended, exempts WIPP from compliance with the RCRA land disposal restrictions. *See also*, <https://www.env.nm.gov/hazardous-waste/hazardous-waste-regulation-and-authorization/>.

⁵ *See e.g., Nuclear accident in New Mexico ranks among the costliest in U.S. history*, Ralph Vartabedian, Los Angeles Times, Aug. 22, 2016, found online at <https://www.latimes.com/nation/la-na-new-mexico-nuclear-dump-20160819-snap-story.html>.

Answer to b. *Today, could a state with a site designated as a high-level waste depository have the same authority under RCRA as New Mexico has with WIPP?*

A state could attempt to assert such authority, but considering DOE's and NRC's aggressive use of their preemptive authority with respect to radioactivity, we would expect years, if not decades, of contentious litigation on the precise contours of that asserted state authority. What the final result of those years of litigation would be, at this juncture we wouldn't hazard a guess. Bluntly, as we have seen for decades, states can attempt to consult with NRC and DOE, but the agencies can, and will, assert preemptive authority where they see fit. This has happened time and again at both commercial and DOE nuclear facilities. This outdated regulatory scheme is the focal point of the distrust that has poisoned federal and state relationships involved in managing and disposing of HLW and spent nuclear fuel, with resulting significant impacts on public health and the environment.

Answer to c. *What changes to current law, if any, would be needed to allow a state to have such authority?*

A meaningful and appropriate role for states in nuclear waste storage and disposal siting can be accomplished in a straightforward manner by amending the AEA to remove its express exemptions of radioactive material from environmental laws. The exemptions of radioactivity make it, in effect, a privileged pollutant. Exemptions from the Clean Water Act and RCRA are at the foundation of state and, we submit, even fellow federal agency distrust of both commercial and government-run nuclear complexes. Removing the exemptions would make the treatment of radioactive waste consistent with every other bedrock environmental law. If EPA and the states had full legal authority and could treat radionuclides as they do other pollutants under environmental law, clear cleanup standards could be promulgated, and the Nation could be much farther along in remediating the toxic legacy of the Cold War. Further, we could likely avoid some of the ongoing legal and regulatory disputes over operations at commercial nuclear facilities.

7. *Besides providing states the opportunity to have more control over a repository, are there any other aspects of a consent based process – including incentives –which you think would be critical for success in siting a new permanent high-level waste repository location?*

NRDC Answer:

As we noted above, the draft legislation offered by Senator Duckworth on this matter is an excellent starting point in the conversation of how to support the reactor communities that benefitted from the power generation and jobs, but will continue to host the waste generated there for years to come. But to be precise, it's not simply "more control" for states that is necessary. Indeed, states have literally no control under the current process and must avail themselves of a wide array of techniques to fend off becoming the unwilling recipient of the entire store of the nation's spent fuel and high-level radioactive waste. If EPA and the states had full legal authority and could treat radionuclides as they do other pollutants under environmental law, clear cleanup standards could be promulgated and states could negotiate from a position of

power on what terms, what amounts, and in what manner this national challenge could be met. Until we solve that part of the equation, we have 50 years of evidence the waste will remain right where it is – dangerous, above ground, and in the human environment.

8. *Do you agree that the nation should be looking to have multiple permanent high-level waste repositories across the country – rather than one central location? If so, why?*

NRDC Answer:

Yes, NRDC agrees that the nation should look at multiple sites across the country. But with that thought in mind, we have a sequencing caution that accompanies this answer.

To avoid repeating failures of past decades and consistent with the bipartisan BRC recommendations, both the standards for site screening and development criteria must be in final form *before* any sites are considered. Generic radiation and environmental protection standards must also be established prior to consideration of sites. To give this recommendation explicit and simple context, Senator Bingaman's 2012 legislative effort (S.3469, specifically in Sections 304, 305, and 306) set in place some of the necessary structures that could avoid repeating the failure of the Yucca Mountain process. Specifically, the bill would have directed EPA to adopt, by rule, broadly applicable standards for the protection of the general environment from offsite releases of radioactive material from geologic repositories. The bill also directed NRC to then amend its regulations governing the licensing of geological repositories to be consistent with any relevant standard adopted by EPA. Further, embedded in Senator Bingaman's bill was the requirement that the polluters pay the bill for the contamination created. This bipartisan concept has long history as bedrock American law and must remain in full force in any legislation.

These requirements and this phasing of agency actions in Senator Bingaman's bill were appropriate (i.e., first EPA sets the standards and then NRC ensures its licensing process meets those standards) – and we have recommended how to expand and improve on this coherent legal framework by removing the environmental exemptions in the AEA. But in any event, it is key that a coherent legal framework be in place before siting decisions get made. Unfortunately, recent iterations of nuclear waste legislation, including this Discussion Draft, ignore this wise sequencing, thus ignoring BRC's recommendation that new, applicable rules be in final form before site(s) selection.

9. *Some have suggested that the Department of Energy should no longer have authority over our nation's permanent high-level nuclear waste repository. Do you agree with that view, and, if so, who should have the authority? If you feel a federal corporation should have the authority, what guardrails are needed to ensure that safety and states' rights are preserved in the siting of a permanent high-level waste repository?*

NRDC Answer:

We will answer the last question first – *what guardrails are needed to ensure that safety and states' rights are preserved in the siting of a permanent high-level waste repository* – by stating

that a coherent legal framework must be in place before siting decisions get made and reiterating that EPA and the states must have RCRA authority over radioactivity, as we described in our testimony.

Further, we have not fully formed our opinion on whether DOE should no longer have authority over the repository program. We believe a federal entity accountable to bedrock environmental laws and to Congress must be in place to run the program. Whether that entity is at DOE or, for example, a new federal agency that is governed by a board of directors, is an issue we think can be addressed after the fundamental flaws in the NWPA are dealt with. In any case, the success of any legislative outcomes will depend on a consensus process that includes— (1) recognizing that repositories must remain the focus of any legislative effort; (2) creating a coherent legal framework before commencing any geologic repository or interim storage site development process; (3) arriving at a consent-based approach for nuclear waste storage and disposal via a fundamental change in law; (4) addressing storage in a phased manner; and (5) excluding polarizing closed fuel cycle and reprocessing options from this effort to implement the interim storage and ultimate disposal missions.

10. Are there examples that we can learn from the high-level waste management experiences of other countries – such as Sweden and Finland – that could help us with our nuclear waste issues in this country?

NRDC Answer:

Without a doubt, we can always learn from the experiences (and parallel failures) of other countries, and this is especially true with respect to scientific analyses of geologic media, engineered barriers, waste forms, protective and useful canisters, and transportation. But the nuclear waste challenges faced by the United States are uniquely difficult due to the sheer expanse and legacies of our commercial sector and nuclear weapons program, overlaid by a federal system of states with sovereign power that can and will challenge the power of the federal government. As we noted in our testimony, state consent and public acceptance of a nuclear waste solution will never be willingly granted unless and until power to make such a decision as to how, when, and where such waste is disposed of is shared rather than decided by federal fiat. This is a peculiarly American challenge and the one way that it can happen consistent with the protective, cooperative federalism that rests at the heart of our domestic environmental law is for Congress to finally end the AEA's exemptions from environmental law.

11. Nuclear waste policy has divided this country for far too long. Having listened to others on the witness panel during the hearing, would you provide this Committee with one course of action where there is agreement among the panel members?

NRDC Answer:

There were a few areas where there was important agreement among the panel members. One example was where Xcel's witness, Mr. O'Connor, stated the company's intent to "be carbon-free by 2050 ... and to achieve 100 percent, we think that maintaining a technology-neutral or

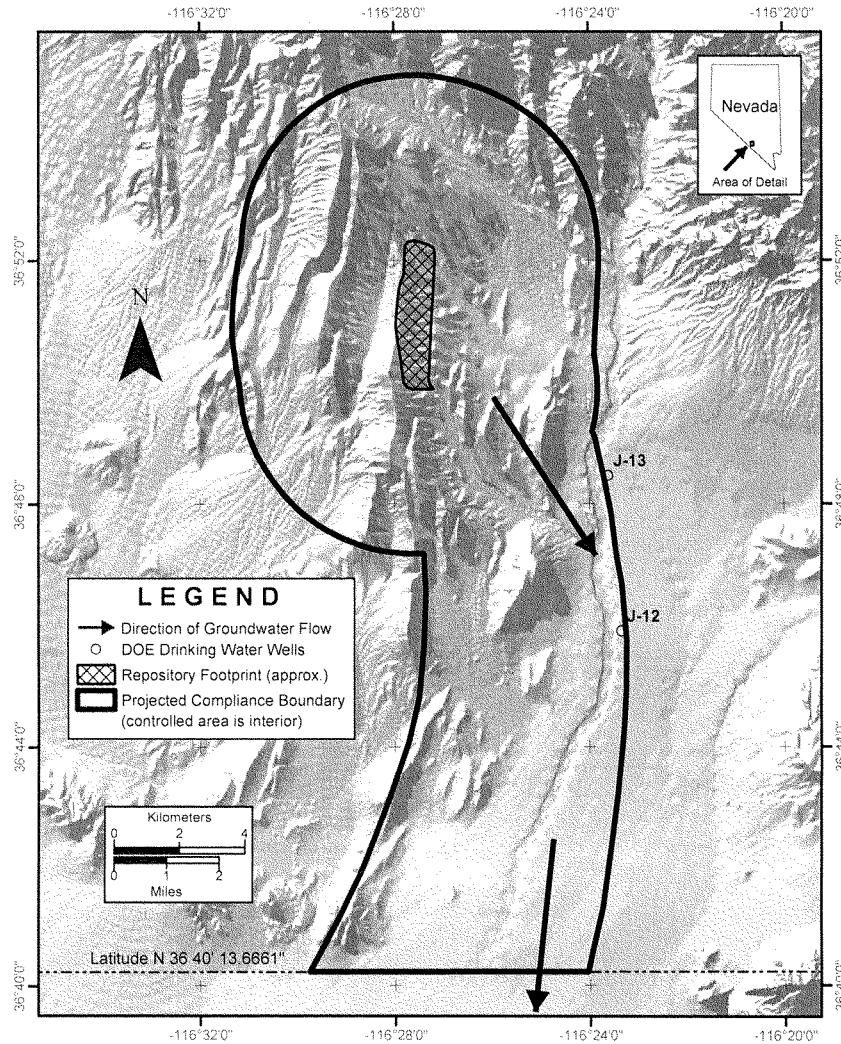
open to all technologies, included advanced nuclear, provided it is affordable and provides the needs, it is dispatchable in the way that our grid needs it, would be useful.” See Hearing Transcript at 42, 43. NRDC is in full agreement with and support of this goal, regardless of our differing views on the likely pathways for a 100 percent carbon free goal to be met. For a view of NRDC’s understanding of the pathways to a carbon free future, please see our Pathways report.⁶

Another example is our common understanding of the profound technical challenges associated with the disposal of nuclear waste. Senator Capito, looking for consistency among the panelists, asked the following: “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.” Hearing Transcript at 60. Mr. O’Connor responded, “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.” *Id.* at 60, 61. Mr. O’Donnell responded, “Thank you, Senator. I have nothing really to add on that. I think it is essentially the same.” *Id.*, at 61. If we can agree on the technical particulars of what’s facing us, that is at least an important starting point and a statement of shared understanding.

⁶ See *America’s Clean Energy Frontier: The Pathway to a Safer Climate Future*, Vignesh Gowrishankar & Amanda Levin, September 19, 2017, found online at <https://www.nrdc.org/resources/americas-clean-energy-frontier-pathway-safer-climate-future>.

Projected Groundwater Standards Compliance Boundary for Spread of Radioactive Contamination at the Yucca Mountain Project

Measurement of Radioactive Contamination Takes Place Outside of Controlled Area



NRDC produced this visual representation from the following information:

"The controlled area may extend no more than 5 km in any direction from the repository footprint, except in the direction of groundwater flow. In the direction of groundwater flow, the controlled area may extend no farther south than latitude 36°40' 13.6661" North ... [T]he size of the controlled area may not exceed 300 square km." 68 Fed. Reg. at 32117 (June 13, 2001). The direction of groundwater flow is from FEIS (February 2002) at 5-21, Figure 5-3. The repository footprint is from the Yucca Mountain Science and Engineering Report, DOE/RWV-0539, at 1-17, Figure 1-3, and the area is approximately 4.27 square km. The area within the projected compliance boundary, as shown in this map, is about 230 square km. The relief image was created from a 1 arc-second Digital Elevation Model from the USGS National Elevation Dataset, April 2002. This map is based on a Nevada State Plane Central projection, North American Datum 1927.



Senate Committee on Environment and Public Works
Hearing entitled, “Legislative Hearing on a Discussion Draft Bill, S.____, Nuclear Waste
Policy Amendments Act of 2019”

May 1, 2019

Additional Questions for the Record for Mr. Fettus (in italics)

Responses from Mr. Fettus Timely Filed July 17, 2019

Senator Markey:

1. *What steps would you take to improve safety and security standards for the transport of nuclear waste by rail?*
 - A. *How old are the current rail safety standards for nuclear waste?*
 - B. *Do you think that the current standards for spent nuclear fuel shipping containers, which specify that packages must be able to survive a 30-foot drop and a 30-minute fire, are sufficient to protect against modern transport accidents?*

Answer from NRDC:

- A. The Nuclear Regulatory Commission (NRC) updated its analysis of high-level waste and spent nuclear fuel transport risk in 2014 (“Spent Fuel Transportation Risk Assessment,” NUREG 2125 (Jan. 2014)), and the transport accident standards in 10 CFR §71.73 were last updated in 2004. NRC updated security requirements for high-level waste transport in 2013.¹
- B. No. The current standards in some respects are unrealistic. NRDC has not recently commissioned an analysis from a transportation expert, as we currently do not see the substantial likelihood of an impending interim or long-term repository option, thus we are not investing our scarce resources in such an analysis at this time. However, we are aware of substantial and credible controversy over the adequacy of the system. For nearly two decades, the State of Nevada has raised serious concerns about the adequacy of the

¹ See, *Physical Protection of Irradiated Reactor Fuel in Transit*, 78 Fed. Reg. 29520, May 20, 2013, found online at <https://www.govinfo.gov/content/pkg/FR-2013-05-20/pdf/2013-11717.pdf>.

current standards on just the issues you note above.² The updates in 2004, 2013 and 2014 by the NRC in no way addressed all of the concerns raised by Nevada and others.

Indeed, as President Obama's Blue Ribbon Commission for America's Nuclear Future noted in its 2012 report, "the current set of transport-related regulations will need to be updated to accommodate changes in fueling practices. Moreover, past performance does not guarantee that future transport operations will match the record to date, particularly as the logistics involved expand to accommodate a much larger number of shipments." BRC Final Report at xiii.

To cite just a few of the meaningful criticisms that will need substantial updates and re-analysis long before shipments could ever be ramped up; are the scenarios – and any associated modeling and testing of accidents – conservative in term of routes and potential mishaps? Here, we urge conservatism with respect to analysis of casks falling from substantial heights, accidents caused by high speed, casks being submerged for long periods, and casks subject to fires and high heat (such as tunnel incidents). Indeed, we have specific concerns that the standards do not explicitly require physical testing.³ All of this will need substantial reworking to ensure the public health and environment will be protected in the event we finally do get a repository program (and thus a massive potential ramping up in the number of shipments) back on track.

Senator Markey:

2. *Residents around the country with decommissioned or soon-to-close nuclear plants are grappling with the threat of indefinite storage of nuclear waste within their communities to which they did not consent. How would your nuclear waste management proposal, as laid out in your testimony, seek to address these concerns?*

Answer from NRDC:

With the evidence of fifty years of failure to develop a meaningful solution for nuclear waste, we hope to put all of that in the rear-view mirror with our proposal – that is, essentially, amending

² See Letter from Nevada Governor Guinn to the Honorable Senator Harry Reid, regarding a report entitled, "Radiological Consequences of Severe Rail Accidents Involving Spent Nuclear Fuel Shipments to Yucca Mountain: Hypothetical Baltimore Rail Tunnel Fire Involving Spent Nuclear Fuel." Found online at <http://www.state.nv.us/nucwaste/news2001/nn11458.htm>. The referenced report can be found online at <http://www.state.nv.us/nucwaste/news2001/nn11459.htm>.

³ See NRC "Spent Fuel Transportation Risk Assessment," NUREG 2125 at 9 (Jan. 2014) ("The tests are performed on a package design (either physically using a full-scale prototype or sub-scale test unit, or via computational modeling), but not on every package that will be used to transport SNF. A package designer may create computer models to evaluate the performance of a package design or components of the package design, build full-size or scale model packages for physical testing, or incorporate references to previous satisfactory demonstrations of a similar nature. In practice, the safety analysis performed for Type B packages often incorporates a combination of physical testing, computer modeling, and engineering evaluation.").

the AEA to remove its express exemptions of radioactive material from environmental laws. The exemptions of radioactivity make it, in effect, a privileged pollutant. Exemptions from the Clean Water Act and RCRA are at the foundation of state and, we submit, even fellow federal agency distrust of both commercial and government-run nuclear complexes. Removing the exemptions would make the treatment of radioactive waste consistent with every other bedrock environmental law.

Specifically, normalizing the treatment of nuclear waste with environmental laws by expanding the reach of hazardous waste laws to include radioactivity would not simply offer “more control” for states, although that is necessary. What it would start to rectify, importantly, is the reality that states have literally no control under the current process and must avail themselves of a wide array of techniques to fend off becoming the unwilling recipient of the entire store of the nation’s spent fuel and high-level radioactive waste. If EPA and the states had full legal authority and could treat radionuclides as they do other pollutants under environmental law, clear cleanup standards could be promulgated and states could negotiate from a position of power on what terms, what amounts, and in what manner this national challenge could be met. Simply put, states could trust that they could agree to accept a specific portion of the nation’s nuclear waste without fearing that they would open the door to the entire expanse of the burden.

Indeed, one could imagine as a first step delegated states requiring better and more protective storage configurations (say, for example, not directly on the beach/shoreline in California) than what is currently allowed for. But crucially, to avoid the mistakes of the past and address the communities’ concerns in your question, NRDC strongly urge that we give these communities confidence that the repository program is on track and looking at multiple sites around the country, but in a way that supports equitable, sound and careful solutions. Thus, we have a sequencing caution that accompanies this answer.

To avoid repeating failures of past decades and consistent with the bipartisan BRC recommendations, both the standards for site screening and development criteria must be in final form *before* any sites are considered. Generic radiation and environmental protection standards must also be established prior to consideration of sites. To give this recommendation explicit and simple context, Senator Bingaman’s 2012 legislative effort (S.3469, specifically in Sections 304, 305, and 306) set in place some of the necessary structures that could avoid repeating the failure of the Yucca Mountain process. Specifically, the bill would have directed EPA to adopt, by rule, broadly applicable standards for the protection of the general environment from offsite releases of radioactive material from geologic repositories. The bill also directed NRC to then amend its regulations governing the licensing of geological repositories to be consistent with any relevant standard adopted by EPA. Further, embedded in Senator Bingaman’s bill was the requirement that the polluters pay the bill for the contamination created. This bipartisan concept has long history as bedrock American law and must remain in full force in any legislation.

These requirements and this phasing of agency actions in Senator Bingaman’s bill were appropriate (i.e., first EPA sets the standards and then NRC ensures its licensing process meets

those standards) – and we have recommended how to expand and improve on this coherent legal framework by removing the environmental exemptions in the Atomic Energy Act. But in any event, it is key that a coherent legal framework be in place before siting decisions get made.

As a later step, after the passage of strong site screening and development criteria and associated radiation and environmental protection standards, one could envision a process for regional repositories where not all but some significant portion of the country's nuclear waste would be disposed of permanently. A state might negotiate and ultimately assent to such a thing because unlike now, that state would, consistent with a strict and protective regime of federal environmental law, have the ability to limit, halt, and restrict whatever amount of nuclear waste in question according to a precise set of protective terms. And it could do so with the clear understanding and with unstinting confidence that it would not, no matter what, become the unwilling recipient for all the nation's nuclear waste. Until we solve this institutional part of the equation, we have 50 years of evidence the waste will remain right where it is – dangerous, above ground, and in the human environment.

Thus, we are confident the imposition of environmental laws on nuclear waste will lead to improved protections for the communities that host the waste during the pendency of years the waste will remain in place, at reactors. Our proposal will also provide important leverage to ensure transition assistance is available as the nuclear industry continues to decommission more and more of the domestic reactor fleet. And on a final note, NRDC supports a benefits package for the locations where the spent nuclear fuel is currently held, at operating and decommissioning reactor sites. The draft legislation offered by Senator Duckworth on this matter is an excellent starting point in the conversation of how to support the reactor communities that benefitted from the power generation and jobs but will continue to host the waste generated there for years to come.

Senator Markey:

3. *The Pilgrim Nuclear Plant in Plymouth, Massachusetts announced that it would move its Independent Spent Fuel Storage Installation (ISFSI) to a site farther away from the coastline, following concerns over the potential for climate impacts and sea level rise to affect the integrity of the dry casks. Do you believe the Nuclear Regulatory Commission is sufficiently considering climate projections in its approval and inspection process, and if not, how could it better integrate climate science?*

Answer from NRDC:

No, the NRC is not sufficiently considering climate projections in its approval and inspection process. We have several examples of this, but one is in active litigation before the Commission and the Atomic Safety & Licensing Board, so we will not go into detail on those matters. Suffice to say that the NRC could and should better integrate rapidly developing climate science if it dramatically reworked its environmental reviews under the National Environmental Policy Act,

42 U.S.C. §4321, *et seq.*, to include a thorough review of sea level rise impacts and direct water impacts. Notably, about two-thirds of the thermal energy produced in a nuclear reactor is discharged to the environment as waste heat,⁴ frequently pushing temperatures in receiving lakes and rivers beyond both their ecological carrying capacities and legal limits on the temperature of the receiving waters.⁵ Also, conversely, a nuclear reactor can also consume water more intensively than any other power generation technology—at the rate of 2400 gallons per million BTU.⁶ These impacts, in an overheating, carbon constrained world, pose serious potential problems and the agency has shown little inclination to seriously grapple with them.

Turning to the recent developments at the Pilgrim site in your home state, the new Independent Spent Fuel Storage Installation (ISFSI) site will increase spent fuel storage capacity, elevation and distance from the shoreline, which we depict in the image below. The image also includes various sea level rise scenarios. Under a 1.5C global warming scenario (RCP4.5), which we are not expected to meet, mean sea level is expected to see a rise between 0.62ft to 1.08ft by 2065. In the image provided, a 1ft sea level rise is indicated in dark red. Nonetheless, this image does not take into consideration storm surge. From 2015 analysis from the Union of Concerned Scientists, local intense precipitation events can result in flooding up to 23.5 feet above mean sea level in the north and west sides of the plant, up to 25.2ft above mean sea level in the south sides of the plant. As the existing ISFSI pad sits just 25ft above mean sea level, moving the site's spent nuclear fuel to the proposed location is wise.

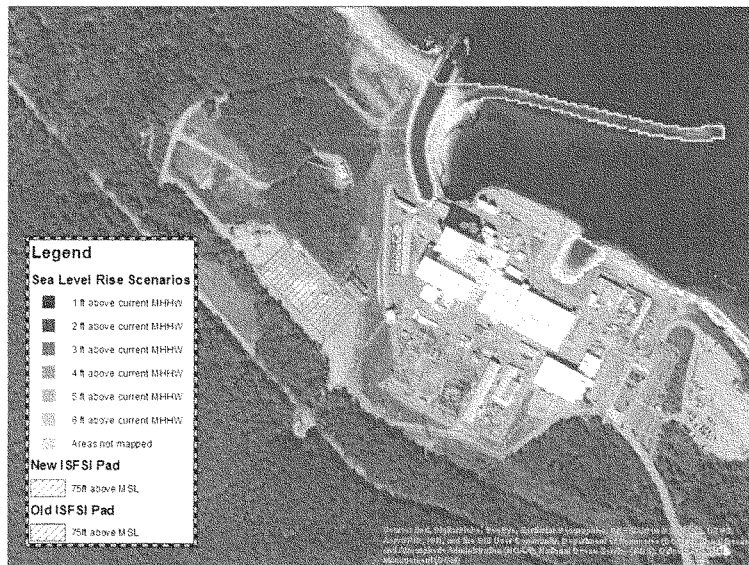
	Elevation (ft above mean sea level)	Distance from shoreline (ft)	Cask capacity
Existing ISFSI	25	200	40 casks
New ISFSI	75	700	70 casks

⁴ David Lochbaum, Union of Concerned Scientists, *Got Water?* at 2, (2007), found online at https://www.ucsusa.org/sites/default/files/legacy/assets/documents/nuclear_power/20071204-ucs-brief-got-water.pdf.

⁵ See generally Pollution Issues, Thermal Pollution, <http://www.pollutionissues.com/Te-Un/Thermal-Pollution.html>.

⁶ Tamim Younos et al., Va. Polytechnic Inst. & State Univ., Va. Water Res. Research Ctr., *Water Dependency of Energy Production And Power Generation Systems*, 8 Tbl.4 (2009).

Pilgrim Nuclear Station
Independent Spent Fuel Storage Installation (ISFSI) Sites



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, No. 1, a Washington Post editorial entitled Put Yucca Mountain to work. The nation needs it. Second, a Chicago Tribune editorial entitled Revive 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:]

The Washington Post

The Post's View Opinion

Put Yucca Mountain to work. The nation needs it.

By Editorial Board

July 15, 2017

ENERGY SECRETARY Rick Perry traveled to Capitol Hill last month, asking Congress for \$28 billion in funding for everything from nuclear weapons to clean-coal research. Yet one of the most controversial elements in his department's budget proposal was a request for a relatively tiny \$120 million — to restart work on Nevada's Yucca Mountain nuclear waste storage site.

Congress decided in the 1980s that Yucca was to be the permanent home of the country's large and increasing pile of spent nuclear fuel. In a forbidding desert landscape about 100 miles outside Las Vegas, the site would appear to be an ideal choice for an unbreachable underground vault. The federal government spent more than \$15 billion studying the place. Just a couple of years ago, the Nuclear Regulatory Commission found that the facility would be technically sound, considering everything from seismic activity to accidental human intrusion, on time scales of up to a million years. Locals in Nye County, which would stand to benefit from employment related to the site, are on board.

But practically everyone else in Nevada opposes the Yucca project, and state leaders have waged a so-far successful not-in-my-back-yard campaign, even though federal law is clear that the site is to be the nation's nuclear waste storehouse. The state has denied the Energy Department the water rights it would need to build the depository. For years, then-Senate Majority Leader Harry M. Reid (D-Nev.) successfully blocked funding for its development, with the help of President Barack Obama, who made an exception for swing-state Nevada from his pledge to run a science-based administration.

With Mr. Reid and Mr. Obama both retired, the Trump administration and GOP leaders are trying to revive the project. Work is furthest along in the House, where a bill jump-starting Yucca's approval is advancing quickly. Yet it faces a tough road: Nevada's congressional delegation will fight it tooth-and-nail.

It's past time the opposition was sidelined for good. The nation's nuclear regulators have found that technical hurdles can be overcome; the biggest barriers to developing the site are political. Congress should re-fund Yucca Mountain and finally end this gratuitous fight.

But that is hardly all lawmakers need to do. No matter what happens with Yucca, the country should move its stocks of waste, which have piled up at nuclear plants, to interim storage sites, where they will be secured more safely and cheaply while the permanent depository is permitted and constructed. With the messy Yucca process in mind, an Obama-era blue-ribbon commission on nuclear waste recommended enticing localities to volunteer to host waste sites with the significant economic benefits that such facilities can bring to isolated communities. Though perhaps few places would volunteer, a cooperative approach could result in a smoother process and is worth a try. Congress has considered legislation along these lines before. It should do so again.

The nation's nuclear power plants generate massive amounts of electricity with practically no carbon dioxide emissions. Answer the waste question, and the technology will look all the more valuable.

Read more:

Letters to the Editor: Yucca Mountain is an ideal site for nuclear disposal

The Post's View: Back to Yucca Mountain

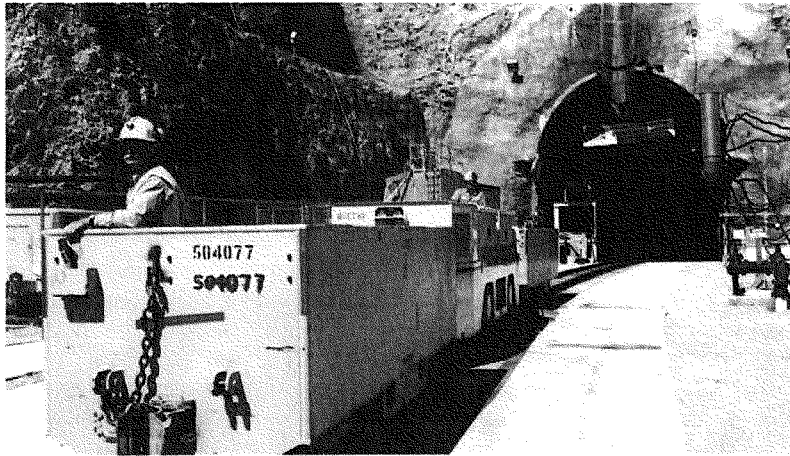
Letters to the Editor: Refueling the Yucca Mountain debate

The Post's View: A bankruptcy that's bad news for climate policy

Jennifer Rubin: Things just got worse for the GOP's weakest senator

 **23 Comments**

Editorial: Revive Yucca Mountain: Illinois has more nuclear waste than any other state, all of it in temporary storage



The Yucca Mountain nuclear waste storage facility in Nevada is back in the news with President Donald Trump's budget proposal including \$120 million to revive the project. (Isaac Brekken / AP 2006)

By **Editorial Board**

APRIL 11, 2017, 5:14 PM

It has been 30 years since Congress designated Nevada's Yucca Mountain as the secure site for the nation's nuclear waste. Since then, taxpayers have coughed up \$11 billion creating a repository 1,000 feet underground that would keep the radioactive refuse permanently sealed off. As yet, it's still empty. But that could finally change.

Yucca Mountain is in a remote section of the Mojave Desert. But many people in Nevada didn't want the waste, no matter how safe or isolated the storage facility may be. It was the ultimate NIMBY project. One of those opponents, alas, was Harry Reid, who for 10 years was Senate Democratic leader and in a position to get his way. As president, Barack Obama gave Reid exactly what he wanted, closing down the entire effort.

Obama's capitulation defied scientific evidence as well as common sense. A study released by the Nuclear Regulatory Commission in 2014 concluded that the design met all of the agency's requirements. The "proposed repository as designed will be capable of safely isolating used nuclear fuel and high-level radioactive waste for the 1-million-year period specified in the regulations," the NRC said. That's right: 1 million years.

But the technical merits of the facility were, regrettably, beside the point. In 2011, the nonpartisan federal Government Accountability Office found that the Obama administration's "decision to terminate the Yucca Mountain repository was made for policy reasons, not technical or safety reasons."

Now that decision stands to be reversed, as it should be. Energy Secretary Rick Perry toured the facility in March, and President Donald Trump's budget plan includes \$120 million to revive the project. With Reid finally retired and Republicans in control of Congress, now is the time to get it done.

The 79,000 tons of existing nuclear waste, after all, have to be stashed somewhere. Right now, that somewhere consists of dozens of sites across the country, including the mothballed plant in Zion. Illinois has more of the spent fuel than any other state — including 1,000 tons at Zion, on the shore of Lake Michigan.

These facilities are much less secure and permanent than Yucca Mountain is designed to be. And instead of confining the material to one tiny portion of one state, they leave it scattered over 34 states, with each site requiring constant expense and vigilance.

This haphazard approach makes no sense from the standpoint of safety or security. On the contrary, it creates unnecessary risk of environmental disasters and terrorist attacks — unlike the formidably impregnable Yucca Mountain. It has also wasted huge sums of money, because the federal government has had to pay those utilities that have been forced to store the spent fuel — a tab expected to approach \$25 billion. And it stands in the way of expanding nuclear power, which ought to be a priority today as a method of generating electricity without producing greenhouse gases.

Local opponents referred to the 1987 measure designating Yucca Mountain for the nation's nuclear waste as "The Screw Nevada Act." In fact, the danger to the state was pure fantasy, and the economic benefits were real.

Yucca Mountain is the only viable alternative to the jury-rigged status quo. We hope the Trump administration and Congress will revive it. Because if they don't, we're all screwed.

Los Angeles Times

There's no great answer for nuclear waste, but almost anything is better than perching it on the Pacific

By THE TIMES EDITORIAL BOARD

SEP 11, 2017

One of the great failures in U.S. energy policy was that we've never figured out what to do with the lethally radioactive waste produced by nuclear power plants. That's why the owners of the decommissioned San Onofre nuclear plant have had little choice but to keep their spent fuel rods on site, bundled up in concrete bunkers at the edge of the Pacific Ocean, dangerously close to an earthquake fault and millions of people — and hope for the best until the federal government finds a good place to put the deadly waste.

The feds don't have one yet, but developments in court and in the marketplace could help move San Onofre's waste somewhere considerably less risky. As part of a legal settlement earlier this month, Southern California Edison, which is the majority owner of the shuttered nuclear power plant, promised to make a good-faith effort to find a safer home for the 3.55 million pounds of nuclear waste at the plant. That's a welcome shift for the company, which has been focused on moving its spent fuel rods into safer containers on-site.

And unlike in the past, it may have several choices for where to send the waste. Although there still are no federally licensed nuclear waste dumps, despite the billions of dollars ratepayers have paid to fund them, as of this year there are two proposals for temporary storage sites that could conceivably be ready for business by the early 2020s.

When it comes to waste that's going to remain radioactive for tens of thousands of years, there are no great solutions.

The most promising is an underground facility in the southeast corner of New Mexico, 35 miles from any significant population center, operated by Holtec International, the nuclear storage company that makes the dry storage casks used currently by San Onofre. If there are no hitches in licensing, it could be ready to store spent nuclear fuel in about five years. That would incidentally be good timing for California's last operating nuclear plant, Diablo Canyon, which is set to shut down its last reactor in 2025.

Another proposed short-term site is in Andrews, Texas, operated by Waste Control Specialists and currently storing low-level radioactive waste. But its prospects are less certain. Earlier this year the company put on hold its application to expand into high-level nuclear waste, citing financial reasons. Meanwhile, public opposition to the proposed expansion had been growing.

A third option is the Palo Verde Nuclear Generating Station in the Arizona desert about 50 miles from Phoenix. At the moment, Palo Verde holds a permit to store its own waste on site, but Edison is a part owner of the plant and presumably could have some sway in the decision to seek an expanded waste storage permit.

That there are real options at last for off-site storage is heartening. Although the nuclear waste at San Onofre is about as safe as it could be, the storage containers used aren't designed for long-term storage. Yet any longer-term option will require tremendous political will to achieve. Having Edison contributing to that effort certainly can't hurt.

As for truly permanent storage, the U.S. Department of Energy's proposed Yucca Mountain site in Nevada still appears to be the safest place in the country for a permanent nuclear repository, though even if all the stars aligned it would take decades to open. The federal government needs to renew its efforts to bring the Yucca Mountain site into operation.

Doing so, however, will be a political challenge. After the federal government sunk \$11 billion into the site's development, President Obama halted work in 2010 as a favor to then-Senate Majority Leader Harry Reid (D-Nev.). And though the GOP generally seems more open to the project, Nevada Republican Sen. Dean Heller vociferously opposes it. Nevadans don't generally like the idea of having nuclear waste in their state, but even they would have to concede that the remote and dry location built deep into a mountain is a better spot for radioactive material than in the middle of a seismically active population center.

Granted, when it comes to waste that's going to remain radioactive for tens of thousands of years, there are no great solutions. But there are certainly better ones than continuing to hold more than 70,000 tons of nuclear fuel at about 120 operating and decommissioned nuclear plants across the country in facilities never intended for long-term storage, then hoping for the best.

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 8 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 4 years.

The discussion draft amends the law to provide for an additional 3 years for the Commission to complete the licensing process. Government Accountability Office reported the Commission could complete the process within this timeframe.

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 3 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 decisionmaking 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. OK, 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. OK, 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 facto 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 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 judgment 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 onsite. 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, 100 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:]

IN LIFE



"Spider-Man: Far From Home" arrives this summer. JOJO WHILDEN

What's after 'Endgame' for Marvel Universe?

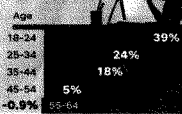
Five directions the popular franchise could go to hold on to its momentum



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More than a 'case of the Mondays'
Across almost all age groups,
more U.S. workers said they
had depression in
2018 than 2014:



SOURCE: Gallup research of 480,000 employed individuals, ages 18 to 64 from Jan. 2014 to Dec. 2018. FRANK POMPA, JANET LOEBHRE/USA TODAY

Destined to Burn, in which a partnership between journalists from USA TODAY Network-California, McClatchy, Media News and The Associated Press explore the urgent wildfire issues facing California.

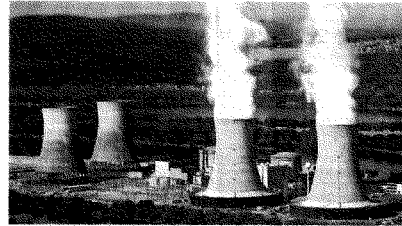
readily that road systems throughout the state are not designed to handle a sudden evacuation.

A USA TODAY Network-California analysis reveals the extent to which a fundamental problem in Paradise – too few escape lanes for too many people in vehicles – applies to other cities and neighborhoods at great risk of wildfire.

The ratio of people to exit routes doesn't account for all complexities of an evacuation, experts say, but it does serve as shorthand for evaluating evacuation efficacy.

In the Gold Rush town of Sonoma, about 3½ hours southeast of the town

See EVACUATION, Page 3A



Nuclear power provides nearly 20% of U.S. electricity, data show. THINKSTOCK

Some 2020 Dems warm up to nuclear

Clean-energy option finds unlikely support

Ledyard King
USA TODAY

WASHINGTON – Nuclear energy could be making a comeback thanks to Democrats.

Several candidates vying for the party's presidential nomination in 2020 are promoting or have shown openness to expanding "next genera-

tion" nuclear power as part of the arsenal of options to aggressively address the effects of climate change.

Sen. Cory Booker, D-N.J.; Rep. John Delaney, D-Md.; and Sen. Amy Klobuchar, D-Minn. are backing expansion of modern nuclear energy that would have to meet tougher safety standards. Several other White House candidates, including former Colorado Gov. John Hickenlooper, Rep. Tim Ryan, D-Ohio; and Sen. Elizabeth Warren,

See NUCLEAR, Page 2A

'We will not be afraid, and we will not hide'

Jewish leaders confront rise in anti-Semitism

Elizabeth Weiss
and Nicquel Terry Ellis
USA TODAY

A rabbi in Riverside, California, begins services with an announcement about where the exits are – in case people need to run for their lives.

In Glen Rock, New Jersey, a rabbi is unsure what to write on signs at the temple entrance. At first, the message read, "Entering a secure space," but that wasn't exactly what she wanted to convey to people arriving to worship.

A synagogue in San Francisco allocates money toward airport-style metal detectors and security guards.

Saturday's deadly shooting at the Chabad synagogue of Poway near San Diego killed one woman and injured three people when a gunman opened fire during a Passover service.

The attack came six months after a mass shooting at the Tree of Life

See ANTI-SEMITISM, Page 4A

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 10 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. OK. 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 proc-

ess 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 having dedication toward 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 2 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.]