SPENT FUEL SOLUTIONS INFORMATIONAL WEBINAR:

INFLUENCES AND NARRATIVE AROUND THE U.S. SPENT FUEL PROGRAM

Via Zoom

TRANSCRIPT OF MEETING

September 15, 2023

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Transcript of video-recording meeting via Zoom commencing at 11 a.m., Friday, September 15, 2023.

WEBINAR SPEAKERS:

CHRIS WAHL - (EXECUTIVE DIRECTOR OF SPENT FUEL SOLUTIONS)

KATRINA MCMURRIAN – (EXECUTIVE DIRECTOR OF NUCLEAR WASTE STRATEGY COALITION)

ROD MCCULLUM – (SENIOR DIRECTOR, USED FUEL AND DECOMISSIONING, NUCLEAR ENERGY INSTITUTE)

TOM ISAACS – (INDEPENDENT STRATEGIC ADVISOR TO SCE FOR NUCLEAR WASTE MANAGEMENT/FORMER DIRECTOR OF THE OFFICE OF NUCLEAR WASTE POLICY WITHIN THE U.S. DEPARTMENT OF ENERGY)

Via Zoom, Friday, September 15, 2023

CHRIS WAHL: Ok, I think we're going to get started.

I'd like to welcome everybody to our symposium.

My name is Chris Wahl, I'm the Executive Director of the Spent Fuel Solutions Coalition and I'll serve as your moderator today.

Very excited to say that this is our fourth symposium now and we have a great all-star panel that is going to be providing some great commentary today.

Just before we start, a little bit more information about our coalition.

If you're not familiar, we have more than 250 members that come from local governments, elected officials, environmental groups, labor leaders, Native American leaders, business organizations and community members.

Also includes support from 11 different cities around San Onofre as well as the three counties.

Our mission is to advocate for federally licensed offsite solutions, for spent nuclear fuel, including consolidated interim storage and one or more deep geological repositories.

We have a few folks with us today that have been helping us along the way.

I'd like to call them out.

I'm not sure if everyone's on board yet, but they had RSVP'd.

So if you don't mind, I'll just start with Kristal Jabara, who's with Supervisor Jim Desmond's office.

Supervisor Desmond is the co-chair of our executive committee.

Welcome Kristal.

Mayor Chris Duncan from San Clemente, who's also a member of our coalition, had RSVP'd to attend.

Sue Garcia from SDG&E who's a member of our advisory council had also RSVP'd.

Garry Brown from Orange County Coastkeeper who's a member of our advisory council and Shari Horne, councilmember from the city of Laguna Woods is also joining us today.

And Dan Stetson, who is the code, is the chair of the San Onofre CEP.

So thank you all for joining and thank you for everyone else that has joined.

As you know, the spent fuel management program has seen big changes over the last few years.

There's a lot of excitement around this issue.

The current presidential administration has provided some renewed interest in it, which has been

exciting for all of us that have been following this issue closely.

One of those things is the Department of Energy has recently issued an RFI and consent-based siting for consolidated interim storage and awarded $26 million in funding to 13 consortia that will help communities explore the possibility of hosting a CIS facility into the future.

They've also outlined a road map to have one or more operational storage facilities within the next 10 to 15 years in the United States.

At that same time, the spent fuel conversation is evolving in response to several shifting influences, including the prospect of reprocessing and technologies such as small modular reactors.

We're going to cover those subjects today and you'll have the opportunity to ask additional questions.

Our national clean energy goal also calls for 100% clean electric grid by 2035 and a net zero economy by 2050.

So making nuclear, making clean nuclear power a part of that energy mix and highlighting the need to once and for all address the back ends of fuel cycle is very, very important.

Ok, So I'm going to introduce our panelists and

then jump right into questions.

And just a couple of logistics real quick.

We do have three great panelists with us today.

We have a series of questions that have been sent in by by you as well as others and ones that we've come up with.

I'm going to run through those questions and and once we get to the end of that list, we will take any additional questions that come through the chat.

Jessica Lutenauer here, wave Jess, who's supporting us on the coalition as well, will be routing all of the questions and getting them to me so that we can make sure that we try to cover everyone's inquiries.

We will go until 12:00.

So it's a one-hour symposium.

We will try to end either right at that time or a little bit early.

And so with that, I'm going to introduce our panelists.

First with us is Katrina McMurrian, and Katrina you can wave.

She serves as the Executive Director of the Nuclear Waste Strategy Coalition in Tennessee.

And their goal is to seek the removal and disposition of commercial spent nuclear fuel by the

federal government as required and contracted by law.

Welcome.

NWSC's members include state utility regulators, consumer advocates, attorneys general and radiation control officials, tribal governments, local governments, electric utilities with operating and or shutting down nuclear reactors, and other experts on the nuclear waste of policy matters.

So we're very happy to have Katrina with us today.

I'd also like to introduce Rod McCullum, who is the Senior Director of Used Fuel and Decommissioning for the Nuclear Energy Institute in Washington, D.C.

Welcome, Rod.

Thank you for joining us.

NEI and its members promote the benefits of nuclear power, advocate for smart policies, and educate lawmakers on industry issues.

Finally, please welcome Tom Isaac, Tom Isaacs, independent strategic advisor to Southern California Edison for nuclear waste management.

He's also the former Director of the Office of Nuclear Waste Policy within the United States Department of Energy.

We're honored to have Tom here with us to provide his expertise as a member of the Spent Fuel Solutions

Advisory Council as well.

Ok, so now we're going to get started on the Q&A.

And as I mentioned, we've prepared a series of questions.

Each of the panelists will be asked to answer and then provide commentary afterwards.

And we'll continue to be tracking questions in the future here as we go along.

Ok, so Rod, I'm going to start with you without further ado.

And the first question that we're going to pose in our symposium is how has the spent fuel landscape changed over the past few years and what's changed for the better or worse in your view?

ROD MCCULLUM: Well, I think it's changed for the better.

And if I had to give a one word answer to your question, the answer to what has changed, everything.

And and these changes primarily happen in three areas.

Number one, we're a lot smarter than we were before.

We've learned a lot with the additional experience we've had.

You know, there are several international programs,

disposal programs that are moving forward quite smartly.

Every single nation that is now advancing their disposal projects had a big failure before they had a big success.

And you know, I, I think we can admit with now, I think 11 years of inactivity, the Nuclear Waste Policy Act is not a big success.

Let's just put it that way.

So we're smarter.

The second, the second thing is we have more tools in our toolbox, not just the international experience, but you know, we put a lot of technology into dry storage.

And now I know the people in Southern California, I need to say right off the bat here, aren't interested in technologies that make it easier for us to manage our casks right where they are for a longer period of time.

Those technologies do enable us to do that, but they also enable transportation.

And given the investment that we're making in storage technologies in this industry, it sure makes sense to do that at fewer locations.

So that's a huge motivator for consolidating.

The more, the more technology that we put into the long-term management.

And the third and most important change, reason everything is different, and, and Chris, you alluded to this in your opener is the motivation for doing something with used fuel is, is completely different.

You know, we used to be trying to push somewhere.

Now it's going to be pulled.

The interest in, in, in advanced nuclear, the the interest in, you know, carbon free energy, more reliable energy.

There are several electric grids that suffered near collapse incidences in recent bad weather periods.

And it was the reliable nuclear plants that prevented those things, that have prevented people from being in, in freezing cold and smoking heat with no power.

So whether you believe that weather is caused by climate change or whether you don't, you want your electricity to operate in severe weather.

So there, there's a lot going on.

And I, I've never seen the organization, I have, as you mentioned, where we represent the nuclear industry, I've never seen it be so dynamic, so energetic.

So there there is that motivator in, in, in, in fact, we have everything we need for moving used fuel off the Southern California site except for a site to move it

to.

That's because we are proceeding at the speed of trust.

We know that the prior process did not engender trust, at least not enough in Nevada.

So you know you have DOE with their consent-based and I prefer to call that community-based because consent is like take something you shouldn't want.

Community is start with the what the community wants and and work forward from there.

I'm hoping as because DOE is contracted with entities all over the map, red states, blue states, a lot of university smart people, I'm hoping that that initiative will give us some institutional momentum so we don't have to start over every time there's a new president, that has something that's plagued us.

And I think that's something that'll be different going forward.

So looking for that institutional momentum, plenty of things to keep it going.

I will have a a question later on recycling, but I think that's a potential accelerant as well.

I think things will continue to proceed slow at the speed of trust, but once they start proceeding, I think you'll be surprised at, at what does then happen.

CHRIS WAHL: Thank you, Rod.

That's, that's, those are, those are great comments.

And I, I just like to say it is an exciting time to be in this industry because there is a lot of movement.

Tom, do you have anything you'd like to add to what Rod said?

TOM ISSACS: So I'll just just make two quick points to add to Rod's nice presentation.

One, shortly, probably within a year or so, Finland will open the first geologic repository in the world for the permanent disposal of spent nuclear fuel.

And that will be a, a hallmark, a major milestone, I think in the waste management community that you can indeed find a site, find a willing community, license a facility, design it, build that facility and begin to operate it with a community that's quite happy to be the host of that facility.

So that's the first point I would make to add.

The second point I would make is I think without new legislation, there's only so far we can go in solving this problem in the United States.

The legislation we're living with right now is, is quite old, it's quite dated, and we need a number of things to change in order for the momentum that Rod

speaks about to really kick into gear.

So we can talk more about that later.

But those are the only two points I want to make.

CHRIS WAHL: Sorry, I was on mute.

Thank you, Tom, Katrina, any, any thoughts from you on this one?

KATRINA MCMURRIAN: I guess I would just say that, you know, I of course, Rod was very optimistic and and it's great to have that optimism because we we need it in this discouraging discussion a lot of times.

And I agree with the positive points about how we're smarter and have better tools and we can learn from international experience and we have what's going on with respect to new nuclear.

But I'm going to throw in that, we're, the negative part about we're too complacent.

And I think it's because it's being the fuel is being safely stored.

Now we know what to do with it.

We assume that it will get taken care of just in time, whether whether or not that's because there we've reached some kind of consensus and then do it at that stage.

But right now we're just, and I count myself in this, we get too complacent with how things are.

And I think if we work together, and I think that's what's so encouraging about this, and I'm glad you invited me, is that we can all work together on trying to find the best way to get to the solutions that we know are out there.

And I, you know, I want to say too, that our complacency, I'm afraid, will hamper new nuclear, our complacency about waste.

So I, I realized that no doubt that that's in the playbook of the people who want to stop new nuclear.

And of course that's not the goal of the Nuclear Waste Strategy Coalition is to support or oppose nuclear in any way.

But we see the new nuclear discussion as an opportunity to, to push solutions on the wayside.

And I don't want it to work the other way around where the waste problem stops new nuclear or hampers new nuclear in some way.

So just wanted to add those thoughts.

CHRIS WAHL: Thank you, thank you, thank you.

That's, that's helpful.

And completely agree.

I, I do think it's easy sometimes to go on site, see what's happening, for example, at SONGS and think to yourself, ok, it's, it's in good spot.

We don't need to do much.

There's no, no urgency.

So urgency's an important component in, in all facets of life.

Ok, so I'm gonna shift gears to a second question.

TOM ISSACS: And Tom, this one is for you.

And I think you'll have a lot to say on this given your past experience.

And the question is how does DOE's current spent fuel management program differ from previous unsuccessful attempts to find solutions to the spent fuel issue?

TOM ISSACS: Thank you, Chris.

So I can imagine easily spending the rest of the hour talking about this problem.

So, but unfortunately I do have a lot I could say, but I'm going to try and be brief.

So I joined the Department of Energy's nuclear waste program in 1983, the year after the original Nuclear Waste Policy Act.

The law was passed.

That was a set of compromises set up to try and solve this problem.

Those compromises included that we were going to site not one, but two repositories, one in the western part of the country, probably one in the east, and that

we were also going to look at a possible interim storage facility, but, is, essentially an insurance policy in case the repository programs didn't work.

That's number one.

Number two, there was an expectation that this was going to be really, really hard to do.

And so as a result of that, the program was put in place with an incredible amount of detail driving the program to make milestone after milestone, whether we were ready to do it or not.

That required lots of shortcuts, lots of the, the phrase at the time was always there's never enough time to do it right.

There's always enough time to do it over.

We were under a lot of pressure that led to very poor decision making that there wasn't much opportunity to change.

The program was set up with an expectation that there would be lots of confrontation.

Built into the law was the right of a governor of any state where we were going to consider to put nuclear waste to veto the the siting of the waste in their state with with a congressional override allowed.

That said, if the governor vetoed it, and the expectation was the governor would veto it, that the

Congress, each body of Congress within 60 days with a simple majority vote could override the governor's veto.

So the whole program was set up in a pressure cooker environment.

We were looking for two repository sites.

Those sites were grandfathered into the law.

It wasn't based on anybody's willingness or acceptance or interest in hosting it.

It was based on historical work that was done to look for promising sites.

So we were guaranteed to have confrontation.

We were guaranteed not to make milestones.

We were guaranteed to have the kinds of things that eroded trust.

That led to the 1987 Amendment Act, where Congress truncated the program that they had put together five years earlier and said, forget all that stuff, just go to Yucca Mountain and Yucca Mountain alone.

And people felt like that undermined the promises and the compromises that had been made.

And there's been fights over that ever since.

And it's understandable, the governor of Nevada did indeed file what was called a notice of disapproval, a veto.

Congress did override it and there's been fighting

ever since.

So that has been going on for a long time until in 2010 the program was stopped and and a Blue Ribbon Commission was formed, of which I happen to be an advisor to try and recommend things to get the program back on track.

And two years later, the Blue Ribbon Commission on America's Nuclear Future Report was put forward and made a number of fundamental recommendations.

One of which is it should in the very first, one of which which the cochairs, who were very distinguished Americans, I might have insisted it be the first one, we should use a consent-based process.

We should go where communities are interested.

They understand what they're getting into, and they voluntarily enter into a partnership with the people trying to implement the program in a way that makes their community better off for having been part of it.

Secondly, it said that they needed to get access to the funding required.

Lots of money has already been collected, many billions of dollars, to fund this program.

Most industries don't do this.

The money here is already available, but the program can't get access to it because it needs Congress

to appropriate it, and Congress is often reluctant to do that.

It's said to start on both an interim storage facility and a repository program, because a repository program is going to take a long time and an interim storage facility can happen sooner and can provide more flexibility into the system.

And it's said to take the program out of the Department of Energy.

This was not a cut at the Department of Energy.

It was a simple matter of fact that every other country in the world that's doing this has a dedicated external focused organization on waste management.

And it's very challenging and difficult for somebody in the administration to run all the things that are in the Department of Energy and run this program as well.

And it gets beholden to short-term political objectives.

So it often is not stable and predictable, which erodes trust.

So the new program, as we've already reflected a little bit, is in its nascent stages.

It's in its early stages, but it is taken what it can and started, as you said, Chris, a program of trying

to develop consent-based siting for storage.

It can't move forward on the repository program right now 'cause the law says the only repository program that can be considered is Yucca Mountain.

And this administration and previous administrations have said they're not gonna go to Yucca Mountain for the reasons that we just talked about.

So they need new legislation to get a vibrant repository program back on track.

And when the Yucca Mountain was picked, they tied the progress on interim storage to progress on the repository so tightly that interim storage lost its appeal.

The whole appeal of interim storage is something even much faster and much more certainly.

And so they need to find a way to to make more flexible the linkages between building a storage facility and a repository.

So that's in my mind, the major differences that the the Department of Energy has learned, I think as Rod said in his early remarks, have learned a lot.

They, I think, understand much better the necessary steps forward.

They are restricted from doing many of the things that they need to do.

And that's why I said earlier, we need new legislation and I'll stop there.

CHRIS WAHL: Thank you, Tom.

Very, very robust answer.

CHRIS WAHL: Katrina, do you have any thoughts you'd like to add to that conversation?

No, ok.

Rod, anything from you on that?

ROD MCCULLUM: No, I, I I think that the notion of what utility does interim storage have is something that will require it to to move a lot faster than repository.

Otherwise, go for the repository.

CHRIS WAHL: Great, thank you.

Agreed, ok.

So I'm gonna move on to our next question and this one's for you, Katrina.

And the question is what further changes need to occur at the legislative and administrative levels to see a deep geological repository and consolidated interim storage move forward in the short to medium term?

And there's two parts to this.

In addition to that, the second part is with partisan politics seemingly growing in America, what do you see as the prospect for a bipartisan collaboration on spent fuel policy.

KATRINA MCMURRIAN: Right, well, thank you, Chris.

That's a lot to unpack, but I'll take the last part first about the bipartisanship.

First, I just want to say nuclear waste is a bipartisan issue.

Red and blue states both have storage of commercial and defense waste.

They have shut down plants and they even both have proposed private consolidated interim storage facilities.

The House Spent Fuel Solutions Caucus and I, maybe you're familiar with them, cochaired by Congressman Levin from California and Fleischmann from Tennessee, they demonstrate bipartisan interest in this issue.

There have been a number of bipartisan bills filed and floated over the years.

One reform bill by former Congressman Shimkus received a bipartisan vote of 340 to 72 on the House floor in 2018.

And while perhaps for different reasons, both parties seem to be on board with new nuclear.

So bipartisan collaboration on spent fuel policy, I think is definitely possible.

However, presidential politics, the desire to control the U.S. Senate, constant election cycles, administration turnover, and back to complacency are also

bipartisan constructs.

And so you still of course have partisan policy differences and divides that linger.

But as your question suggests, partisans, partisanship seems to be at an all time high.

So I think those are huge reasons why the Nuclear Waste Strategy Coalition or NWSC, which I'll refer to it later, calls for two main reforms by Congress.

And Tom touched on these in his his overview of the BRC report.

The first one, forming an independent waste management entity outside of the Department of Energy, preferably using the federal corporation model.

And the second, getting sustained access to the nuclear waste fund for such an entity to have the reliable resources it needs to succeed.

So electric customers have paid over 50 billion including accrued interest and they deserve a working program for that.

So these of course reforms are consistent as as Tom mentioned with the BRC and I think recognizing both federal law concerning Yucca Mountain and the standstill over Yucca Mountain.

I'll, I'll submit that getting an independent entity set up with a single purpose mission and the

necessary, necessary resources to fund them from the Nuclear Waste Fund is the clearest and fastest path to a repository for permanent disposal and probably also to consolidated interim storage.

Because at least what I feel like I'm seeing time and time again is potential host states just don't seem interested in proceeding without some kind of more significant action on a permanent solution.

They're not.

They don't want to take it on an interim basis without something happening on permanent, so a repository.

So we call on Congress to legislate those two reforms, of course, management reform and funding reform, and try not to nail down all the other waste management details.

In other words, they don't have to put in statute, the definition of consent.

They don't have to put in statute how to solve the cue what you know, how fuel is taken in, in what order, they need to focus on what they need to actually put in law.

And so finally, because I haven't said anything about the administration so much yet, I'll try to wrap this up quickly here.

We I want to say first that we appreciate the DOE team and how they've arrived at the need for consent-based siting and at the decision to focus only on consolidated interim storage.

But frankly, I know that I'm not sold.

I don't think all my members are sold on that approach.

We are focused on constructive engagement on it.

And that's how I hope these criticisms and recommendations kind of land on folks.

I'm I'm skeptical at least about whether consent is the appropriate standard for critical infrastructure.

And I count these facilities as critical infrastructure.

We have to face that there are things we need and any consent process designed by the administration or whoever should still be designed to result in a site or sites.

I'm skeptical about whether consent-based siting can work at all, but especially under an agency that is subject to these election cycle turnovers and protracted confirmation processes so that we just don't get people in to work with soon enough.

And then I'm skeptical about whether we can make timely progress given its pursuit of only the federal CIS

facility without also doing something on disposal and of course the lack of sustained annual funding.

So I recommend that do we set up a dedicated office for spent fuel management while waiting for Congress to move the program out officially into a separate entity, that DOE expand its consent-based siting work to include disposal in whatever way it can.

Ask for congressional direction and funding, that's great.

But also do whatever you can without asking.

Spend it on your own.

They need to clearly relay to Congress and other stakeholders that they don't need to define everything and nail everything down in law.

And then lastly, I think the administration can take up a lot of other near-term actions and the BRC went along with this too, of course.

They had a whole chapter about near-term actions and I don't know that any of them have been acted on anywhere near near term especially.

So an example that would be having EPA work on generic repository standards, and we've been supportive of that.

And A&S has been doing some good work on that and Matt Bowen and others.

And I think there's some things that the administration and even Congress could maybe do without doing wholesale changes.

But we certainly want to see those two big reforms by Congress.

So just two tiny ask of Congress, four tiny ask of the administration, if you all help us get it done, that would be great.

CHRIS WAHL: Great. Katrina, thank you.

That was very, very well on point.

Tom, do you have any thoughts to add to that?

TOM ISSACS: Yeah, I would just say I'm somewhat skeptical as well of the program.

I can tell you in a democracy, there are no guarantees.

We got to do the best we can in this regard and sometime we learn from our failures and hopefully do it better the next time.

When the program passed originally, we were in more than 20 states looking for candidate repository sites at the state level.

Every single one of them opposed the program vehemently.

So the idea that we can somehow from the top down impose this on a state where at the state level, where

there’s state elected officials in Congress, in in the Senate, governors and so forth, over their objections, we've seen has been extremely difficult.

We selected Yucca Mountain 35 years ago.

I'd I'd say we're a step and a half back from where we were 35 years ago with regard to Yucca Mountain.

So there is no guarantee that consent-based siting works, but we can look to other countries, for example, for where consent has worked.

So that's one data point if you will.

And we know because of experience that there are a lot of communities who would be interested in working with a program like this.

The difficulty would be at the state level, but if you can engage a community and work with them in a way that this is clearly in their best interest, you might then be able to deal with the state in a more effective way.

That's kind of what happened at the Waste Isolation Plant in New Mexico.

It was the people in Carlsbad, New Mexico, who went to the government of New Mexico, to the governor and state reps and said, look, we need this program.

This is something that's important for us.

And that program has been in place for well over a

decade, runs beautifully, and the people of Carlsbad benefit from it, and they're quite happy to have it, and I think they'd be quite happy to have more.

So I think there are reasons out there to contemplate something like this.

What you can't do is know ahead of time exactly how something like this is gonna work.

You have to be willing to be adaptable.

You have to be willing to look for the opportunity.

The one of the things that made WIPP happen was the agreement to build a bypass around the city of Santa Fe, hundreds of miles away from the repository site, because that's what the state wanted.

If you went in there and said, well, that's not something that's our problem, that's your problem, it wouldn't have worked.

So I think the whole attitude of how one and goes negotiates this and takes the time and the flexibility, which is one of the reasons you have to have a dedicated organization, I think gives the best chances of success.

CHRIS WAHL: Thank you, Tom.

Rod, any comments to add before you leave this?

ROD MCCULLUM: It's 100% agreement with Katrina and and Tom, don't want a top down approach that didn't work.

It's not what the other countries are doing.

It is a funding reform and the and the having an organization that's outside the government that doesn't change direction with every election.

We talk about trust and every turn here.

How do you learn trust when you when you change direction 180° every time there's an election?

Again, democracy is something we need to hang on to.

But yeah, you're there's always going to be uncertainties.

I just point to Canada.

They've narrowed 22 potential host sites, all of whom were interested in being host sites at some point down to two.

They have given each of those two communities and the First Nations surrounding on whose land those communities exist, the the right to define their own decision-making process.

They've each defined a different decision-making process.

That's why I like to call it, and this will address some of the skepticism that Katrina and Tom share.

I like to call it community-based siting, not consent based.

Hopefully you know this, some others will start

saying that too.

I think that's, that's more likely to earn trust.

But I, I think again, we have the tools.

All I want from Congress is, is a new organization and, and, and the $46 billion the electric ratepayers have paid to do this, that organization having access to it.

CHRIS WAHL: Ok, thank you.

Ok, Tom, the next question is for you.

And the question is how do deep geological repository programs in other countries shape the United States' spent fuel management program?

You mentioned Finland, I imagine you're going to kind of build on that.

TOM ISSACS: Sure, thanks.

So it might be interesting for you to know that when I was in the Department of Energy for 10 years, I ran the international cooperation program on spent fuel management.

So I used to go visit all the countries around the world to cooperate with them.

And I, when I would come back from Finland and Sweden, who are clearly the two leading countries in the world in terms of implementing this program, I'd go back into DOE, into our management meetings.

And I'd usually start by saying, you know something, they're smarter than we are.

And of course, everybody would take take aback at that, you know, we have the best science and technology in the world.

We're we're, we're the number one nuclear country.

How can you say that?

And of course that's true.

But what they understood was that this isn't only a science and technology program, that this is going to be affecting communities, it's going to be affecting economics, it's going to be affecting social values, it's going to be affecting political entities.

And so their programs were built with, they didn't use the words consent or community-based siting, they just did it.

They decided that they were, because of the culture of those countries, that they were only going to go to places where they were accepted and they were willing to take the time and engage with communities, and they were kicked out of communities, originally, just like Rod mentioned earlier, even the Finns and the Swedes had some failures in the very early parts, but they persisted.

They were adaptable, they were flexible, and through time they started to build trust.

Now there's a huge difference.

You can't simply take what happens in one country and say, well, they did it and it works, so let's do it here.

Guess what Finland and Sweden don’t have?

The equivalent of state level government, so the federal people implementing the program could deal directly with the local communities.

That of course makes things much more direct and much greater chances of success.

Nonetheless, the whole idea of how to engage with people was an eye opener 25, 30 years ago when I was working on this stuff, and I think we've seen some of that being built in.

Rod mentioned the Canadians.

The Nuclear Waste Management Organization in Canada was created 20 years ago and I've been working with them closely since.

I currently chair something called the Site Selection Review Group.

So Rod is exactly right.

They started with 22 communities and they have narrowed them down over time based on one, how good is the rock?

Because they're going to build a repository.

They're not going to build an interim storage, so they're going to build a repository directly.

So how good is the rock in ensuring safety and how compliant or interested are these communities, both host communities and host Indigenous communities, in having a facility like this?

And Rod is exactly right.

If either the municipal community or the Indigenous community in the area says no, they're not going to be able to build it there.

That's just the way it is.

So they've been working very, very closely with this over these 20 years.

Whenever I'm working with NWMO and there's a serious meeting in the room, the vice president for all the technical stuff is sitting at the table with the vice president for all the engagement siting work.

And they work together to bring the sensitivity and the understanding so that the movement of the science and technology to get to the place where they need to be goes hand in hand with the willingness and the education of these communities and the eventual partnering of these communities to have a profound impact on how that program goes forward and whether it goes forward.

And they hope to pick a final site sometime at the

end of next year.

And in order to do that, they will have to have what are called partnering agreements between the communities and NWMO that lays out the stipulations under which these communities are willing to partner with NWMO in hosting a facility.

So those are a few of the examples.

The last thing I would say that I learned is that when I would go, particularly Finland and Sweden, everybody in the program understood very well what the program was about and could say why that program was safe in a clear, concise and compelling way.

And that added a lot to the credibility of the program.

I think throughout time, if you ask people even in the program, why did you think Yucca Mountain was safe, you would get a variety of points of view.

You don't didn't get the kind of understanding that brought together the the simple argument of why you should have confidence in a program like this being successful.

So I think that experience has been profound.

It very much affected the recommendations of the Blue Ribbon Commission.

I think it reflects the comments that I've heard

from my copanelists today.

And I think I think if we're fortunate, much of it will underpin what I hope will be some legislative action to get the program fully back on track.

CHRIS WAHL: Oh, thank you, Tom.

I'm going to keep us moving along.

We're we're having such a robust discussion that the hour is, is slipping by.

And apparently we weren't urgent enough for Katrina because she's dropped off here.

So hopefully we'll retrieve her somewhere.

I'm kidding, of course, I'm not sure what happened, but we're hoping that she'll join us back here.

But we're going to shift to spent fuel reprocessing and recycling.

So Rod, I'm going to direct this next question to you, while while we hope to restore connection with Katrina and the question is what is the current status of spent fuel reprocessing or recycling in the United States and worldwide and how does the prospect of reprocessing affect efforts to site spent fuel storage and disposal facilities?

And we'll keep it at that for now.

ROD MCCULLUM: Yeah, as I mentioned before, I think reprocessing and recycling and recycling is the use of

the materials you extract from used fuel at when you reprocessing.

So these are all cans of the same ilk.

I think it's an accelerant.

I think that that's what's different about tomorrow's nuclear.

Now the current fleet of nuclear plants, France does reprocess, Russia reprocesses, Japan is building a plant, Britain used to etcetera, etcetera.

That old school reprocessing will continue in some parts of the world.

But our our current fleet's not interested in reprocessed fuel just because that the regulatory complications of using that fuel and an existing reactor are hard.

But it's 180° different for the new reactors.

Many of those reactors will need reprocessed used fuel as feedstock.

So I'm telling the people of Southern California that there's a potential market for that which currently is being stored on your beach.

I know that there's three NEI member companies that are are have tangible plans to move forward with recycling.

One of them, Oklo, has very publicly stated it will

be applying for a license for recycling facility as early as 2025.

Curio and Alpha Nur have also been out there and there's probably others that haven't made their plans known to me.

I've seen the business cases of some of these and it's very compelling.

The nuclear energy is much more affordable if you use used fuel as your feedstock.

I also know that there's at least two states that are actively trying to bring recycling to their states.

One of them, Arkansas, if you want to look something up on your Google machine, Arkansas Act 259 that was passed this year puts in place a number of measures to bring recycling to Arkansas.

The people in Arkansas understand that storage comes with recycling.

You know all of the used fuel in France, they have a great interim storage facility at their reprocessing facility.

So you know, I, I think recycling will happen.

It's a game changer.

It's why I said everything is different now.

It will happen as we build the existing react, build the next fleet of reactors.

CHRIS WAHL: Thank you Rod, that's great.

Tom, anything you want to add on reprocessing before we jump to the next question?

Oh you're on mute, Tom.

TOM ISSACS: It had to happen once.

I'll just add a couple of quick comments.

I'm, I'm more, much more cautious about the prospects of reprocessing than Rod.

I, I, I'd like to see us get a healthy set of new orders for power plants and build some on schedule and on time, which we have not been able to do before we start talking about a much more complicated fuel cycle in order to develop advanced reactors, which themselves will have their own challenges.

Reprocessing in France has happened.

It's a massive undertaking.

They've done it well.

They've reprocessed some of the plutonium, but once they put that material into the reactor, then it's not clear they can reprocess it again.

So you still wind up now with new waste forms and new waste streams that have to be handled.

So it it's a complication.

And the new fuel, because of the cost of reprocessing, carries an economic penalty.

So you're going to be paying more for fuel, at least for a long time, other than to do the direct disposal of the spent fuel.

And we know that you can dispose of spent fuel directly.

You don't need to reprocess.

The the Fins and the Swedes and the Canadians are all disposing directly of spent fuel.

So I think that's one thing.

The Japanese also built a reprocessing plant.

It cost 10s of billions of dollars.

It's so far over schedule and budget.

It still doesn't run.

And what is it giving them is more and more stocks of separated plutonium, which they don't have a place to put.

So from a proliferation point of view, what we're finding is more and more plutonium being separated, which is a weapons usable material.

I would not like to see reprocessing be sort of a default position around the world.

I would not like to see plutonium being transported around the world in fuel going into reactors because it's we're going to increase the proliferation concern.

So until there's some institutional measures in

place to guarantee that the proliferation concerns will not be aggravated by reprocessing and until there's a healthy nuclear industry, the idea that somehow we can't solve it now, but let us build this facility that will cost a massive amount of money and create new fuel waste streams just seems to me to be premature.

ROD MCCULLUM: I do need to say I agree with Tom and I, I failed to mention you do always need a repository.

That's any eyes recycling principle number one, there are waste forms that come out of it.

I do believe that future reprocessing technologies will be very different than what is currently practiced in France.

I, I, again, I've seen the business cases for some of these reactors.

The fuel is much more affordable with recycling and many of these processes do not separate out pure plutonium.

So, but I agree also with Tom that the reactors are going to have to lead the recycling facilities.

You're not going to do it the other way around.

So yeah, it's, it's a lot of pieces have to go together here.

But I am excited about the recycling piece.

CHRIS WAHL: Great.

Thank you so much.

Katrina, we're back to we're happy to have you back.

Sorry for the disruption there.

Thank you for for joining us again.

We're going to, we're, we're going to move into one of our questions related to nuclear technology and its benefits.

And everyone will have an opportunity to to answer this as well is, and I'm going to go a little out of order here guys.

So hopefully it doesn't disrupt too much.

But Tom, I'm going to move to you as are there national security implications in your, from your perspective for nuclear power and the permanent disposal of spent fuel in a jeep, in a deep geological repository?

Excuse me.

TOM ISSACS: Yeah.

So there are a number of national security issues.

The issues associated with nuclear power plants is not what I would consider the most significant, but it's not insignificant.

And it goes back to what we Rod and I just talked about.

When you take spent fuel out of a nuclear power

plant, about 1% of that spent fuel is plutonium normally.

Fortunately it's self-protective.

Those spent fuel elements are highly radioactive.

So trying to get at that plutonium is a major pass unless you build a reprocessing plant that deliberately separates.

So it's less of a concern.

Nonetheless, the International Atomic Energy Agency, which is the agency that looks around the world to make sure that all facilities and materials are not being misused for weapons purposes, spends most of its inspection efforts looking at spent nuclear fuel to make sure it's not been secretly diverted and then sent to maybe a reprocessing plant and the plutonium separated for weapons.

So that's a concern, but there are many other things.

Most countries, all countries that have built nuclear weapons have had a dedicated program.

They haven't diverted material from civilian nuclear reactors.

So I think it's important, but it's not in the prioritization.

It's not the most important.

It is interesting, of course, what happened in this

war between Russia and Ukraine and Zaporizhzhia nuclear power plant that what happened was the Russians came in and did what I, I call sieze and hold.

They didn't sabotage the facility.

They didn't divert materials.

They simply went in there and held the facility.

And by doing that, because of the fact that it's a nuclear plant, because of the fact that there's spent fuel there, it does raise the vulnerability of what could be done.

And so it raises national security concerns.

So do I think these things can, can are being handled?

Yes.

I think by and large they are.

Are there emerging threats that couldn't that could be be aggravating the situation?

Yes, I think we had to have to.

When we think about our nuclear future, we lead by example in the United States.

We've always been able to influence responsible behavior by leading by example.

And that includes putting a major priority on not eroding the safeguards that are in place to assure that these facilities and materials don't get misused in a

weapons program.

CHRIS WAHL: Thank you, Tom.

That's great.

Katrina, would you like to comment on that?

No.

Ok, Tom, any thoughts on that one, Rod?

Rod, thank you, Tom.

ROD MCCULLUM: The, the, you know, the appalling position that Russia has placed itself in on the global stage right now is, is another reason why I think some of these things will, will, will have new momentum.

You know, U.S. leadership in these technologies is more important than ever.

And so it's not just energy reliability, it's not just climate change.

Our, our CEO Maria Korsnick has, has said on on many occasions, energy security is national security.

So, yeah, I mean, I it's very, again, it's appalling, but maybe it's a wakeup call for the United States in terms of leading, as Tom said, in these areas.

CHRIS WAHL: Ok, great.

So I'm going to do a little bit of a pivot here.

We have a few questions from the audience I do want to get to.

So I'm going to ask one more question of the

panelists and then I'm going to shift to the audience questions.

And so the question I have is for you, Rod, and if you don't mind keeping this pretty succinct, will give us time.

And the question is, how does DOE in the nuclear industry respond to the recent ruling in Texas that overturned the granting of the NRC's license for an interim high level waste storage facility in that state?

And what does this mean for the longer-term procedural issues for a permanent repository and the shorter term goals for interim storage?

ROD MCCULLUM: Yeah, well, what we do first is wait for NRC to respond.

I mean, Texas sued NRC saying you can't license that in our state.

Two courts actually in related decisions found in favor of NRC.

The Fifth Circuit said the license is vacated.

So that license, unless there's an appeal which overturns this court, and that decision to appeal rests with NRC, is currently vacated.

It doesn't exist.

What this decision, but I you know if I was NRC, I can't speak for them, I I would probably appeal because

if that decision is left to stand, it sets an ugly and really nonsensical precedent for things about NRC's licensing processes.

I talked to several lawyers.

They get very animated when they spend long periods of time, which I won't, explaining all the flaws in that in that decision.

What that decision means going forward is for now, you cannot site an interim storage facility in Mississippi, Texas, Louisiana, or the Panama Canal zone.

Those are the areas covered by the Fifth Circuit.

It, it does not, and unless the Supreme Court does take it up and, and, and side with the court, it does not affect anything going on anywhere else in the country.

It's a, we have a, a, a schism amongst the courts right now.

What are the chances of the Supreme Court will hear it?

If NRC appeals, I would think they're pretty good and industry will file amicus briefs or amicus briefs.

If if NRC does appeal, I would encourage anybody who cares about moving used fuel, solving this problem to to think about saying.

CHRIS WAHL: Thank you.

Appreciate that, Rod, good comment on that.

And I think you're right, it's it's a little unclear, but it's a significant ruling, so something to track.

Ok, so I'm going to shift then to audience questions.

The first question that we received which came in advance of the symposium, so thank you for for to that individual for being available in advance here.

And Tom, I'm going to aim this towards you.

And the question is what is the desirability practical likelihood of a permanent spent fuel storage solution becoming available anywhere anytime soon?

And given your answer, what is the likelihood desirability of an interim solution in California spent fuel becoming available here to provide a solution in the meantime?

TOM ISSACS: So if I take a question verbatim on its face, the answer is we're going to have a repository very soon, but it's not going to be in the United States.

It's going to be in Finland, followed probably not too long behind that by Sweden and possibly by France after that.

And as as Rod and I have discussed, Canada has a vibrant program going too.

If we talk about the United States, I think I would

reiterate the fact, taking a repository to completion from where we are right now is going to be a long process.

It's going to take, I'll throw out a number that we can shoot at, minimum 25 years from today to there unless the stars change in the sky and we go back to Yucca Mountain.

Because a huge amount of work was done on Yucca Mountain to determine its suitability.

A license application was filed.

So if somehow the politics change, you could have a repository in Yucca Mountain sooner.

I think anywhere else it's going to take by the time you do all the steps.

And I won't take the time because I know we're short on time to get there.

You're talking about the Finns did it in 30 years and they did everything beautifully.

So I think nothing permanent anytime soon.

You could have a storage facility much, much sooner if the politics align, it's not as difficult to site or license.

As for California, that's a California decision.

There's no compelling technical or scientific reason you couldn't build one in California.

And California on many things has led the country.

I'd be happy if they led the country again in terms of doing something like this, but I have no expertise in determining whether there's any credibility to an initiative to site an interim storage facility in California.

CHRIS WAHL: Thank you.

Ok, so I have a, a, a handful of questions I'm going to ask of the group and feel free to just jump in.

So we have about six minutes left and I'd like to try to get to all these at some level.

So one of the the the attendees is questioning the viability and effectiveness of consent.

And the question was who will grant consent?

The community?

The state?

The anti-nuclear groups?

Environmental groups?

What's the process?

Nevada's a good example of why it didn't work.

Why can we expect anything different in Texas, New Mexico?

I know you talked about Finland, Tom, does anyone want to comment about why it might be different in this time around in in the United States?

ROD MCCULLUM: I think Finland is not like the United States.

So we can't expect the same thing and that's why I say community-based siting.

I, I think if you have an entity that can earn trust, an entity that has consistent funding and doesn't change with every election, you begin with the community's view.

So the answer on consent, and I, and again, I want to call it community-based siting is it is you, it's going to be different in every case.

And it's going to be something that's going to evolve.

You know, the, the process of earning trust, building trust, maintaining trust, that's going to depend on whose trust you want.

And there'll be people at the state level, the tribal level, in the local level.

But you know, you have to have an organization that's trustworthy and as good as the people like Tom who were in DOE were, DOE as an entity can't be trusted because again, it changes course too much.

It it had a top down program with too many constraints.

So flexibility, the willingness to, to stand tall

in the face of uncertainties.

I know it can be done simply because we've done it at all our commercial nuclear plants.

They're still running.

We've we've, we've established trust and we've maintained it and we, we know we have to earn it every day.

We don't say, ok, we got trust, we're done now you know you, you earn it every day.

CHRIS WAHL: Thank you, Rod.

Next question is who bears the cost of long-term storage?

Is that is that something utilities pay for or is that or how does that also get handled?

That was the the question.

ROD MCCULLUM: Well, that's what the the polluter pays principle, that's what the Nuclear Waste Policy Act did with collecting the $46 billion.

I would argue that I could do almost everything that's needed to do with that $46 billion because it earns a billion and a half in interest every year.

Yucca Mountain was never going to cost more than 1.9 billion a year.

And one of the really cool things coming out of Finland is we'll actually have real cost numbers on what

it takes per ton to build a repository.

So I, I, you know, I think the answer may be it's already paid for.

We have to, Congress has to unlock that money.

TOM ISSACS: Let me add if I can.

So there's two set of folks who can pay for this.

It's the taxpayer or the rate payer.

The rate payer, the people who get their electricity from these nuclear power pants, as Rod said, have put in billions of dollars, which sits in a nuclear waste fund dedicated to solving this problem, although getting at that money is not practical these days.

But the rate payer, you and me, you on this call and me are all paying for the lack of success in this program, because the utilities of all who have put this money in have all sued, have all sued the federal government for lack of performance, and they've all won those lawsuits.

So the federal government through a judgement fund, you, the taxpayers are paying out billions of dollars because the federal government hasn't solved this problem and will continue to pay that money until the federal government has in place a program to pick up the spent fuel from these nuclear reactor sites.

CHRIS WAHL: Thank you, Thank you.

Ok, I think we have questions, I think we have time for one more question, but let me say this real quick.

This symposium's video will be posted on our website.

So for anyone that wants to go back and look at the questions or get more information, you can do so via that way.

We will also make sure that every question that was asked in the chat that we didn't get to will be addressed and written and posted on our website as well.

Ok, so I think the last the time that we have for the last question is Tom geared towards you, but I think others might have a comment too.

And the question is how do we how do we do differently from Canada and NWMO so that hopefully our process doesn't take 20 years.

TOM ISSACS: So I have bad news, it's going to take 20 years and that in this business, if you work in the nuclear business, you know I always tell young people you should go into the nuclear business, it's guaranteed lifetime employment.

Things take a long time in the nuclear world, and there's rather good justification for it.

And in the long run it pays off doing that.

To have a repository, I'm not talking about a

storage specific repository, it will have to show first the scientists and engineers, then the discriminating public and the communities that are involved and all that this is going to isolate the waste for geologic time periods for literally tens of thousands and hundreds of thousands a year.

So you have to undertake a major program to first identify sites that look promising and then go underground like we did at Yucca Mountain, and conduct many years of scientific and technical investigation to convince yourself that if you put the waste down there, it's going to stay there for the foreseeable future, foreseeable meaning long, long periods of time.

That just takes time.

It's it's a wonderful scientific experiment.

It it's at the cutting edge of many technologies and sociology, psychology as well, but it's climatology.

We worry about the climate.

We worry about earthquakes and volcanoes.

All of that takes time.

It's going to take that amount of time to do it well.

CHRIS WAHL: Thank you, Tom.

And with that, I'm going to close the discussion.

It is 12:00 and I wanted to end on time and so I'd

like to thank all of our panelists and the audience members for joining.

This is one of the most robust and action-packed symposiums we've had in terms of audience participation.

Thank you so much for that, has made it that much better.

As I mentioned, our coalition will post all the information on our website that came out today.

We're very encouraged by where this discussion is heading and where the Department of Energy is done, where they're going.

We also wanted to call out Representative Mike Levin and his Spent Fuel Nuclear Fuel Solutions Caucus.

He's been a great partner to our coalition in this effort as we forge ahead and thank you all very much.

We will have more opportunities to participate in in future symposiums coming forward.

So thank you again for everybody and I look forward to seeing you again soon.

Thanks all.

Thank you guys again for your participation.

Bye now.