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NEWS

Media Contact: John Dobken, (626) 302-2255

Crucial Milestone Achieved for Decommissioning San Onofre Nuclear Plant

ROSEMEAD, Calif., Oct. 17, 2019 — The California Coastal Commission today unanimously approved a coastal development permit for the San Onofre Nuclear Generating Station, clearing the way for dismantlement of plant structures and decontamination of the site. The vote took place at the commission's meeting in Chula Vista.

"We appreciate the commissioners for their diligence in understanding the issues involved and Coastal Commission staff for their efforts in making sure all voices were heard in the process," said Doug Bauder, SCE vice president and chief nuclear officer. "I also want to thank the members of the public who spoke in favor of the permit for their support in helping get this project underway."

Today's approval by the Coastal Commission allows SCE to move forward with removing above-grade structures on the site, such as the twin containment domes. SCE anticipates beginning major decommissioning work in 2020.

What is Decommissioning?

The Nuclear Regulatory Commission allows up to 60 years to complete decommissioning. However, SCE believes completing the work in a timely manner will benefit customers and local communities. Importantly, the dismantlement of the plant structures will remove a significant amount of hazardous material from the site. In addition, removing most of the above-grade structures will eliminate prominent visual features associated with the facility and start the process to return the property to landowners as soon as practical. Finally, completing the radiological decontamination work now will allow SCE to leverage today's disposal rates and labor costs.

SONGS Decommissioning Solutions (SDS) is the decommissioning general contractor. The project is expected to create about 600 jobs during the 8-to-10-year dismantlement phase, and the majority of the labor force will be hired locally from the San Diego region. As decommissioning activities ramp up, any impacts to traffic and public access near the site are anticipated to be short-term and limited. SCE will make timely notifications to the public through posted signs and the SONGS Community website before any traffic impacts.

"We are committed to protecting the safety of our workers and the public, to stewardship of our natural environment and open engagement with our community," Bauder said.

As part of that commitment, SCE is installing a continuous radiation monitoring system in the dry spent fuel storage facility. The monitors will collect real-time data that will be analyzed and shared with the public through a state agency.

An inspection and maintenance program for the Holtec UMAX dry storage system originally due to the commission in October 2020 will now be delivered to the commission in March and will undergo independent third-party review. During the Coastal Commission hearing, SCE revealed it is conducting industry-leading research into a canister repair method using a metallic overlay.

The $4.4 billion nuclear plant decommissioning is financed through existing trust funds, including SCE's share of the project as majority owner. The total cost includes the dismantlement work awarded to SONGS Decommissioning Solutions, continued on-site storage of San Onofre's spent nuclear fuel until the federal government provides a required repository and restoration activities. Customers contributed about one-third of the trust funds while two-thirds of the total is due to investment growth over time.

Members of the public interested in finding out more about decommissioning activities are invited to the next Community Engagement Panel meeting Thursday, Nov. 21, at 5:30 p.m. at the QLN Conference Center in Oceanside. Informational booths will be open at 4:30 p.m. Up-to-date information can also be found at the SONGS Community website.

About Southern California Edison

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NEWS

Media Contact: Liese Mosher, (626) 302-2255

SCE Files Motion to Dismiss Lawsuit Over Spent Nuclear Fuel Storage

ROSEMEAD, Calif., Sept. 20, 2019 — Southern California Edison today filed a motion to dismiss a lawsuit brought by an activist group in the U.S. District Court for the Southern District of California in San Diego and an opposition to a request for a temporary restraining order and preliminary injunction as part of the same lawsuit. The lawsuit focuses on spent nuclear fuel storage at the retired San Onofre nuclear plant.

Public Watchdogs filed its lawsuit Aug. 30 against SCE, San Onofre co-owner San Diego Gas & Electric and its parent company Sempra Energy, as well as dry storage system manufacturer Holtec International, and the Nuclear Regulatory Commission. The lawsuit sought an immediate halt to fuel transfer operations at San Onofre through a temporary restraining order. The court did not rule on the restraining order and instead set a Sept. 20 deadline for filing additional legal briefs.

“This latest lawsuit by Public Watchdogs is wrong on the law and it’s wrong on the science and on the engineering of spent fuel storage,” said Doug Bauder, SCE vice president and chief nuclear officer. “We’re working to get the fuel safely into dry storage as a required step toward eventually shipping it to a federally approved repository. Public Watchdogs’ lawsuit is a barrier to achieving this goal. We want the fuel removed, which is consistent with what members of the community tell us they want.”

In July, Public Watchdogs withdrew a similar lawsuit, which also named SCE, after being given a chance to amend the complaint by the court.

SCE has placed 33 canisters of spent nuclear fuel into the Holtec UMAX dry storage system. Forty canisters remain to be stored. All canisters should be placed into the dry storage system by mid-2020.

Factual Errors in Public Watchdogs’ Lawsuit

- The lawsuit claims the Aug. 3, 2018, canister lowering event *“could have turned … much of Southern California into a permanently uninhabitable wasteland.”* Detailed studies, reviewed and validated by a respected engineering firm and the NRC, showed that had the canister dropped 18 feet, there would not have been a radioactive release. This point is detailed in the NRC’s final special inspection report (July 9, 2019, p. 30). In fact, since 2015, no credible accident scenario exists in which radioactive material could leave the site boundary at San Onofre.
- The lawsuit also misrepresents a canister placement on July 22, 2018. During the placement of that canister, the crew experienced some delays in aligning the canister properly before safely lowering it. The canister was always supported during this time. However, Public Watchdogs claims the canister “nearly dropped,” which would have “turned San Onofre State Beach Park into a permanently uninhabitable nuclear wasteland.” Here’s what the NRC said during its Nov. 8, 2018, webinar about the placement: “ … during that time, never was the MPC, or the canister, not suspended by the slings, every time they attempted to download, they caught the loss of load condition … ” and “ … So they (SCE) were always within procedure during this event … ” Further, as already stated and verified, a dropped canister would not result in any release of radioactivity.

- The Public Watchdogs filing and subsequent correspondence reveals a misunderstanding about the dry storage systems in place at San Onofre. The lawsuit claims SCE is *"… burying those canisters."* In fact, the Holtec storage module is an engineered concrete monolith with stainless steel vaults, and a seismic rating twice that of the (wet) spent fuel pool storage systems. A removable lid made of steel and concrete is placed on top of the vaults. After the court set the Sept. 20 date to submit filings, the attorney for Public Watchdogs took the unusual step of writing directly to SCE on Sept. 6 asking for a voluntary halt to fuel transfer operations. In the letter, attorney Eric Beste writes one reason for the halt is "that the technology does not presently exist to remove canisters that have already been buried." During practice runs, SCE routinely placed a simulated canister into dry storage and then removed it. Demonstrating this capability is required prior to the NRC's approval to move fuel into dry storage.
- Another allegation in the lawsuit, that *"there is an imminent danger that the canisters will fail"* is not accurate. Similar dry storage canister systems are in use all over the U.S. and have been since 1986. Currently, nearly 3,000 canisters are in service in the U.S. — none have released radioactive material to the environment. The canisters in use at San Onofre have a design life of 60 years and a service life of potentially 100 years or more. Due to radioactive decay, fuel in dry storage is significantly less hazardous than fuel in a recently shutdown reactor, with no motive force within the canister to propel material into the environment.
- Regarding the incidental contact that may occur during spent fuel canister lowering, Public Watchdogs calls it gouging, but then quotes the NRC regional administrator as saying the canisters experienced "a little bit of scuffing" and "a little bit of contact." The lawsuit also claims the issue wasn't thoroughly vetted. In fact, SCE performed a detailed visual assessment of eight stored canisters using a high-resolution borescope. The results were presented to the NRC, which independently verified the "scuffing" and "contact" did not affect the safety function of the canisters. (See the NRC's final special inspection report , July 9, 2019, p. 34)

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30 September 2019

Dr. Kris P Singh
Pierre Oneid
Holtec International

Via email

Dear Kris and Pierre

Thank you for the openness and hospitality that you and your staff afforded us, the leadership of the SONGS CEP, during our visit on 17 September. Our discussions—joined by Tom Isaacs, Doug Bauder, and Manuel Camargo—affirmed the importance of partnership given your central role in packaging, moving, and storing spent fuel from SONGS. Your success is our success.

We appreciated hearing from you regarding what Holtec learned from the August 2018 downloading incident, as well as how Holtec is positioning itself for success in new lines of business. It was good, as well, to meet some of your staff and get a better understanding of your organizational structure, your bench strength, and succession plans.

The conversation we had regarding techniques for remediating a degraded canister was a good one. We appreciate your offer to reduce to writing your position as it relates to the robotic repair techniques that SCE is developing based on R&D by EPRI and support from vendors. Setting the record straight with respect to Holtec's position on repair strategies and aging management will be critical to our engagement efforts here in Southern California.

We look forward to continued productive dialogue with the Holtec team. Know that you have our strong support as it relates to advancing your planned CIS facility in New Mexico.

With all best wishes

David G. Victor, Chairman
Dan Stetson, Vice Chairman
Jerry Kern, Secretary
SONGS CEP

copy: Tom Isaacs, Chairman, Experts Team
Kevin Walker, Senior Vice President, SCE
Doug Bauder, Chief Nuclear Officer and Vice President, SCE
Manuel Camargo, Principal Manager, SCE

Testimony of Prof. David G. Victor, Chairman of the San Onofre Community Engagement Panel, before the Nuclear Regulatory Commission Community Meeting on Section 108 of the Nuclear Energy Innovation and Modernization Act

San Juan Capistrano, CA
August 29, 2019

Thank you for holding this meeting in our community, which for the last five years has been grappling with closure and decommissioning of the San Onofre Nuclear Generating Station (SONGS). Under the Nuclear Energy Innovation and Modernization Act (NEIMA) of 2019, the Nuclear Regulatory Commission (NRC) has been charged with gathering information about the establishment and operation of community advisory boards (CABs). Here I share what we have learned from the Community Engagement Panel (CEP), which I chair. My comments today are a reflection on the CEP experience from a chairman's perspective; I have shared a draft of these comments with the CEP and consulted in detail with the CEP leadership (Daniel Stetson, Vice-Chair, and Jerry Kern, Secretary). But the CEP is not a decision-making body and thus formally does not take a position on any matter. I speak today as a private citizen who happens to be Chairman of the CEP, and I reflect on what we have learned since early 2014 when the CEP was created.

In 2013 the SONGS operator, Southern California Edison (SCE) decided to decommission the facility. It also promptly began to set up this panel to open a two-way conduit between SCE (and its co-owners, San Diego Gas and Electric, the City of Anaheim and the City of Riverside) and the communities that would be affected by the decommissioning process. We met for the first time in March 2014[1] and have met quarterly every year since. Each meeting includes an update from SCE about the decommissioning process and then, in most cases, focuses on a particular topic—for example, monitoring of spent fuel canisters, transportation of spent fuel, environmental impacts of plant decommissioning, etc. In addition to quarterly meetings we also hold workshops on key topics, such as the choice of canisters for on-site storage of spent fuel.

At the time, there was no "best practices" guidance from NRC. Instead, SCE looked to EPRI[2] for best practices and to other community panels, such as the one established at Maine Yankee[3]. Our Charter is attached as an appendix, along with the current CEP membership roster and a list of the topics covered at each of our meetings.

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[1] "Community Panel to Hold First Meeting March 25 on Nuclear Plant Decommissioning," SCE News Release, March 17, 2014 https://www.songscommunity.com/news/releases/community-panel-to-hold-first-meeting-march-25-on-nuclear-plant-decommissioning

[2] "Preparing for Decommissioning: The Oyster Creek Experience," EPRI Report, June 2000, pp. 11-3 and 11-4 (copyright protected) www.EPRI.com

[3] "Main Yankee Decommissioning Advisory Panel - *A Model for Public Participation in Nuclear Projects",* by the Main Yankee Community Advisory Panel on Decommissioning, Feb. 2005 http://www.maineyankee.com/public/cap%20final.pdf

Over the last five years the CEP has provided exactly that function of opening a two-way conduit. It has offered ways for SCE to learn about the concerns of the communities and vice-versa. It squarely meets the definition of a "community advisory board" (CAB) under Section 108 of NEIMA. However, our Panel is called "engagement," not "advisory," because the founding philosophy was one of active, two-way engagement between the licensee (SCE) and the communities (plural) affected by the decommissioning process. Our rules for constitution and operation are set forth in the CEP Charter[4].

I am confident that as the NRC travels around the country and learns about the wide range of Community Advisory Boards you will learn that one size doesn't fit all. I will focus on what works here locally and also on a few areas where we could do better. My perspective is from San Onofre (and having learned a lot about other communities), with humility that different approaches may be needed in different communities with different licensees.

In my view, there are two keys to understanding most of what happens with the SONGS CEP. First, the local communities are, for the most part, highly aware of the plant, attentive to the decommissioning process, and hold a diverse set of views. I have learned about CABs at other plants that meet only occasionally with sparse attendance. That is not SONGS. Practically nothing of significance happens at SONGS without a wide range of community views and input. Even topics that are relatively straightforward in the rest of the industry—such as the merits of moving spent fuel into stainless steel dry storage canisters—are contested matters at SONGS. Second, the licensee is highly engaged and attentive to the need for a two-way dialogue with the affected communities. I have heard of licensees that abhor or are largely indifferent to what they see as community interference in their business; in addition, of course, there are licensees that are selling their plants to third party specialists that take over the entire process of decommissioning. That is not SONGS. High levels of engagement create strong motivations on all sides to talk—even when there isn't agreement—but also creates acute challenges when there are high tensions and disagreements.

Best Practices

As I see it, at least five attributes of the SONGS process that help explain how the CEP has been effective. Under Section 108 of NEIMA NRC is charged with identifying "best practices," but I hesitate to use that term unequivocally since these attributes are important to us at SONGS and they not apply directly to every other setting.

First, independence. The SONGS CEP is chartered at 18 members, all volunteers. Second, the membership of the CEP is highly diverse.

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[4] SONGS Decommission Community Engagement Panel (CEP) Charter https://www.songscommunity.com/internal_redirect/cms.ipressroom.com.s3.amazonaws.com/339/files/20195/SONGS_Decommissioning_CEP_Charter.pdf

Many of the members are elected officials and they serve on the CEP because of that role they play in their community. (Current membership and affiliations are listed in the appendix.) This approach means that information flows more readily into and out of the affected communities. It also helps ensure that the process stays anchored in what the communities—as reflected in who they elect—want to hear and discuss. Other members of the CEP represent other important perspectives in the community—organized labor, public interest groups, first responders, Native Americans. Because of the geography of the plant, the membership of the Panel must reflect the reality that SONGS straddles two major counties (Orange County and San Diego County) along with one of the nation's most important military bases (Camp Pendleton). (The plant itself is on land owned by the Navy.) We have official representation from both counties and the Camp.

Independence extends to the ability for the Panel to invite and consult its own experts. (We can't pay them since the CEP doesn't have control over its own budget—more on that below. Over the last five years I have seen only one instance where a request for expert input was refused because we didn't have the capacity to make a payment. And in that case we found local donations of a few hundred dollars to fix the problem.) At all times there is at least one person on the Panel with technical domain expertise—vitally important the Panel sifts through conflicting technical claims and tries to figure out which evidence is realistic. We have also invited the NRC on numerous occasions to join in our Panel discussions, and they have provided vital input.

At most meetings we will invite one or more outside experts so that the conversations stay anchored in technical, regulatory and policy reality. We have had Prof Per Peterson (Berkeley) to talk about spent fuel storage, Prof Neil Driscoll (Scripps Institution of Oceanography) to present the latest research on seismic risks in southern California, Prof Allison Macfarlane (former chair of the Nuclear Regulatory Commission) to discuss spent fuel strategies, senior officials from two major manufacturers of spent fuel canisters, John Kotek (former senior DOE official) to discuss national spent fuel strategy, and the list goes on.

Third, the Panel is <u>created and maintained by SCE, the licensee</u>. I am sure that some members of the public will groan with the prominence I put on this point, and in other communities around the nation different approaches have been taken—for example, CABs created by statute. On an almost daily basis I am reminded that the CEP could not engage if the operator didn't want to be engaged. In other communities if operators are evasive and disinterested in engagement then I would focus on that problem squarely, rather than trying to force engagement by procedure—for example, procedures that establish CABs independently of the operator.

An engagement or advisory panel is not oversight. There's a lot of oversight already in the industry—by NRC, by trustees of trust funds (including the California Public Utilities Commission), by corporate boards, state and local planning authorities, utility regulators, etc. The river of oversight runs full and, perhaps, periodically overflows its banks. Serious engagement—a two-way process—is different.

As a practical matter, a utility-owned engagement process also radically raises the odds that the CEP gets full and accurate information about what's really happening at the plant—including with vendors that provide so many vital services in the industry. (Vendors, for the most part, are not used to the highly intense political environment and don't really understand why respectful, fact-driven engagement is so important. Having SCE as the owner of the CEP helps align the incentives.) Because CEP members are volunteers they don't have the bandwidth to do all the spadework needed for an effective process—SCE, with our guidance, does that. Moreover, on essentially every topic that arises in our meetings—such as seismic risks at the plant, design and operation of dry cask storage systems, and the ecological costs and benefits of actions such as removing ocean conduits—there is a massive amount of technical information that is, for the most part, not written in plain English. A huge part of what the CEP does is help expose its members and the public to the best technical analysis and translate that information into plain language. We couldn't do that without the licensee at the center.

Fourth, we are not a decision-making body. The NEIMA instructions include requests for information about our rules of order and such. Those can be found in our charter and are not complex mainly because we don't take formal decisions. If we did then meetings and processes would be torqued by the need to build supporting coalitions and the need to wordsmith resolutions in ways that engender support. There are vital roles for those processes in our societies, but the purpose of the CEP is two-way engagement—in part to identify places where formal decisions (by whatever relevant party) might be needed, to put a spotlight on topics of importance to the community, and for all sides to learn.

Fifth, the work of the CEP is completely transparent. Every meeting has an agenda that is publicly noticed in advance, with presentation slides circulated in advance. Correspondence is routinely shared with the CEP—including technical reports. Periodically, it is the sense of the CEP that an important topic needs to be distilled into a white paper or some other note that is written in plain language. (The "sense of the CEP" emerges from discussions at our meetings and is, as a practical matter, something that the CEP leadership helps to identify—with plenty of opportunity for dissenting or diverging views.) When that happens, SCE (or its contractors) write a draft, share it with the CEP leadership (which usually then also seeks input from others), and then a report is issued. Anything shared with the CEP is immediately shared with the broader public online at www.SONGScommunity.com. That online site has an opt-in email system so that anyone that wants push notifications of important meetings, activities and documents will get that.

There is live streaming and recording of every meeting.

Over time, we have evolved a process of public comment that I think has worked reasonably well. Questions that arise during public comment (or are submitted in writing, or both) get answered. Some answers are provided the day of the meeting—after public comment—and we are expanding the time allowed for that. The rest are answered in writing. And the full process is documented. That has proved complex and time-consuming, but it is

vitally important that people see that if they have real questions they will get answers. At least one hour of every three-hour meeting is devoted to hearing public comment, and that allocation often runs longer than an hour.

Where we can improve

The above five are my sense of the most important attributes of the CEP process—our "best practices." Attributes are not the same thing as delivery, and I'll talk about that shortly. However, it is also important that we identify places where we think we can do better—perhaps much better. I want to flag three.

First, we continue to struggle with how to engage diverse voices from the communities. Every CEP meeting includes a public comment period, and we invite other correspondence as well. But there is a world of difference between being able to speak for 3 minutes at a meeting and, for example, being a member of the CEP itself. In particular, I note that there are many communities affected by the presence and closure of the plant (and often critical of SCE) that aren't formally on our Panel. That includes many voices from the anti-nuclear community and from overlapping communities of public interest groups concerned, rightly, with a wide array of ecological issues and the coastline. Three CEP members hail from those communities (in addition to elected officials, who represent a wide array of interests), but the diversity in the broader community is even wider than that.

A particularly large challenge arises when the diversity of viewpoints on a matter—for example, the integrity of stainless steel canisters, or the real level of seismic risk at the plant—isn't supported by the technical literature. In those cases, the CEP has offered a forum (one of many) to hear viewpoints and to marshal technical evidence. On the seismic topic, for example, we dedicated a full meeting to that topic, discussed it at other quarterly meetings, helped organize workshops for local city councils, and also held private technical meetings with members of community groups that held their own views about the geology. As with nearly every visible topic that arises at the CEP, we have also spent a lot of time with local press reporters to raise the odds that news coverage is accurate. In the end, these many different forms of consultation are extremely time consuming and I wonder whether they have had much impact on folks who steadfastly don't believe the science. I don't see how we could do anything different since fact-based deliberation is vitally important to a democracy even when the facts are inconvenient.

Second, I think we still have a long way to go with regard to communicating with the public. The website was revamped a year ago—it is now easier to navigate, but hardly a paragon of clarity. There is a tendency in the industry to speak in technical jargon; there is a tendency in the regulated world to speak in terms of administrative law. In a world where there are lots of disagreements, some of our disagreement stems simply from the fact that we are not speaking the same language. I remain deeply disturbed by the number of organized interest groups that are actively pushing misinformation—for example, misinformation about the risks associated with storing spent nuclear fuel in stainless steel canisters. And I am

concerned that the chaos created by that misinformation is leading to outcomes that are directly contrary to what is best for our communities—for example, the dismantling of the site and moving the spent fuel away from SONGS can't happen unless we have the fuel stored in the safest and best stainless steel canister systems. I don't naively expect that opposed groups will suddenly change their tune, but for the vast majority of the public it is still hard to get reliable, accurate information in plain English about what is happening at SONGS and about the best technical options. That difficulty has created a vacuum that is being filled, in part, by falsehoods. That's not good for our democratic process and it is not good for the safe, smart management of the SONGS site.

Third, I am concerned about our bandwidth to address happenings at SONGS as they arise. For example, over the last 13 months—since SCE and its contractors halted fuel transfer operations because they failed to follow best practices, through today when transfers are back under way and public trust has been eroded severely—it has been particularly vital to engage with the public. The CEP members are volunteers—they can only do so much. SCE and its contractors have been in the process of fully revamping its fuel transfer system and dealing with the consequences of poor performance. The number of meetings and activities has skyrocketed. Other important tasks—for example, a workshop long promised to focus on possible worst-case events (and what they mean for the plant)—has not happened. SCE and the CEP and the many other members of the affected communities are in the process of regaining their stride, but one thing we have learned along the way is that we need better surge capacity—to deal with issues as they mount, which is often hard to predict.

Standards for success

What I have described above are attributes of our process that I think are working well and those that need more work. Together, they inform what I hope NRC will see as our best practices. Those practices are like ingredients in baking a cake. They are not the cake.

Whether the communities and SCE continue to invest in the ingredients depend on the quality of the cake. This is where the identification of "best practices" must clearly distinguish between attributes that can be declared as "best practice" and things that must be earned through practice.

I see two outcomes from this process that are earned attributes—they can't be ordained or written into "best practices."

One is trust. A lot has been said about the need for trust in any process and about the maxims that trust must be earned and it is not the same as agreement. It is the result of processes that are reasonable and fair—processes that, if folks engage, deliver results. My sense is that trust in an engagement panel like this is highly correlated with trust in the operator—SCE. Although we are independent, our mode of action is at the center of the relations between the operator and the communities. That gives all of us, SCE first and

foremost, a strong stake in creating trust. And where trust has frayed, it creates strong incentives to diagnose and fix the problem.

Practically nowhere in the engagement process will you find universal agreement. Even on topics where I expected essentially everyone would agree—such as on the need to empty the spent fuel pools and put the fuel into widely used stainless steel canisters—people disagree. But I hope that there is broader agreement that even when outcomes don't command universal consent (which is impossible) that the process has allowed for fair, multiple hearings.

Second, success must be judged by whether the process delivers tangible value to the communities. This is fundamentally why "one size fits all" won't work for community engagement. The contours of membership, procedures, and roles for the operator will all vary with local circumstances—all for the purpose of delivering value back to the community. The CEP is delivering value as the central forum where any issue regarding the relationship between SCE and the communities on decommissioning can be raised. Often they are raised in the CEP and then settled in other forums. For example, via the CEP many members of the communities have raised the desire for real time radiation monitoring so long as spent fuel is in the community. That desire is now being handled by SCE under mandates with various regulatory agencies, and will be implemented via data sharing agreements still in progress. The CEP can raise and frame these topics; most of them it can't settle.

Some people see the attribute of independence in direct conflict with a licensee-led CAB. I see the opposite because these attributes must be considered in light of our goals. The goal is not some purely independent body comprised of people with no stake in the outcome. Nor is the goal some pure system of industrial capture in which the firm calls the tune. Rather, the goal is delivering value to the communities affected by decommissioning—so that they learn what is happening, they can frame reasonable expectations, and crucially so the licensee can learn and engage seriously with the concerns of the community. Pure independence and pure capture would defeat that goal. My view is that SCE knows that independence is critical to success, and the CEP members know that SCE's central engagement is critical to relevance of the process. This kind of joint product through informed deliberation happens all the time in our democracy, and I doubt anyone on the CEP is surprised by the process—it is one reason why such large representation of elected officials is important to our CEP. They are used to balancing interests—to working with the community in all its forms—on a daily basis.

Lots of other groups hold public meetings and processes. The NRC does this; so do various state regulators. But in all those cases the meetings must follow the agenda and strictures of their sponsors. The CEP is different—it is where the totality of the decommissioning process is on the agenda.

It is worth flagging two lesser known details of this process that are important to consider as other communities craft their own CABs. One is that it is truly impressive how many people will volunteer time and other resources to make this process work. That

volunteerism reflects trust and value, I think, but it also reflects two other things. One is that we work in the open; nobody is covered by a nondisclosure agreement (NDA) for purposes of being on the CEP. The other is that many of us, as a condition of joining, required legal backstop from SCE so that we did not face jeopardy as a result of good faith work as a volunteer. In the five years I have been working in this area I have looked at that legal agreement once—when a vendor threatened a lawsuit after we accurately raised some questions about their behavior. Counsel was consulted; the vendor calmed down; life moved on. Absent these kinds of assurances—that our work stays in the open and we don't face undue legal jeopardy—I doubt the CEP would be as effective.

There are many other areas where value is still to be delivered. Number one on my list is removal of the spent fuel. Indeed, the one topic has attracted the most attention at our CEP meetings and in the local communities is management of spent fuel. We can't fix this problem without a place to send the fuel, and that requires action at the federal level. Absent federal action, local frustration remains high, as does the supply of clever but unworkable ideas for different ways to store the fuel or other nearby locations to send the fuel. We in the CEP have written letters and consulted widely in Congress. We have written opinion-editorials and testified [5]. Yet progress remains elusive. As a nation we need to solve that problem, and so long as solutions are elusive the time horizon and difficulty of the tasks that CABs must handle will grow.

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[5] Opinion-editorials and testimony:

a. Op-Ed: "Nuclear waste has been piling up across America with nowhere to go. Congress ...," By David G. Victor, Dan Stetson, Jerry Kern, Los Angeles Times, Jan. 24, 2019 https://www.latimes.com/opinion/op-ed/la-oe-victor-stetson-kern-san-onofre-20190124-story.html
b. Op-Ed: "Why the wiring of our brains makes it hard to stop climate change…", by David Victor, Los Angeles Times, Sept. 17, 2017 https://www.latimes.com/opinion/op-ed/la-oe-victor-amaya-obradovich-why-our-brains-make-it-hard-to-stop-global-warming-20170917-story.html
c. 2019. Testimony of Dan Stetson, Witness, Vice Chair, SONGS Community Engagement Panel, before the House Committee on Oversight and Reform – Subcommittee on Environment Representative Harley Rouda, Congressional Field Hearing, June 7
d. 2017. Testimony of Prof. David G. Victor, Chairman of the San Onofre Community Engagement Panel, before the House Oversight and Government Reform Subcommittee on Interior, Energy and Environment

Testimony of Prof. David G. Victor, Chairman of the San Onofre Community Engagement Panel, before the Nuclear Regulatory Commission Community Meeting on Section 108 of the Nuclear Energy Innovation and Modernization Act

San Juan Capistrano, CA

August 29, 2019

APPENDIX

SOUTHERN CALIFORNIA EDISON
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SONGS Decommissioning Community Engagement Panel (CEP) Charter

I. Purpose

A. SCE has permanently retired SONGS and is preparing for decommissioning. The SONGS Co-owners recognize the importance of open and transparent dialogue with the local community with respect to decommissioning activities.

B. The SONGS Community Engagement Panel (CEP) is convened by the SONGS Co-owners as a volunteer, non-regulatory body to enhance and foster open communication, public involvement and education on SONGS decommissioning activities. It is intended to serve as a conduit for public information and encourage community involvement and communication with the SONGS Co-owners on matters related to SONGS decommissioning.

C. To foster and encourage an open dialogue of issues of interest to the community, the SONGS Co-owners will provide regular decommissioning updates to the CEP. The CEP serves the interests of area communities and will act as a sounding-board for community feedback to the SONGS Co-owners on decommissioning issues and activities.

D. The CEP will focus on public education and understanding of matters of interest to area communities related to the shutdown and decommissioning of SONGS. The CEP is not intended to be a regulatory body or to substitute for the owners' judgment. Its focus will remain on matters of interest to area communities.

II. Organization and Membership

A. Membership

i. The CEP will be comprised of representatives from legislative, business and community groups to broadly reflect the diverse stakeholder viewpoints in proximity to SONGS.

ii. Members should be highly engaged and well-informed leaders in the community who have the network and credibility to serve as resources to their communities regarding SONGS decommissioning.

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iii. SCE will facilitate the recruiting of CEP members in consultation and with the participation of the SONGS Co-owners and/or working with local entities such as city governments that will appoint a representative.

iv. The CEP will initially consist of 14 to 18 members. Four to six members will be elected officials from local communities and will include, as a minimum, cities and counties within the SONGS 10-mile Emergency Planning Zone, including the Cities of San Clemente, Dana Point, and San Juan Capistrano as well as San Diego and Orange Counties. Members from represented cities will be determined by their respective city councils. Representatives from the counties will be the elected County Supervisors who represent the supervisorial district that includes or is nearest to San Onofre. An additional 10 to 12 members, representative of the local public and key stakeholders, will be selected by the SONGS Co-owners.

v. Each member of the CEP will serve a two-year renewable term (following the initial staggering of terms). The inaugural panel shall have staggered terms as assigned by the SONGS Co-owners. Membership on the panel shall be renewable at the discretion of the SONGS Co-owners.

vi. CEP members shall commit to sharing educational information on SONGS decommissioning with their own networks of contacts.

Each member may be allowed one designated alternate, as selected by the SONGS Co-owners in consultation with the Chairperson, who shall be allowed to participate in CEP meetings in the absence of the panel member. The goal is for panel members to participate in all meetings.

vii. Termination of an individual may occur in the event that three (3) consecutive CEP meetings are missed without prior notification to the Chairperson.

viii. Individual membership may be resigned in writing to the CEP Chairperson.

ix. Any vacancy, whether created by the expiration of a member's term, termination, or resignation, will be named by the SONGS Co-owners with the review and advice of the CEP and in an effort to maintain representation of a diverse group of stakeholders. As referenced in section II A iii, vacancies with local government entities will be appointed by the relevant government entity.

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B. Officers

i. The CEP shall have a Chairperson, Vice Chairperson and Secretary. The inaugural Chairperson and Vice Chairperson will each serve a two-year renewable term. The inaugural Chairperson and Vice Chairperson will be appointed by the SONGS Co-owners. Subsequent Chairpersons and Vice Chairpersons will be selected by the SONGS Co-owners with the advice of the CEP.

ii. The Secretary will be appointed by the Chairperson and serve a two-year renewable term at the discretion of the Chairperson.

C. Officer Duties

i. The Chairperson of the CEP shall perform the following duties:

1. Convene quarterly meetings of the CEP and schedule educational workshops, as appropriate.
2. Preside over the CEP and CEP meetings.
3. Appoint the CEP Secretary.
4. Submit to the SONGS Co-owners all recommendations adopted by the CEP.
5. Forward member resignation letters to the SONGS Co-owners.
6. Work with SCE administrative support to ensure the smooth flow of information to the CEP and public.

ii. The Vice Chairperson will perform all the duties of the Chairperson in his/her absence. Additional duties shall include:

1. Support facilitated public dialogue during CEP meetings.

iii. The Secretary shall perform the following duties:

1. Review and approve CEP meeting minutes.
2. Support facilitated public dialogue at CEP meetings.

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D. Committees

i. Committees, sub-committees, or similar working groups may be designated by the Chairperson as needed to carry out the work of the CEP.

ii. The Chairperson will appoint members to committees established by the CEP.

III. Meetings

A. CEP "Regular Meetings," shall be held once a quarter and shall be open to the public. Special meetings may occur more frequently in the discretion of the Chairperson, with the advice of the other members.

B. In an effort to maximize public education efforts, the CEP may also periodically convene public educational workshops where detailed information on specific matters may be discussed with the public.

C. The SONGS Co-owners will arrange for a Regular Meeting venue and will provide a light meal and refreshments for members prior to the meeting.

D. Compensation and Expenses - As volunteers, members shall not be compensated for their time. However, members may be reimbursed by the SONGS Co-owners for expenses incurred in the course of participating in CEP meetings and educational workshops, such as travel and lodging.

E. Participation – To ensure quality input from a variety of community leaders, CEP members will make an effort to ensure that at least half of the members are present at all Regular Meetings.

F. Public Notice – Regular Meetings and Educational Workshops shall be publicly noticed at least 72 hours prior to the scheduled meeting. Public notice shall be provided via the posting of a meeting notice to the www.SONGScommunity.com website.

G. Public Information – Information shared with CEP members shall be considered public information that is appropriate for dissemination to all external audiences.

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H. Public Comment Period – Regular Meetings shall include a public comment period in accordance with procedures determined in the discretion of the Chairperson. In general, oral comments will be limited to approximately three minutes per person, and the comment period will not exceed approximately one hour, subject to the discretion of the Chairperson

I. Meeting Agendas – The SONGS Co-owners shall be responsible for preparing agendas for Regular Meetings in consultation with the Chairperson and such other persons as he or she may designate.

J. Meeting Materials – The Co-owners will endeavor in good faith to provide to the members the meeting agenda, the previous meeting's minutes, and any pertinent information requiring review prior to the upcoming meeting at least five calendar days before a scheduled meeting.

K. Administrative Support

i. Ensure that the minutes include a record of members present, a concise and accurate description of matters discussed, and copies of all reports.
ii. Provide electronic versions of the minutes to SCE's public outreach staff for retention and posting on the www.SONGScommunity.com website.
iii. Meeting Minutes – Prepare meeting minutes and consult with the Secretary to confirm accuracy.
iv. Document Retention – Documents shall be maintained in a manner consistent with the SONGS Co-owners' Records Retention Policies.
v. Administration and Logistics – SCE staff will handle meeting logistics such as venues and audio/visual requirements. Administrative support will include but not be limited to typing, photocopying, compiling, mailing and/or e-mailing documents, and managing CEP content on the www.SONGScommunity.com website.

L. Additional Input from CEP Members

i. Consultation – In addition to and separate from the quarterly "Regular Meetings," the SONGS Co-owners may consult, on an as-needed basis, with CEP members by convening conference calls or face-to-face meetings through which CEP members can serve as a sounding board for decommissioning public outreach.

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IV. CEP Initial Term

A. The continuation of the CEP may be evaluated every two (2) years. Continuation of the CEP shall be determined by the SONGS Co-owners.

V. Charter Amendments

A. Amendments to this charter will be adopted by the SONGS Co-owners as necessary.

Members of the San Onofre Community Engagement Panel

Chairman

- University of California, San Diego (**Dr. David G. Victor**)

Vice Chairman

- The Nicholas Endowment (**Dan Stetson**)

Secretary

- City of Oceanside (**Representative Jerome M. "Jerry" Kern**)

Members

- American Nuclear Society, San Diego Chapter (**Edward "Ted" Quinn**)
- California State Parks (**Rich Haydon**)
- Camp Pendleton (**Sam Jammal**)
- Capistrano Unified School District Board of Trustees (**Board Member Martha McNicholas**)
- City of Dana Point (Mayor Pro Tem **Paul Wyatt**)
- City of San Clemente (Mayor Pro Tem **Dan Bane**)
- City of San Juan Capistrano (Council Member **John Taylor**)
- Laborers International Union of North America Local 89 (**Valentine "Val" Macedo**)
- Orange County Board of Supervisors (**Supervisor Lisa Bartlett**)
- Orange County Coastkeeper (**Garry Brown**)
- Orange County Sheriff's Department (**Donna Boston**)
- San Diego County Board of Supervisors (Supervisor **Jim Desmond**)
- San Luis Rey Band of Mission Indians (Captain **Mel Vernon**)
- Sierra Club (**Marni Magda**)
- South Orange County Economic Coalition (**Jim Leach**)

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Decommissioning San Onofre Nuclear Generating Station

2019 CEP Meetings Summary

3 Regular Meetings

Topic	Guest	Affiliation
Dry Cask Storage: Defense-In-Depth (DID)	Doug Bauder Lou Bosch Jerry Stephenson	Southern California Edison
Fuel Transfer Operations: Status & Path Forward	Tom Palmisano Doug Bauder Jearl Strickland	Southern California Edison
NRC Update	Scott Morris Linda Howell	Nuclear Regulatory Commission Administrator and Deputy Regional Administrator, Region IV
Canister Downloading Event: Lessons Learned and Understanding the Incident	Tom Palmisano	Southern California Edison
NRC Update	Scott Morris Linda Howell	Nuclear Regulatory Commission Administrator and Deputy Regional Administrator, Region IV

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2018 CEP Meetings Summary

4 Regular Meetings

Topic	Guest	Affiliation
Decommissioning Plan and Fuel Transfer Updates	Tom Palmisano	Southern California Edison
Dry Cask Storage Defense-In-Depth	Tom Palmisano	Southern California Edison
Spent Fuel Transportation	Gary Lanthrum	Radioactive Material Transportation and Storage Consulting (RAMTASC)
Canister Downloading Event	Tom Palmisano	Southern California Edison
NRC Special Inspection	Scott Morris	Nuclear Regulatory Commission Deputy Regional Administrator, Region IV

Decommissioning San Onofre Nuclear Generating Station
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2017 CEP Meetings Summary

4 Regular Meetings

Topic	Guest	Affiliation
Seismic	Dr. Neal Driscoll	Scripps Institution of Oceanography
Consolidated Interim Storage (CIS)	Pierre Oneid	Holtec International
	John Heaton	Eddy-Lea Energy Alliance LLC
Aging Management	Lisa Edwards	Electric Power Research Institute (EPRI)
Decommissioning	Matt Marston	SONGS DS
	Bruce Watson	Nuclear Regulatory Commission
	Ray Kellar	Nuclear Regulatory Commission

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Decommissioning San Onofre Nuclear Generating Station

2016 CEP Meetings Summary

4 Regular Meetings

Topic	Guest	Affiliation
California Environmental Quality Act	Cy Oggins	California State Lands Commission
Consolidated Interim Storage (CIS)	Rep. Darrell Issa	California 49th Congressional District
	John Kotek	Department of Energy
	Allison Macfarlane	NRC
	Rob Oglesby	California Energy Commission
	Jack Edlow	Edlow International
Marine Mitigation	Steve Schroeter	UC Santa Barbara
Community Perspective	Sara Kaminske	IPC & OC Sheriff Emergency Management
	Dan Dominguez	Utility Workers Union of America
	Charles Langley	San Clemente Green

Safety | Stewardship | Engagement
Decommissioning San Onofre Nuclear Generating Station

2015 CEP Meetings Summary

3 Regular Meetings / 1 Regular (Joint) Meeting

Topic	Guest	Affiliation
Nuclear Waste	Tim Frazier	Bipartisan Policy Center
	Per Peterson	UC Berkeley
	Geoff Fettus	NRDC
	David Wright	So. Carolina Public Service Commission
	Rob Oglesby	California Energy Commission
	Jim Williams	Western Interstate Energy Board
	Frank Ury	Mayor, Mission Viejo
	Einar Ronningen	Rancho Seco Nuclear Generating Sta.
	Marni Magda	Sierra Club
Security	Duane White	NRC
Emergency Planning	Sara Kaminske	Interjurisdictional Planning Committee
Defense in Depth	Dr. Kris Singh	Holtec
Economic Impact	Dustin Schrader	Beacon Economics

Decommissioning San Onofre Nuclear Generating Station
Safety | Stewardship | Engagement

2014 CEP Meetings Summary

4 Regular Mtgs / 1 Special Mtg / 2 Workshops

Topic	Guest	Affiliation
Spent Fuel	Per Peterson	UC Berkeley
	Marvin Resnikoff	Radioactive Waste Management Associates
	Dr. Michael McMahon	AREVA
	Drew Barto	NRC
Regulatory Fillings	Bruce Watson	NRC
	Angela Leiba	URS
	Barry Sims	Energy Solutions
Emergency Planning	Joe Anderson	NRC
	Jeremy Kirchner	Interjurisdictional Planning Committee
Dry Cask Storage	Dr. Michael McMahon	AREVA
	Dr. Kris Singh	Holtec

Los Angeles Times, January 24, 2019

OPINION

Op-Ed: Nuclear waste has been piling up across America with nowhere to go. Congress needs to act



Nuclear waste is stored in underground containers at the Idaho National Laboratory near Idaho Falls, Idaho on May 11, 2015.
(Keith Ridler / Associated Press)

By DAVID G. VICTOR, DAN STETSON, JERRY KERN
JAN. 24, 2019, 3:05 AM

At 74 sites around the country, radioactive waste from the nation's commercial nuclear reactors is accumulating with no place to go.

The long-standing problem is becoming a logistical and administrative nightmare. Financial pressures are forcing many reactors to close. Thousands of canisters packed with highly radioactive fuel remain.

There are closed nuclear reactors in at least 34 states, including Maine, Florida, Pennsylvania and New York. Some are near big cities, such as the San Onofre plantsouth of Los Angeles. The sites are monuments to decades of political neglect and mangled nuclear strategy.

But a solution finally appears to be within reach. Thanks to a growing grass-roots movement and new technology, consensus is building in Washington. A bipartisan coalition in Congress may soon be able to update the country's antiquated nuclear waste laws.

Any new law should allow communities to compete for investment in so-called interim storage.

At the center of the debate is the Nuclear Waste Policy Act of 1982 — legislation that was predicated on the idea that our nuclear reactors, which reload with fresh fuel every 18 to 24 months, would send their spent fuel to at least one national permanent repository.

The 1982 law was passed with strong support, because the location of any repository was unknown. A few years later, the country settled on Nevada's Yucca Mountain, about 100 miles from Las Vegas.

Since then, our policy has been hamstrung by opposition in that state, with additional opposition coming from people who object to nuclear power altogether and think, wrongly, that blocking the creation of a permanent storage site would prevent more reactors from being built.

Other countries, including Canada and Finland, have avoided this kind of impasse. They invited local communities to compete for the investment and jobs that would come with a nuclear waste repository. By the time this better approach became conventional wisdom, American politics around nuclear waste had already been thrust into gridlock by Yucca Mountain.

New legislation could rectify all this, and some proposals are already in the works.

To be effective, any new law should allow communities to compete for investment in so-called interim storage. These new sites would be vast holding zones, most likely located in the desert and far from people, where spent fuel can sit in one location (rather than dozens) and await a permanent home.

Sites in New Mexico and Texas are already seeking licenses, enticed by a combination of industrial backers (who will profit) and local, well-informed civic leaders who want the jobs and investment. These sites are betting that Congress will change the law, and when that reform happens, more sites are likely to emerge.

New legislation should also ensure that shuttered sites like San Onofre are first in line to send away their spent fuel, ahead of reactors that are still operating.

Getting the votes for a new law will take some political engineering. Most Republicans want to open Yucca Mountain. They are motivated by stronger support for nuclear power and the $11 billion already spent to engineer the site. Democrats are more circumspect, with many questioning whether Yucca Mountain can withstand the scrutiny of rigorous licensing.

But a growing alliance across the two parties recognizes that the country can't keep stranding nuclear fuel, especially at reactors that have already closed.

In the last Congress, Republican-written legislation was easily passed in the House. Of the 109 sponsors, 21 were Democrats. Bipartisan support grew as the bill moved through the House and was amended to include more language on interim storage. In the new Congress, a Democratic-written bill could do the same, but with more safeguards that could make Nevada and the left a bit happier.

Just because it now seems *possible* to fix the nation's nuclear mess doesn't mean Congress will deliver. To get it done, the new House will need to focus on legislating, not grandstanding. The not-so-new Senate will need to get proactive. Sens. Lamar Alexander of Tennessee and Dianne Feinstein of California have been forging a compromise in the Senate Appropriations Committee, one that includes support for interim storage. But no serious bill has been drafted in the Senate.

New technologies could help. For instance, a technique that would inject spent nuclear waste into the Earth's crust — known as deep borehole drilling — is being tested and may offer alternatives to Yucca.

Regions with closed nuclear plants, including in Southern California, need to keep organizing and pressuring their legislators. The industry and the Decommissioning Plants Coalition, a political lobby also known as the Dead Plant Society, must talk less about the mechanics of closing plants and more about making the politics work.

As 2020 campaigning begins in earnest, new legislation on nuclear waste — a topic that has long been a radioactive third rail in American politics — could remind us what bipartisanship looks like.

David G. Victor is a professor of international relations at UC San Diego and a nonresident senior fellow at the Brookings Institution. Dan Stetson is head of the Nicholas Endowment and president emeritus of the Ocean Institute. Jerry Kern is a former member of the Oceanside City Council. Together they lead the San Onofre Community Engagement Panel, a volunteer group working toward the safe closure of the San Onofre Nuclear Generating Station.

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Los Angeles Times

OPINION

Op-Ed: Why the wiring of our brains makes it hard to stop climate change



Pedestrians walk in a flooded street as Tropical Storm Irma hits Charleston, S.C. on Sept. 11.
(Mic Smith / Associated Press)

By DAVID G. VICTOR, NICK OBRADOVICH AND DILLON AMAYA
SEP. 17, 2017, 4 AM

Houston has barely begun to dry out from Hurricane Harvey, and Florida faces a massive rebuilding effort after the Irma catastrophe. These two storms, among the most powerful in American history, are typical of the extreme weather events that are

likely to become more common as the planet warms. A third hurricane, Jose, waits offshore and the storm season is far from done.

So why isn't the public heeding scientists and demanding climate action by politicians that could help deal with these destructive extremes? You can point fingers at the influence of fossil fuel companies, at misinformation from climate deniers and at political obstructionism, notably from a fragmented Republican party. But a much deeper force is also at work: the way our brains function.

Humans aren't well wired to act on complex statistical risks. We care a lot more about the tangible present than the distant future. Many of us do that to the extreme — what behavioral scientists call hyperbolic discounting — which makes it particularly hard to grapple with something like climate change, where the biggest dangers are yet to come.

Humans aren't wired to act on complex statistical risks very well. We care a lot more about the tangible present than the distant future.

Our mental space is limited and we aren't primed to focus on abstruse topics. Except for a small fraction that are highly motivated, most voters know little about the ins and outs of climate change, or the policy options relating to it. Instead, voters' opinions about such things derive from heuristics such as political party affiliation and basic ideology.

It isn't surprising, then, that most people don't process information about extreme events the way scientists do. And they don't do a good job of holding politicians accountable when the effects of political inaction are far removed from the policy failures that cause them.

The arrival of extreme events — hurricanes, wildfires, drought and torrential deluges — is not proof to many people that scientists are right and that a complete rethinking of climate policy is overdue. Instead, voters see these shocks more as evidence that things are out of whack. Change is needed, and voters deliver that verdict not by reevaluating policy but by casting politicians out of office.

Political scientists call such decision-making retrospective voting, and it too is rooted in how the brain deals with complex topics. It seems less than rational, but for busy voters, focusing on immediate, visible results and situations is a practical way to

assess politicians, even if those results and situations are many steps removed from elected leaders' actual responsibilities.

When it comes to climate change, this sort of brain-driven behavior tends to create churn in political leadership rather than the continuity needed for long-term planning. It ejects whoever happens to be in office, rather than the real culprits. It doesn't help that when politicians know they are at risk of losing office due to disasters, they may pursue quick payoffs, neglecting longer-term policies like those needed for emissions mitigation and climate adaptation.

California's climate actions prove there can be exceptions to these rules. But what matters for global warming is ultimately what happens across the nation and the planet. Overall, the politics of controlling emissions, especially given the time horizons we face, will continue to bring out the worst in how we make important policy decisions.

Quick, deep cuts in emissions would impose high costs on existing well-organized interest groups for benefits that will be diffused across all nations and that will accrue mainly in the distant future. Failing at emissions control, we will have to grapple with the politics of adaptation — abandoning vulnerable regions and subsidizing the construction of various forms of protection, like sea walls to deal with worsening storm surges.

Voters consistently report being worried about climate change. But asked to rank their priorities, they rarely put climate policy high on the list. Nor does the public indicate that it is willing to spend what is needed to address the problem. What voters know is mixed, muddled and sparse.

This grim analysis explains why political systems will always be playing catch-up. Even with the conspicuous signals of regular extreme events, public support for the policies needed to stop global warming will be fleeting. But that realization can also inspire new policy strategies that are better wired for our political brains.

First, investments in technology can help immensely because they lower the cost of reducing emissions, making change appear less costly and easier to adopt. New energy technologies also create new interest groups that can help keep policy makers focused on controlling emissions when voters' minds drift.

Second, we're likely to do better with policies that generate immediate and tangible benefits. A good example is efforts to control soot — a potent warming pollutant and also a central ingredient in noxious local air pollution. Even countries and societies that care little about global goals find it in their self-interest to protect the air their citizens breathe.

Third, our political institutions can help people focus on the long view by surveying climate impacts on a regular basis, so that each extreme storm is less a novel event and more a part of a pattern that needs sustained policy attention. One model is California's program of localized climate assessments that inform decisions about land-use planning and development. Another is the Obama administration's regular, nationwide assessments, which are at risk of termination under President Trump.

Our brains are unfortunately not wired to tackle problems like climate change. With some help we can build policies that enable us to do better. What the storms in the Gulf and Atlantic are reminding the public — for now, if not for long— is that the consequences of failure are big.

David G. Victor is a professor at UC San Diego's School of Global Policy & Strategy and codirector of the Initiative on Energy and Climate at the Brookings Institution. Nick Obradovich is a research scientist at MIT's Media Laboratory. Dillon J. Amaya is a PhD student at the Scripps Institution of Oceanography.

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Congressional Field Hearing – June 7, 2019
House Committee on Oversight and Reform - Subcommittee on Environment
Representative Harley Rouda, Chairman

Dan Stetson, Witness
Vice Chair, SONGS Community Engagement Panel

Introduction

Good morning Mr. Chairman and members of the Subcommittee. Thank you for the opportunity to appear and testify at today's hearing. My name is Dan Stetson[1] and I serve as Vice Chairman of the Community Engagement Panel or "CEP" for the San Onofre Nuclear Generating Station, or "SONGS" for short.

CEP History

I was invited here today to serve as a representative of the SONGS CEP. The CEP was formed early 2014 after the retirement of SONGS in 2013. The purpose of the CEP is to serve as a bridge and conduit between SCE and the local communities.

The 18 members[2] of the CEP represent a range of stakeholders, from environmental NGOs and Native American Tribes to business and organized labor. More than half are local elected officials – from Oceanside to Dana Point - sworn to represent best interests of their constituents. All are volunteers.

There are three officers including Chairman Dr. David Victor of UCSD … myself, Dan Stetson, Vice Chairman … and Jerry Kern, immediate past city council member from Oceanside. Officers provide input to SCE on agenda topics and public engagement.

We hold quarterly meetings and periodic workshops. All are open to the public for transparency. Meetings are webcast live and video recordings are posted online.[3] We provide one full hour for public comment.

[1] See appendix for resume
[2] List of CEP members is available at https://www.songscommunity.com/community-engagement/community-engagement-panel
[3] Past CEP meetings may be viewed at https://www.songscommunity.com/community-engagement/meetings

What's Important?

Over the past 5-plus years, the CEP has addressed a variety of issues that are important to the local communities.

But I have learned that there really are just a couple of truly important issues. The first is safety managing the spent fuel while it is on site and the second is removing the spent fuel from the site.

Dry Cask Storage Canisters

Let me first address on-site storage and, more specifically, dry cask storage. This is what we on the CEP have come to call "defense-in-depth" for dry cask storage. Defense in depth means looking at the full complement of means to support safe on-site storage of spent fuel.

This starts with design and fabrication of the spent fuel canisters, while also considering operations, maintenance and security, as well as canister inspections, and—if needed—remediation of a compromised canister.

Dry cask storage has been addressed frequently at CEP meetings in the past 5-plus years. I am proud to say I am among those on the SONGS CEP who have advocated with SCE to help shape the utility's approach to spent fuel management. Edison has taken concrete steps to address areas of interest. One such step is laser peening the welds on the new canisters to minimize the risk of chloride-induced stress corrosion cracking of the canister shells.

Offsite Storage and/or Disposal

The second important issue is moving the spent fuel offsite. Over the years, most but not all members of local communities also have expressed an interest in moving the spent fuel offsite from San Onofre to a federally licensed storage or disposal facility. Offsite storage has been addressed frequently at CEP meetings over time.

Just consider the costs. As the schedule for the Department of Energy to pick up spent fuel continues to slip, the 2018 Audit Report of the Office of the Inspector

General[4] estimates that slippage costs to American tax payers of over 35 billion dollars, or approximately 2.2 million dollars per day.

To address offsite storage, Chairman David Victor delivered testimony[5] the fall of 2017 before the House Oversight and Government Reform Subcommittee on Interior, Energy & Environment. David, Jerry, and I are among those CEP members who have met with members of the California Congressional delegation to advance federal legislation for spent fuel. In April, I met with 5 members of Congress and/or their staff, including staff from Representative Rouda's office.

Congressional outreach is part of a broader effort to try to effect changes to the Nuclear Waste Policy Act and enable consolidated interim storage and permanent disposal.

I appreciate the request by Representative Rouda and others for 25 million dollars in the Energy & Water Appropriations bill to help fund CIS, transportation, and infrastructure.

On behalf of the SONGS Community Engagement Panel, let me close by saying thank you for making this a top priority. We look forward to additional action in Congress to get spent fuel at San Onofre off site.

With the passage of the Nuclear Waste Policy Act of 1982, Congress made a solemn promise to the American people. To date that promise remains unfulfilled. We are counting on you to keep this promise and solve this seemingly intractable problem … once and for all.

Thank you for your attention.

[4] See appendix for the Audit Report and supporting material
[5] See appendix for testimony

APPENDIX

Daniel T. Stetson

Dan has never had a job East of Pacific Coast Highway. He is currently the Executive Director and a Trustee of The Nicholas Endowment. The Endowment was created by Broadcom co-founder Dr. Henry Nicholas III and his wife Stacey Nicholas to provide meaningful support to charitable organizations in the advancement of science, education and the arts.

Dan also serves as vice chairman of the Community Engagement Panel (CEP) established in February 2014 to encourage open communication, public involvement and education throughout the decommissioning of San Onofre nuclear plant. The CEP was established by current and former owners of San Onofre responsible for decommissioning: Southern California Edison, San Diego Gas & Electric, and the cities of Riverside and Anaheim.

Dan served as President and CEO of the Ocean Institute from 2005-2015, after having joined the Institute in 1992. The Ocean Institute is an educational non-profit organization located in Dana Point, California that provides inspiring marine science and maritime history programs for over 100,000 students annually. Under Dan's leadership, the programs became nationally renowned and received the inaugural Walter Cronkite Award for Excellence in Maritime Education.

Immediately prior to his tenure at the Ocean Institute, Dan consulted for the law firm of Pillsbury, Madison & Sutro representing a foreign shipping company involved in an oil spill incident. Dan managed the compensation process for over 2,000 claimants from the largest oil spill in the LA Harbor's history. While the spill was originally attributed to his client's cargo ship, Dan's efforts led to the discovery of evidence that the majority of the spill (93%) was actually from a previously unidentified ship. Dan testified as an expert witness in criminal court. In the resulting civil trial, 100% of the client's multimillion dollar clean up and claims expenses were recovered.

Dan has a BA from UC Santa Barbara and an MBA from California State University, Fullerton. He is a veteran of the US Coast Guard. Together with Roxanne, his wife of 33 years, Dan enjoys hiking, tennis, and diving.

OFFICE OF INSPECTOR GENERAL
U.S. Department of Energy

AUDIT REPORT

DOE-OIG-19-08 November 2018

DEPARTMENT OF ENERGY NUCLEAR WASTE FUND'S FISCAL YEAR 2018 FINANCIAL STATEMENT AUDIT

Department of Energy
Washington, DC 20585

November 27, 2018

MEMORANDUM FOR THE DIRECTOR, OFFICE OF STANDARD CONTRACT MANAGEMENT

FROM: Sarah B. Nelson
Assistant Inspector General
for Audits and Administration
Office of Inspector General

SUBJECT: INFORMATION: Audit Report on the "Department of Energy Nuclear Waste Fund's Fiscal Year 2018 Financial Statement Audit"

The attached report presents the results of the independent certified public accountants' audit of the balance sheets of the Department of Energy Nuclear Waste Fund, as of September 30, 2018, and 2017, and the related statements of net cost, changes in net position, and statements of budgetary resources for the years then ended.

To fulfill Office of Inspector General audit responsibilities, we contracted with the independent public accounting firm of KPMG LLP to conduct the audit, subject to our review. KPMG LLP is responsible for expressing an opinion on the Nuclear Waste Fund's financial statements and reporting on applicable internal controls and compliance with laws and regulations. The Office of Inspector General monitored audit progress and reviewed the audit report and related documentation. This review disclosed no instances where KPMG LLP did not comply, in all material respects, with generally accepted Government auditing standards. The Office of Inspector General did not express an independent opinion on the Nuclear Waste Fund's financial statements.

KPMG LLP concluded that the combined financial statements present fairly, in all material respects, the respective financial position of the Nuclear Waste Fund as of September 30, 2018, and 2017, and its net costs, changes in net position, and budgetary resources for the years then ended, in conformity with United States generally accepted accounting principles.

As part of this review, auditors also considered the Nuclear Waste Fund's internal controls over financial reporting and tested for compliance with certain provisions of laws, regulations, contracts, and grant agreements that could have a direct and material effect on the determination of financial statement amounts. The results of the auditors' review disclosed no instances of noncompliance or other matters required to be reported under generally accepted Government Auditing Standards or applicable Office of Management and Budget guidance.

Attachment

cc: Chief Financial Officer, CF-1
Director, Office of Finance and Accounting, CF-10
Deputy Director, Office of Finance and Accounting, CF-10
Assistant Director, Office of Financial Policy and Internal Controls, CF-12
Division Director, Office of Financial Policy and Internal Controls, CF-12
Audit Resolution Specialist, Office of Financial Policy and Internal Controls, CF-12

Audit Report: DOE-OIG-19-08

Attachment

INDEPENDENT AUDITORS' REPORT

UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND

Annual Financial Report

As of and for the Years Ended
September 30, 2018 and 2017

November 13, 2018

Attachment

UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND

Annual Financial Report
September 30, 2018 and September 30, 2017

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Management's Discussion & Analysis

Reporting Entity

The Nuclear Waste Policy Act of 1982 (NWPA) (Public Law 97-425) established the Office of Civilian Radioactive Waste Management (OCRWM) within the United States (U.S.) Department of Energy (Department or DOE). OCRWM's mission was to manage and dispose of the Nation's spent nuclear fuel (SNF) and high-level radioactive waste (HLW). The Nuclear Waste Policy Amendments Act of 1987 (Title V, Public Law 100-203) directed the Secretary of Energy to characterize only the Yucca Mountain site in Nevada as a candidate site to determine if it was suitable for a repository for SNF and HLW.

Once the characterization of the Yucca Mountain site was completed, the Secretary recommended the site to the President. In July 2002, the President signed into law the Congressional Joint Resolution designating Yucca Mountain as the site for the Nation's first SNF and HLW repository. In 2008, OCRWM submitted a license application to the U.S. Nuclear Regulatory Commission (NRC or the Commission) seeking authorization to construct the Yucca Mountain repository.

In fiscal year (FY) 2009, the previous Administration decided to terminate the Yucca Mountain Project. In January 2010, at the direction of the President, the Secretary announced the formation of the Blue Ribbon Commission (BRC), which was shortly followed by the FY 2011 Budget Request with a zero budget request for OCRWM. In March 2010, the Department filed a motion to withdraw with prejudice the Yucca Mountain License Application pending before the Atomic Safety and License Board (ASLB or Board), the independent adjudicatory body of the Nuclear Regulatory Commission (NRC or Commission). In June 2010, the ASLB issued an order denying the Department's motion to withdraw the License Application, which the Department appealed to the Commission. By the beginning of FY 2011, the Department had disbanded OCRWM, and shifted OCRWM program responsibilities to various Departmental Program Secretarial Offices. Among these shifts, the Office of General Counsel (OGC) is now responsible for ongoing litigation and oversight of regulatory activities associated with the NWPA, the Nuclear Waste Fund (NWF), and the Standard Contract for the Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste (10 CFR 961) with utilities (Standard Contract).

In July 2011, a lawsuit was filed against the NRC in the U.S. Court of Appeals for the District of Columbia (DC) Circuit requesting that the court order the NRC to continue reviewing the Yucca Mountain license application.

In September 2011, the NRC issued its decision in which the Commission (1) announced it was split evenly on the question whether the NRC's ASLB had properly refused to allow the Department's motion to withdraw the Yucca Mountain construction license application with prejudice, and (2) unanimously held that "budgetary limitations" required the ASLB to dispose of pending matters by the end of FY 2011 and to document the history of the adjudicatory process. Subsequently, the ASLB issued a memorandum and order suspending the adjudicatory portion of the licensing proceeding due to uncertainty regarding the availability of future appropriations from the NWF to pay for future proceeding and a lack of staff to continue the proceeding. The adjudicatory portion of the licensing proceeding remains suspended due to lack of appropriations.

The BRC submitted a final report in January 2012 with its recommendations for consideration by the Administration and Congress, as well as interested state, tribal and local governments, other stakeholders, and the public.

In August 2013, the U.S. Court of Appeals for the DC Circuit issued an order to the NRC to promptly continue with the legally mandated licensing proceeding unless and until Congress authoritatively says otherwise or there are no appropriated funds remaining.

In November 2013, the NRC requested the Department prepare the supplemental environmental impact statement (EIS) that the NRC staff determined was needed for purposes of the review of the application under the National Environmental Policy Act (NEPA). In October 2014, the Department provided an updated version as of July 30, 2009, entitled, *Analysis of Postclosure Groundwater Impacts for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada.* In May 2016, the NRC subsequently issued the report as the *Supplement to the U.S. Department of Energy's Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada (NUREG-2184, Final Report).*

No funds for Yucca Mountain were requested in the FY 2017 Budget Request. Funds for Yucca Mountain were requested in the FY 2018 and FY 2019 Budget Requests, but not received. Funds remaining prior to disbanding OCRWM have been used between October 1, 2010 and September 30, 2018 to continue the management of the NWF, litigation activities, for additional closure activities under the previous Administration, and for exploratory activities under the current Administration to prepare for a resumption of DOE participation in the licensing proceeding pursuant to the FY 2018 and 2019 Budget Requests. The funds are managed by the Office of Nuclear Energy.

In accordance with the NWPA, the Department entered into more than 68 Standard Contracts with utilities in which, in return for payment of fees into the NWF, the Department agreed to begin disposal of SNF by January 31, 1998. Because the Department has no facility available to receive SNF under the NWPA, it has been unable to begin disposal of the utilities' SNF as required by the contracts. Significant litigation claiming damages for partial breach of contract has ensued as a result of the Department's delay.

Fiscal Year 2018 and 2017 Financial Performance

The principal financial statements have been prepared to report the financial position and results of operations of the entity, pursuant to the requirements of 31 United States Code 3515 (b). While the statements have been prepared from the books and records of the entity in accordance with Generally Accepted Accounting Principles for Federal entities and the formats prescribed by the Office of Management and Budget (OMB), the statements are in addition to the financial reports used to monitor and control budgetary resources, which are prepared from the same books and records. The statements should be read with the realization that they are for a component of the U.S. Government, a sovereign entity.

The NWF consists of fees paid by the owners and generators of SNF from commercial reactors, in accordance with provisions of their contracts with the Department for disposal services. NWF assets in excess of those authorized by Congress to pay Nuclear Waste Policy Act costs are

invested in U.S. Treasury securities. On November 19, 2013, the U.S. Court of Appeals for the District of Columbia Circuit found that the Department did not have a legitimate basis to evaluate the ongoing fee and directed the Department to propose to Congress a reduction of the ongoing fee to zero. The Department complied and such proposal became effective on May 16, 2014. The Nuclear Waste Policy Act originally provided that the federal government would pay the costs of defense-generated nuclear waste directly into the Nuclear Waste Fund. However, Congress in 1993 changed that requirement to instead establish a separate Defense Nuclear Waste Disposal appropriation (DNWDA).

As of September 30, 2018, cumulative billings from fees and the DNWDA, totaled approximately $25.4 billion; and cumulative interest earnings and other revenue totaled approximately $27.8 billion. As of September 30, 2018, cumulative expenditures by the Department from appropriations and amounts authorized by Congress, including direct appropriations to the NRC, the now defunct Office of the Nuclear Waste Negotiator, and the Nuclear Waste Technical Review Board, totaled approximately $11.4 billion.

As of September 30, 2018 and 2017, the U.S. Treasury securities held by the NWF were $39.2 billion and $37.6 billion, respectively, and had a fair value of $43.4 billion compared to $44.5 billion.

Offsetting NWF investments and receivables are deferred revenues, which reflect the cumulative fees billed, related accrued interest, and investment income in excess of expenditures since inception. As of September 30, 2018 and 2017, the combined deferred revenue balance was $41.9 billion and $40.3 billion, respectively. The increase from investment income and net gains from the maturity of securities was $1.5 billion for FY 2018 and FY 2017.

The Department estimates the remaining liability associated with the partial breach of the Standard Contract and has reflected that amount on the Commitments and Contingencies line of the balance sheet. As of September 30, 2018 and 2017, the estimate of the remaining liability from SNF litigation was $28.1 billion and $27.2 billion, respectively. Since no appropriation related to fulfilling the Department's NWPA obligations was received for FY 2019, an additional year of delay was added to the current estimate. Judgments and settlements for damages related to the partial breach are paid by the Judgment Fund.

ANALYSIS OF SYSTEMS, CONTROLS, AND LEGAL COMPLIANCE

Analysis of systems, controls, and legal compliance is performed, reported, and audited at the Departmental level. The results of these reviews and assessments are incorporated in the Department's Annual Financial Report. A significant issue, SNF and HLW Disposal, was reported by management in FY 2018 and FY 2017 and is described below.

Federal Managers' Financial Integrity Act

The Federal Managers' Financial Integrity Act (FMFIA) of 1982 requires that agencies establish internal control and financial systems to provide reasonable assurances that the integrity of Federal programs and operations are protected. Furthermore, it requires that the head of the agency provide an annual assurance statement on whether the agency has met this requirement and whether any material weaknesses exist.

In response to the FMFIA, the Department developed an internal control program which holds managers accountable for the performance, productivity, operations, and integrity of their programs through the use of management controls. Annually, senior managers at the Department are responsible for evaluating the adequacy of the internal controls surrounding their activities and determining whether they conform to the principles and standards established by the Office of Management and Budget, and the Government Accountability Office. The results of these evaluations and other senior management information are used to determine whether there are any internal control problems to be reported as material weaknesses. The Departmental Internal Control and Audit Review Council, the organization responsible for oversight of the Management Control Program, makes the final assessment and decision for the Department.

Significant Issue - SNF AND HLW DISPOSAL

The government's acceptance of SNF and HLW, authorized under the NWPA, has been delayed by various factors.

Actions Taken and Remaining

The previous Administration issued the "Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Waste" on January 11, 2013 (Strategy), but no Congressional action was taken to fully implement the Strategy. The key assumptions from the Strategy were: that (1) a pilot storage facility will be operational in 2021 to allow for the removal of SNF from shut down reactors; (2) an interim storage facility will be operational in 2025 to begin the removal of SNF from operating nuclear power reactors and (3) that reactors will incur costs reimbursable by the Department until the Department has fulfilled its obligations under the agreements.

In March 2017, the current Administration submitted *America First - A Budget Blueprint to Make America Great Again* to Congress that included the restart of licensing activities for the Yucca Mountain nuclear waste repository and initiation of a robust interim storage program which were subsequently reflected in the Administration's FY 2018 Budget Request in May 2017. In February 2018, the Administration's FY 2019 Budget Request again included the restart of licensing activities for the Yucca Mountain nuclear waste repository. However, no funding was provided related to the Yucca Mountain repository in the Consolidated Appropriations Act for FY 2018 passed in March 2018 or the Energy and Water, Legislative Branch, and Military Construction and Veterans Affairs Appropriations Act, 2019, passed in September 2018.

Attachment

KPMG LLP
Suite 12000
1801 K Street, NW
Washington, DC 20006

Independent Auditors' Report

Acting Inspector General, United States Department of Energy and
United States Department of Energy Nuclear Waste Fund:

Report on the Financial Statements

We have audited the accompanying financial statements of the United States Department of Energy (Department) Nuclear Waste Fund, which comprise the balance sheets as of September 30, 2018 and 2017, and the related statements of net cost, changes in net position, and statements of budgetary resources for the years then ended, and the related notes to the financial statements.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with U.S. generally accepted accounting principles; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America, in accordance with the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, and in accordance with Office of Management and Budget (OMB) Bulletin No. 19-01, *Audit Requirements for Federal Financial Statements*. Those standards and OMB Bulletin No. 19-01 require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the United States Department of Energy Nuclear Waste Fund as of September 30, 2018 and 2017, and its net costs, changes in net position, and budgetary resources for the years then ended in accordance with U.S. generally accepted accounting principles.

KPMG LLP is a Delaware limited liability partnership and the U.S. member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity.

Emphasis of Matter

As discussed in Note 9 to the financial statements, the Department is involved as a defendant in several matters of litigation relating to its liability to accept commercial spent nuclear fuel by January 1, 1998, the date specified in the Nuclear Waste Policy Act of 1982, as amended. The Department of Energy Nuclear Waste Fund has recorded an estimate of its liability related to this matter of $28.1 billion and $27.2 billion as of September 30, 2018 and 2017, respectively. Our opinion is not modified with respect to this matter.

Other Matters

Required Supplementary Information

U.S. generally accepted accounting principles require that the information in the Management's Discussion and Analysis section be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Federal Accounting Standards Advisory Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audits of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information

Our audits were conducted for the purpose of forming an opinion on the basic financial statements as a whole. The Other Information – Schedules I and II – is presented for purposes of additional analysis and is not a required part of the basic financial statements. Such information has not been subjected to the auditing procedures applied in the audits of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on it.

Other Reporting Required by *Government Auditing Standards*

Internal Control over Financial Reporting

In planning and performing our audit of the financial statements as of and for the year ended September 30, 2018, we considered the United States Department of Energy Nuclear Waste Fund's internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the United States Department of Energy Nuclear Waste Fund's internal control. Accordingly, we do not express an opinion on the effectiveness of the United States Department of Energy Nuclear Waste Fund's internal control. We did not test all internal controls relevant to operating objectives as broadly defined by the *Federal Managers' Financial Integrity Act of 1982*.

A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A material weakness is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the United States Department of Energy Nuclear Waste Fund's financial statements will not be prevented, or detected and corrected, on a timely basis. A significant deficiency is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal

control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether the United States Department of Energy Nuclear Waste Fund's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards* or OMB Bulletin No. 19-01.

Purpose of the Other Reporting Required by Government Auditing Standards

The purpose of the communication described in the Other Reporting Required by *Government Auditing Standards* section is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the United States Department of Energy Nuclear Waste Fund's internal control or compliance. Accordingly, this communication is not suitable for any other purpose.

KPMG LLP

Washington, DC
November 13, 2018

Attachment

UNITED STATES DEPARTMENT OF ENERGY

NUCLEAR WASTE FUND

Balance Sheets
As of September 30, 2018 and 2017
(Dollars in thousands)

	FY 2018	FY 2017
ASSETS		
Intragovernmental:		
Fund Balance with Treasury (Note 3)	$ 10,718	$ 15,697
Investments and Related Interest, Net (Note 4)	39,195,614	37,670,986
Total Intragovernmental Assets	39,206,332	37,686,683
Accounts Receivable:		
Utilities (Note 5)	2,660,601	2,619,525
General Property, Plant, and Equipment, Net (Note 6)	120	122
Total Assets	$ 41,867,053	$ 40,306,330
LIABILITIES		
Intragovernmental: (Note 8)		
Accounts Payable	$ 127	$ 16
Deferred Revenue (Notes 7 and 10)	636,627	634,424
Other Liabilities	197	197
Total Intragovernmental Liabilities	636,951	634,637
Accounts Payable and Other Liabilities	453	1,863
Deferred Revenue (Note 10)	41,222,235	39,658,012
Commitments and Contingencies (Note 9)	28,111,003	27,247,874
Total Liabilities (Note 8)	69,970,642	67,542,386
NET POSITION		
Unexpended Appropriations - Other Funds	7,414	11,818
Cumulative Results of Operations - Other Funds	(28,111,003)	(27,247,874)
Total Net Position	(28,103,589)	(27,236,056)
Total Liabilities and Net Position	$ 41,867,053	$ 40,306,330

The accompanying notes are an integral part of these statements.

Attachment

UNITED STATES DEPARTMENT OF ENERGY

NUCLEAR WASTE FUND

Statements of Net Cost
For the Years Ended September 30, 2018 and 2017
(Dollars in thousands)

	FY 2018	FY 2017
First Repository Costs	$ 4,857	$ 3,011
All Other Program Costs:		
Program Support	196	69
Transfers of Appropriations (Note 7)	3,600	3,600
Waste Acceptance, Storage and Transportation	1,583	1,949
Total All Other Program Costs	5,379	5,618
Total First Repository and Other Program Costs	10,236	8,629
Less Earned Revenues (Note 10)	(10,236)	(8,629)
Net First Repository Costs & Other Program Costs	-	-
Estimated costs for waste acceptance obligations	1,421,685	3,290,256
Net Cost of Operations	$ 1,421,685	$ 3,290,256

The accompanying notes are an integral part of these statements.

Attachment

UNITED STATES DEPARTMENT OF ENERGY

NUCLEAR WASTE FUND

Statements of Changes in Net Position
For the Years Ended September 30, 2018 and 2017
(Dollars in thousands)

	FY 2018	FY 2017
CUMULATIVE RESULTS OF OPERATIONS		
Beginning Balance	$ (27,247,874)	$ (24,689,260)
Other Financing Sources (Non-Exchange):		
Imputed Financing from Costs Absorbed by Others	558,556	731,642
Total Other Financing Sources	558,556	731,642
Net Cost of Operations	(1,421,685)	(3,290,256)
Net Change	(863,129)	(2,558,614)
Ending Balance - Cumulative Results of Operations	$ (28,111,003)	$ (27,247,874)
UNEXPENDED APPROPRIATIONS		
Beginning Balance	$ 11,818	$ 14,151
Budgetary Financing Sources Related to Appropriations:		
Appropriations Used	(4,404)	(2,333)
Total Budgetary Financing Sources Related to Appropriations	(4,404)	(2,333)
Ending Balance - Unexpended Appropriations	7,414	11,818
Total Net Position	$ (28,103,589)	$ (27,236,056)

The accompanying notes are an integral part of these statements.

Attachment

UNITED STATES DEPARTMENT OF ENERGY

NUCLEAR WASTE FUND

Statements of Budgetary Resources
For the Years Ended September 30, 2018 and 2017
(Dollars in thousands)

	FY 2018	FY 2017
BUDGETARY RESOURCES		
Unobligated Balance from Prior Year Budget Authority, Net	$ 11,111	$ 19,899
Appropriations (Note 2)	-	-
Total Budgetary Resources	$ 11,111	$ 19,899
Memorandum (non-add) Entries:		
Net adjustments to unobligated balance brought forward, Oct 1	$ 1,319	$ 1,395
STATUS OF BUDGETARY RESOURCES		
New Obligations and Upward Adjustments (Total) (Note 12)	$ 2,950	$ 10,107
Unobligated Balance, End of Year:		
Apportioned, Unexpired Accounts	1,643	1,206
Exempt from Apportionment, Unexpired Accounts	6,518	8,586
Unobligated Balance, End of Year	8,161	9,792
Total Budgetary Resources	$ 11,111	$ 19,899
OUTLAYS, NET		
Outlays, Net	$ 7,933	$ 3,935
Distributed Offsetting Receipts	(1,538,926)	(1,664,724)
Nuclear Waste Fund Outlays, Net	$ (1,530,993)	$ (1,660,789)

The accompanying notes are an integral part of these statements.

UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND

Notes to Financial Statements
September 30, 2018 and September 30, 2017

(Dollars in thousands unless otherwise noted)

(1) Legislative Background

The Nuclear Waste Policy Act of 1982 (NWPA) was signed into law on January 7, 1983. The NWPA establishes a framework for the financing, siting, licensing, operating and decommissioning of one or more mined geologic repositories for the Nation's spent nuclear fuel (SNF) and high-level radioactive waste (HLW) which is to be carried out by the Department of Energy (Department or DOE). In addition, the NWPA contains other provisions including:

- Assigning responsibility for the payment of disposal costs to the owners and generators of SNF and HLW and creating a special Nuclear Waste Fund (NWF) within the Department of Treasury of the United States for the collection of fees to cover such costs;

- Providing for contracts between the Department and the owners and generators of SNF and HLW pursuant to which the Department is to take title to the SNF or HLW as expeditiously as possible, following commencement of repository operations and, in return for payment of fees established by the NWPA, to begin disposal of the SNF or HLW not later than January 31, 1998; and

- Requiring evaluation of the use of civilian disposal capacity for the disposal of HLW resulting from atomic energy defense activities (Defense HLW). In April 1985, the President notified the Department of his determination that a separate defense waste repository was not necessary and directed the Department to proceed with arrangements for disposal of such waste. Fees, equivalent to those paid by commercial owners, must be paid for this service by the Federal Government.

On December 22, 1987, the President signed into law the Budget Reconciliation Act, Subtitle A Title V, of which contained amendments to the NWPA. The legislation directed the Department to characterize only the Yucca Mountain site in Nevada as a candidate site for the first repository. The legislation also provided for the termination of site-specific activities at all candidate sites other than the Yucca Mountain site, within 90 days of enactment, and for phasing out, not later than six months after enactment, all research programs in existence that were designed to evaluate the suitability of crystalline rock as a potential repository host medium.

In fiscal year (FY) 2009, the President and the Department's Secretary announced that a repository at Yucca Mountain was not a workable option and that the repository program would be terminated. At that time, they also announced that a Blue Ribbon Commission would be established to evaluate disposal alternatives. Accordingly, on January 29, 2010, the Department's Secretary announced the formation of a Blue Ribbon Commission on America's Nuclear Future to provide recommendations for developing a safe, long-term solution to managing the Nation's SNF and HLW. The Blue Ribbon Commission submitted a final report in January 2012 with their recommendations on these issues for consideration by the Administration and Congress, as well as interested state, tribal and local governments, other stakeholders, and the public. On February 1, 2010, the President issued the FY 2011 Budget Request with a zero budget request for the Nuclear Waste Fund Appropriation and the Defense Nuclear Waste Disposal Appropriation (formerly known as and reported under the Office of Civilian Radioactive Waste Management (OCRWM) prior to FY 2011). Consequently, the Department closed OCRWM on September 30, 2010, and, on October 1, 2010, the Department reassigned prior responsibilities for the operations of OCRWM and its assets and liabilities within the Department, herein referred to as the NWF. In March 2017, the Administration submitted *America First – A Budget Blueprint to Make America Great Again* to Congress that included the restart of licensing activities for the Yucca Mountain nuclear waste repository, which was subsequently reflected in the Administration's FY 2018 Budget Request in May 2017. In February 2018, the Administration's FY 2019 Budget Request again included the restart of licensing activities for the Yucca Mountain nuclear waste repository. However, no funding was provided related to the Yucca Mountain repository in the Consolidated Appropriations Act for FY 2018 passed in March 2018 or the Energy and Water, Legislative Branch, and Military Construction and Veterans Affairs Appropriations Act, 2019, passed in September 2018.

UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND

Notes to Financial Statements
September 30, 2018 and September 30, 2017

(Dollars in thousands unless otherwise noted)

(2) Significant Accounting Policies

Basis of Presentation – These financial statements have been prepared to report the financial position and results of operations of the NWF and include all activity related to the Nuclear Waste Fund Appropriation and the Defense Nuclear Waste Disposal Appropriation, used for the disposal of SNF and HLW (formerly reported under the Office of Civilian Radioactive Waste Management). The financial statements have been prepared from the books and records of the Department for the NWF in accordance with accounting principles generally accepted in the United States of America as applicable to Federal entities and presentation guidelines in Office of Management and Budget (OMB) Circular A-136, Financial Reporting Requirements.

Basis of Accounting – The NWF's financial statements are prepared using the accrual method of accounting. Under the accrual method, revenues are recognized when earned, and expenses are recognized when a liability is incurred without regard to receipt or payment of cash. The NWF also uses budgetary accounting to facilitate compliance with legal constraints and to monitor its budget authority. On the Balance Sheets, assets and liabilities have been classified according to the type of entity with which the transactions were made. Intragovernmental assets and liabilities are those from or to other federal entities.

Revenue Recognition – Fees, related accrued interest, and investment income are recognized as exchange (earned) revenue to the extent of expenses incurred, subject to Congressional authorization as discussed below. Fees billed, related accrued interest, and investment income in excess of current expenses are deferred.

The NWPA requires the civilian owners and generators of nuclear waste to pay their share of the full cost of the NWF and, to that end, establishes a fee for electricity generated and sold by civilian nuclear power reactors which the Department must collect and annually assess to determine its adequacy. A one-time fee (see Note 5) was recorded by the NWF as of April 7, 1983, related to the disposal of SNF generated prior to that date. Fees recognized by the NWF are based upon kilowatt (kWh) of electricity generated and sold by civilian nuclear reactors on and after April 7, 1983. The Department set the per kWh portion of the fee to zero in 2014.

Fees associated with the disposal of the Department's SNF and HLW are also recognized as the related costs are incurred and allocated. The methodology for allocating costs between SNF and HLW owned and managed by the Government (defense) and commercial (civilian) was developed by public rulemaking and published in the Federal Register in August 1987. This rule provides guidance for calculating the defense and civilian shares of total costs. The annual *Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program* (TSLCC) calculated the defense and civilian shares of program costs using this methodology. The most recent TSLCC was published in 2008.

Appropriations – Expenditure authority for the NWF has historically been provided by two separate appropriations. For fiscal years 2018 and 2017, Congress appropriated $0 from the Defense Nuclear Waste Disposal Appropriation and the Nuclear Waste Disposal Appropriation to be used for nuclear waste disposal activities.

Fee payments and investment income are deposited into the NWF account and are made available to the Department through the annual expenditure authority provided by Congress. Investments are made in United States (U.S.) Treasury securities from funds in excess of current needs. If, at any time, monies available in the NWF are insufficient to discharge responsibilities under the NWPA, borrowings may be made from the U.S. Treasury. The NWPA limits the NWF from incurring expenditures, entering into contracts, and obligating amounts to be expended except as provided in advance by appropriation acts. Appropriated dedicated collections such as these are excluded from appropriations received on the Statements of Changes in Net Position.

UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND

Notes to Financial Statements
September 30, 2018 and September 30, 2017

(Dollars in thousands unless otherwise noted)

(2) Significant Accounting Policies (continued)

Imputed Financing Sources – In certain instances, costs of the NWF are paid out of funds appropriated to other federal agencies. For example, payments under the terms of settlements and judgments are paid by the U.S. Treasury Judgment Fund (Judgment Fund). When costs directly attributable to NWF's operations are paid by other agencies, NWF recognizes these amounts in the *Statements of Net Cost*. In addition, these amounts are recognized as imputed financing sources in the *Statements of Changes in Net Position*.

Funds from Dedicated Collections – NWF follows Statement of Federal Financial Accounting Standards (SFFAS) No. 43, *Funds from Dedicated Collections*, which requires separate identification of funds from dedicated collections on the Balance Sheets, Statements of Changes in Net Position, and other selected footnotes.

Funds from dedicated collections are financed by specifically identified revenues, often supplemented by other financing sources, which remain available over time. These specifically identified revenues and other financing sources are required by statute to be used for designated activities, benefits or purposes, and must be accounted for separately from the Government's general revenues (see Note 11).

Investments – Investments are in U.S. Treasury securities and are stated at cost net of amortized premiums and discounts as it is the Department's intent to hold the investments to maturity. Premiums and discounts are amortized using the effective interest yield method. Investment interest is accrued on the outstanding investment balance using the applicable interest rate for the investments (see Note 4).

General Property, Plant, and Equipment – Purchases of general property, plant, and equipment (PP&E) exceeding $50 are capitalized if they have a useful life greater than two years. PP&E is depreciated on a straight-line basis over the estimated useful lives of the assets. Useful lives range from 5 to 30 years. Maintenance costs are borne by NWF for equipment either on loan from or shared with other programs (see Note 6).

Accounts Receivable – Payment of accounts receivable will not be complete until NWF starts accepting waste. Interest is accrued quarterly on the outstanding amount receivable including accrued interest. The interest rate used is the 13-week U.S. Treasury bill rate. An allowance for doubtful accounts related to one-time spent fuel fees has not been recorded as of September 30, 2018 and 2017 (see Note 5).

Liabilities – Liabilities represent the amount of monies or other resources that are likely to be paid by NWF as the result of a transaction or event that has already occurred. However, no liability can be paid by NWF absent an appropriation. Liabilities for which an appropriation has not been enacted are therefore classified in these notes as liabilities not covered by budgetary resources and there is no certainty that the appropriation will be enacted. Also, liabilities other than contracts can be abrogated by the Government acting in its sovereign capacity.

Tax Status – NWF, as a part of the Department of Energy, which is a Federal agency, is not subject to federal, state, or local income taxes.

First Repository Costs – For the fiscal years ended September 30, 2018 and 2017, first repository costs consist primarily of Yucca Mountain shutdown costs. Historically, the general goals have been that of licensing and construction of a permanent repository for nuclear waste at Yucca Mountain and to be ready for acceptance of waste at the facility.

UNITED STATES DEPARTMENT OF ENERGY
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Notes to Financial Statements
September 30, 2018 and September 30, 2017

(Dollars in thousands unless otherwise noted)

(2) Significant Accounting Policies (continued)

Use of Estimates – The preparation of financial statements requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Significant items subject to such estimates and assumptions include primarily commitments and contingencies.

(3) Fund Balance with Treasury

Summaries of the status of fund balances with the U.S. Treasury for appropriated and special funds as of September 30, 2018 and 2017 are as follows:

As of September 30, 2018	Appropriated Funds	Special Funds	Total
Unobligated budgetary resources			
Available	$ 1,643	$ 6,518	$ 8,161
Obligated balance not yet disbursed			
Undelivered orders	5,772	5,449	11,221
Accounts payable and other liabilities	303	473	776
Budgetary resources invested in Treasury securities	-	(9,440)	(9,440)
Total FY 2018 Fund Balance with Treasury	**$ 7,718**	**$ 3,000**	**$ 10,718**

As of September 30, 2017	Appropriated Funds	Special Funds	Total
Unobligated budgetary resources			
Available	$ 1,206	$ 8,586	$ 9,792
Obligated balance not yet disbursed			
Undelivered orders	10,612	5,612	16,224
Accounts payable and other liabilities	883	1,194	2,077
Budgetary resources invested in Treasury securities	-	(12,396)	(12,396)
Total FY 2017 Fund Balance with Treasury	**$ 12,701**	**$ 2,996**	**$ 15,697**

Attachment

UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND

Notes to Financial Statements
September 30, 2018 and September 30, 2017

(Dollars in thousands unless otherwise noted)

(4) Investments and Related Interest, Net

For the fiscal years ended September 30, 2018 and 2017, the NWF received proceeds from the maturity of securities of $2,870,834 and $1,320,072, respectively.

Investments in U.S. Treasury securities held as of September 30 of each year consisted of the following:

	FY 2018	FY 2017
Intragovernmental Non-Marketable Market Based:		
Face Value	$ 53,449,211	$ 53,012,627
Unamortized discount, net	(14,375,049)	(15,443,938)
Interest receivable	121,452	102,297
Investments and related interest, net	39,195,614	37,670,986
Unrealized market gains, net	4,247,151	6,819,627
Investments at fair value	$ 43,442,765	$ 44,490,613

Pursuant to statutory authorization, fees collected from owners and generators of SNF that are in excess of those needed to pay current program costs are invested in Treasury securities. The federal government does not set aside assets to pay for expenditures associated with the funds for which the Department holds Treasury securities. These Treasury securities are an asset to the Department and a liability to Treasury. Because the Department and Treasury are both parts of the federal government, these assets and liabilities offset each other from the standpoint of the federal government as a whole. For this reason, they do not represent an asset or a liability in the U.S. Government-wide financial statements. Treasury securities provide the Department with authority to draw upon the U.S. Treasury to make expenditures, subject to available appropriations and Office of Management and Budget (OMB) apportionments. When the Department requires redemption of these securities, the federal government finances those expenditures out of accumulated cash balances by raising taxes or other receipts, by borrowing from the public, repaying less debt, or by curtailing other expenditures. This is the same way the federal government finances all other expenditures.

(5) Receivables Due from Utilities

Owners and generators of civilian SNF have entered into contracts with the Department for disposal services and for payment of fees to the NWF.

The NWPA specifies two types of fees to be paid to the NWF for disposal services: (a) a one-time charge per kilogram of heavy metal in solidified SNF existing prior to April 7, 1983; and (b) a one mil per kWh fee on all net electricity generated and sold by civilian nuclear power reactors on and after April 7, 1983. The kWh fees are due when billed. The contracts between the Department and the owners and generators of the waste provide three options for payment of the one-time spent fuel fee, one of which must have been selected by June 30, 1985, or within two years of contract execution. The options were:

1. Payment of the amount due, plus interest earned from April 7, 1983, in 40 quarterly installments with the final payment due on or before the first scheduled delivery of SNF to the Department;

2. Payment of the amount due, plus interest from April 7, 1983, in a single payment any time prior to the first delivery of SNF to the Department; or

UNITED STATES DEPARTMENT OF ENERGY
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Notes to Financial Statements
September 30, 2018 and September 30, 2017

(Dollars in thousands unless otherwise noted)

(5) Receivables Due from Utilities (continued)

3. Payment of the amount due any time prior to June 30, 1985, or two years after contract execution, in the form of a single payment, with no interest due.

Under options (1) and (2), interest accrues from April 7, 1983 to the date of first payment at the 13-week U.S. Treasury bill rate compounded quarterly. Under option (1), beginning with the first payment, interest is calculated at the 10-year Treasury note rate in effect at the time.

In fiscal year 2018, no payments of one-time accrued spent fuel fees or accrued interest were received from owners and generators of civilian SNF. In fiscal year 2017, payments of $50,394 of one-time accrued spent fuel fees and $136,018 of accrued interest were received.

Per the NWPA, the Secretary of Energy shall annually review the adequacy of the fees established. In the event the Secretary of Energy determines either insufficient or excess revenue is being collected, the Secretary of Energy shall propose an adjustment to the fee to ensure full cost recovery. Because the U.S. Court of Appeals for the District of Columbia Circuit found the Department did not have a legitimate basis to evaluate or assess the ongoing kWh fee, the court directed the Department to propose to Congress a reduction of the ongoing kWh fee to zero. Such proposal became effective on May 16, 2014. In August 2014, the Department collected the remaining ongoing fee receivable balances. The circumstances have remained unchanged for FY 2018 and FY 2017 and no ongoing kWh fees were assessed or collected.

Accounts receivable from utilities at September 30 of each year were as follows:

	FY2018	FY2017
Accounts receivable:		
One-time spent nuclear fuel fees:		
Accounts receivable - one-time spent nuclear fuel fees		
Option (1)	$ 144,273	$ 144,273
Option (2)	560,170	560,170
Total accounts receivable one-time spent nuclear fuel fees	704,443	704,443
Accrued interest on one-time spent nuclear fuel fees:		
Option (1)	399,186	390,743
Option (2)	1,556,972	1,524,339
Total accrued interest on one-time spent nuclear fuel fees	1,956,158	1,915,082
Total accounts receivable	$ 2,660,601	$ 2,619,525

UNITED STATES DEPARTMENT OF ENERGY
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Notes to Financial Statements
September 30, 2018 and September 30, 2017

(Dollars in thousands unless otherwise noted)

(6) General Property, Plant, and Equipment, Net

General property, plant, and equipment and related accumulated depreciation consisted of the following as of September 30, 2018 and 2017:

	FY 2018	FY 2017
General property, plant, and equipment	$ 7,134	$ 7,233
Less accumulated depreciation	(7,014)	(7,111)
General property, plant, and equipment, net	$ 120	$ 122

(7) Transactions with the Department and Other Federal Government Agencies

The NWPA authorized the Secretary of Energy to carry out the provisions of the NWPA and created the Nuclear Waste Fund in the U.S. Treasury. The investment and borrowing powers of the NWF are limited to transactions with the U.S. Treasury. In discharging its obligations under the NWPA, the Department contracts for services with numerous contractors including other Federal Government agencies. Further, significant administrative services are provided by the Department.

As of September 30, 2018 and 2017, NWF owed other Federal Government agencies $127 and $16, respectively. For the fiscal years ended September 30, 2018 and 2017, NWF incurred costs of $390 and $130, respectively, for services and goods provided by other Federal Government agencies. In addition to these incurred costs, NWF made Congressional authorized transfers from the NWF to the Nuclear Waste Technical Review Board in the amount of $3,600 for fiscal years 2018 and 2017.

NWF has entered into Memoranda of Agreement (MOA) with the Department's Office of Environmental Management and the Department's Office of Naval Nuclear Propulsion. The MOA established the terms and conditions for acceptance of Department-owned SNF and HLW (Defense Waste) for disposal. The estimated liabilities are included in the 2008 TSLCC that is used to calculate the estimate of the Department's share of total current and future program costs for Defense Waste. The Department has paid amounts in excess of its estimated share of costs and as a result has no liability to NWF as of September 30, 2018 and 2017.

As of September 30, 2018, the total cumulative share of costs for the Department's Defense Waste is estimated to be $2,452,242 based on the methodology published in the Federal Register in August 1987 and interest owed is estimated to amount to $672,737. As of September 30, 2018 and 2017, $636,627 and $634,424, respectively, was included in intragovernmental deferred revenue representing the Department's Defense HLW fees in the NWF in excess of the Department's cost share to-date.

UNITED STATES DEPARTMENT OF ENERGY
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Notes to Financial Statements
September 30, 2018 and September 30, 2017

(Dollars in thousands unless otherwise noted)

(8) Liabilities Not Covered by Budgetary Resources

A summary of liabilities covered and not covered by budgetary resources as of September 30, 2018 and 2017 is as follows:

	FY 2018	FY 2017
Liabilities not covered by budgetary resources:		
Intragovernmental		
Deferred revenue (Note 10)	$ 636,627	$ 634,424
Non-Intragovernmental		
Deferred revenue (Note 10)	41,222,235	39,658,012
Commitments and contingencies (Note 9)	28,111,003	27,247,874
Total liabilities not covered by budgetary resources	69,969,865	67,540,310
Liabilities covered by budgetary resources:		
Intragovernmental		
Accounts payable	127	16
Other liabilities	197	197
Non-Intragovernmental		
Accounts payable and other liabilities	453	1,863
Total liabilities covered by budgetary resources	777	2,076
Total Liabilities	$ 69,970,642	$ 67,542,386

(9) Commitments and Contingencies

Spent Nuclear Fuel Litigation

In accordance with the NWPA, the Department entered into more than 68 Standard Contracts with utilities in which, in return for payment of fees into the NWF, the Department agreed to begin disposal of SNF by January 31, 1998. Because the Department has no facility available to receive SNF under the NWPA, it has been unable to begin disposal of the utilities' SNF as required by the contracts. Significant litigation claiming damages for partial breach of contract has ensued as a result of this delay.

To date, 40 suits have been settled involving utilities that collectively produce about 84 percent of the nuclear-generated electricity in the United States. Under the terms of the settlements, the Judgment Fund, 31 U.S.C. 1304, paid $5.3 billion as of September 30, 2018 to the settling utilities for delay damages they have incurred through September 30, 2018. In addition, 57 cases have been resolved by 49 final unappealable judgments and eight voluntary withdrawals with no damages. Eight of the unappealable judgments resulted in an award of no damages by the trial court and the 41 remaining cases resulted in a total of $2.1 billion in damages that have been paid by the Judgment Fund as of September 30, 2018.

The Department's SNF litigation liability is updated to include the effects of final judgments and settlements as well as payments to date from the Judgment Fund. Additional payments under these settled and adjudicated cases may be made if the utilities incur additional costs resulting from the Department's delay in acceptance of SNF. The Department believes its assumptions and methodology provide a reasonable basis for the contingent liability estimate.

UNITED STATES DEPARTMENT OF ENERGY
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Notes to Financial Statements
September 30, 2018 and September 30, 2017

(Dollars in thousands unless otherwise noted)

(9) Commitments and Contingencies (continued)

An additional 15 cases remain pending the Court of Federal Claims. Liability is probable in these cases, and in many of these cases orders have already been entered establishing the Government's liability and the only outstanding issue to be litigated is the amount of damages to be awarded. Some years ago, the industry was reported to estimate that damages for all utilities with which the Department has contracts ultimately would be at least $50 billion. The Department believes that the industry's estimate was highly inflated and that the disposition of the 89 cases that have either been settled or subject to a judgment in the trial court suggests that the Government's ultimate liability is likely to be significantly less than that estimate. Accordingly, based on these settlement estimates, the total liability estimate as of September 30, 2018 was $35.5 billion. After deducting the cumulative amount paid of $7.4 billion as of September 30, 2018 under these settlements and as a result of final judgments, the remaining liability is estimated to be approximately $28.1 billion. Under current law, any damages or settlements in this litigation will be paid out of the Judgment Fund. The Department's contingent liability estimate for SNF litigation is reported net of amounts paid to date from the Judgment Fund.

The Department previously reported several developments that made it difficult to reasonably predict the amount of the Government's likely liability. In March 2017, the current Administration submitted *America First – A Budget Blueprint to Make America Great Again* to Congress that included the restart of licensing activities for the Yucca Mountain nuclear waste repository, which was subsequently reflected in the Administration's FY 2018 Budget Request in May 2017. In February 2018, the Administration's FY 2019 Budget Request again included the restart of licensing activities for the Yucca Mountain nuclear waste repository. However, no funding was provided related to the Yucca Mountain repository in the Consolidated Appropriations Act for FY 2018 passed in March 2018 or the Energy and Water, Legislative Branch, and Military Construction and Veterans Affairs Appropriations Act, 2019, passed in September 2018. The liability estimate assumes a FY 2020 restart of licensing activities, and uses timeframes contained in the NWPA and the Yucca Mountain License Application.

UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND

Notes to Financial Statements
September 30, 2018 and September 30, 2017

(Dollars in thousands unless otherwise noted)

(10) Deferred Revenue

As described in Note 2, all fees, both kWh fees and Defense high-level radioactive waste fees, as well as the related interest and investment income, are recognized as revenue to the extent of expenses incurred. Amounts in excess of current expenses are deferred. Deferred revenue as of September 30, 2018 and 2017 was as follows:

	FY 2018	FY 2017
Intragovernmental		
Fees billed:		
Defense high-level waste fees	$ 4,404	$ 2,333
Interest:		
Income on investments	1,531,179	1,464,835
Non-intragovernmental		
Interest:		
One-time spent nuclear fuel fees	41,076	17,344
Other billings	3	26
Total billings and interest	1,576,662	1,484,538
Less earned revenue	(10,236)	(8,629)
Change in deferred revenue	1,566,426	1,475,909
Deferred revenue - beginning balance	40,292,436	38,816,527
Deferred revenue - ending balance	$ 41,858,862	$ 40,292,436

UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND

Notes to Financial Statements
September 30, 2018 and September 30, 2017

(Dollars in thousands unless otherwise noted)

(11) Dedicated Collections

	Dedicated Collections	All Other Funds	FY 2018	Dedicated Collections	All Other Funds	FY 2017
Balance Sheet						
Assets						
Fund Balance with Treasury	$ 3,000	$ 7,718	$ 10,718	$ 2,996	$ 12,701	$ 15,697
Investments, Net	39,195,614	-	39,195,614	37,670,986	-	37,670,986
Accounts Receivable	2,660,601	-	2,660,601	2,619,525	-	2,619,525
General Property, Plant, and Equipment, Net	98	22	120	99	23	122
Total Assets	$ 41,859,313	$ 7,740	$ 41,867,053	$ 40,293,606	$ 12,724	$ 40,306,330
Liabilities and Net Position						
Accounts Payable and Other Liabilities	$ 473	$ 304	$ 777	$ 1,193	$ 883	$ 2,076
Deferred Revenue	41,858,840	22	41,858,862	40,292,413	23	40,292,436
Commitments and Contingencies	-	28,111,003	28,111,003	-	27,247,874	27,247,874
Unexpended Appropriations	-	7,414	7,414	-	11,818	11,818
Cumulative Results of Operations	-	(28,111,003)	(28,111,003)	-	(27,247,874)	(27,247,874)
Total Liabilities and Net Position	$ 41,859,313	$ 7,740	$ 41,867,053	$ 40,293,606	$ 12,724	$ 40,306,330
Statement of Net Costs						
Total First Repository and Other Program Costs	$ 5,832	$ 4,404	$ 10,236	$ 6,287	$ 2,342	$ 8,629
Less Earned Revenues	(5,832)	(4,404)	(10,236)	(6,287)	(2,342)	(8,629)
Net First Repository Costs	-	-	-	-	-	-
Estimated liability for waste acceptance obligations	-	1,421,685	1,421,685	-	3,290,256	3,290,256
Net cost of operations	$ -	$ 1,421,685	$ 1,421,685	$ -	$ 3,290,256	$ 3,290,256
Statement of Changes in Net Position						
Beginning Balance - Cumulative Results of Operations	$ -	$ (27,247,874)	$ (27,247,874)	$ -	$ (24,689,260)	$ (24,689,260)
Imputed Financing from Costs Absorbed by Others	-	558,556	558,556	-	731,642	731,642
Net Cost of Operations	-	(1,421,685)	(1,421,685)	-	(3,290,256)	(3,290,256)
Ending Balance - Cumulative Results of Operations	$ -	$ (28,111,003)	$ (28,111,003)	$ -	$ (27,247,874)	$ (27,247,874)
Beginning Balance - Unexpended Appropriations	$ -	$ 11,818	$ 11,818	$ -	$ 14,151	$ 14,151
Appropriations Used	-	(4,404)	(4,404)	-	(2,333)	(2,333)
Ending Balance - Unexpended Appropriations	-	7,414	7,414	-	11,818	11,818
Total Net Position	$ -	$ (28,103,589)	$ (28,103,589)	$ -	$ (27,236,056)	$ (27,236,056)

The NWPA requires the owners and generators of nuclear waste to pay their share of disposal costs into the NWF and, to that end, established a fee for electricity generated and sold by civilian nuclear power reactors which the Department must collect and annually assess to determine its adequacy. A special fund within Treasury was created to account for the collection of those fees. Fees collected in excess of expenses incurred are invested in Treasury securities and any interest earned is available to pay expenditures related to radioactive waste disposal activities covered by the NWF as appropriated by Congress and allotted by OMB.

(12) Explanation of Differences between the Statement of Budgetary Resources and the Budget of the United States Government

The President's Budget containing actual FY 2018 balances is expected to be published and available on the OMB website in February 2019. The NWF FY 2017 *Statements of Budgetary Resources* reconciled to the Budget of the United States by combining both of the budgets for Defense Nuclear Waste Disposal (89-X-0244) and Nuclear Waste Disposal (89-X-5227). Budgetary resources and obligations incurred are reconciled to the Departmental balances as published in the Appendix to the Budget; distributed offsetting receipts and net outlays are reconciled to the Departmental Balances in the Federal Program by Agency and Account section of the Analytical Perspectives Volume of the President's Budget.

UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND

Notes to Financial Statements
September 30, 2018 and September 30, 2017

(Dollars in thousands unless otherwise noted)

(13) Reconciliation of Net Cost of Operations to Budget

The objective of this information is to provide an explanation of the differences between budgetary and financial (proprietary) accounting. This is accomplished by means of a reconciliation of budgetary obligations and non-budgetary resources available to the reporting entity with its net cost of operations.

	FY 2018	FY 2017
RESOURCES USED TO FINANCE ACTIVITIES:		
Budgetary Resources Obligated:		
Obligations Incurred	$ 2,950	$ 10,107
Less: Spending Authority from Offsetting Collections and Recoveries	(1,319)	(1,395)
Obligations, Net of Offsetting Collections and Recoveries	1,631	8,712
Offsetting Receipts:		
Fees for Disposal of Spent Nuclear Fuel	-	(50,394)
Earnings on Investments	(1,538,922)	(1,614,304)
Total Offsetting Receipts	(1,538,922)	(1,664,698)
Net Obligations	(1,537,291)	(1,655,986)
Other Resources:		
Imputed Financing from Costs Absorbed by Others	558,556	731,642
Other:		
Offsetting Receipts, Deferred	1,828,188	2,431,572
Adjustment for Department of Energy Appropriation	(4,404)	(2,333)
Total Other	1,823,784	2,429,239
Net Other Resources Used to Finance Activities	2,382,340	3,160,881
Total Resources Used to Finance Activities	$ 845,049	$ 1,504,895
RESOURCES USED TO FINANCE ITEMS NOT PART OF THE NET COST OF OPERATIONS:		
Change in Resources Obligated for Goods/Services/Benefits Ordered But Not Yet Provided	$ 5,003	$ (3,693)
Total Resources Used to Finance Items Not Part of the Net Cost of Operations	5,003	(3,693)
Total Resources Used to Finance the Net Cost of Operations	$ 850,052	$ 1,501,202
NET COST ITEMS THAT DO NOT REQUIRE OR GENERATE RESOURCES IN CURRENT PERIOD:		
Increases in Unfunded Liability Estimates	$ 863,129	$ 2,558,615
Components Not Requiring or Generating Resources:		
Depreciation and Amortization of Investment Premiums and Discounts	(291,492)	(769,535)
Revaluation of Assets and Liabilities	(4)	(26)
Total Components Not Requiring or Generating Resources	(291,496)	(769,561)
Total Net Cost Items That Do Not Require or Generate Resources in Current Period	571,633	1,789,054
NET COST OF OPERATIONS	$ 1,421,685	$ 3,290,256

Attachment

UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND

Other Information - Schedule I
Schedule of Cumulative Net First and Second Repository Costs for the
Thirty Six Years Ended September 30, 2018 – **(Unaudited)**

(Dollars in thousands unless otherwise noted)

First Repository Costs	$	7,520,595
All Other Program Costs:		
Program Support		2,180,382
Transfers of Appropriations		677,897
Waste Acceptance, Storage and Transportation		777,217
Imputed and Other Costs		152,506
Total All Other Program Costs		3,788,002
Second Repository Costs		108,896
Total First and Second Repository Costs and Other Program Costs		11,417,493
Less Earned Revenue		(11,398,957)
Cumulative Net First and Second Repository Costs	$	18,536

Attachment

UNITED STATES DEPARTMENT OF ENERGY
NUCLEAR WASTE FUND

Other Information - Schedule II
Schedule of Cumulative Billings and Interest and Deferred Revenue as of and for the
Thirty Six Years Ended September 30, 2018 – **(Unaudited)**

(Dollars in thousands unless otherwise noted)

Intragovernmental:		
Fees billed:		
kWh fees	$	996,143
One-time spent nuclear fuel fees		174,598
Defense high-level waste fees		3,761,663
Interest:		
Income on investments		24,674,331
Non-intragovernmental:		
Fees billed:		
kWh fees:		18,308,083
One-time spent nuclear fuel fees		2,174,802
Interest:		
One-time spent nuclear fuel fees		2,460,614
Other billings		707,585
Total billings and interest		53,257,819
Less earned revenue		(11,398,957)
Deferred revenue	$	41,858,862

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Department of Energy
Washington, DC 20585

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Estimated Taxpayer Liability Exceeds $35 Billion

Date of Audit Report	Amount Paid from Taxpayer Funded Judgment Fund	DOE's Estimate* of Liability Including Amount Paid
9/30/2018	$ 7.4 Billion	$ 35.5 Billion
9/30/2017	$ 6.9 Billion	$ 34.1 Billion
9/30/2016	$ 6.1 Billion	$ 30.8 Billion
9/30/2015	$ 5.3 Billion	$ 29.0 Billion
9/30/2014	$ 4.5 Billion	$ 27.1 Billion
9/30/2013	$ 3.7 Billion	$ 25.1 Billion
9/30/2012	$ 2.6 Billion	$ 22.3 Billion
9/30/2011	$ 1.6 Billion	$ 20.7 Billion

***Over time, these estimates have been based on varying assumptions as to when DOE would begin removing fuel from reactor sites, ranging from 2021 in the 9/30/2013 estimate to 2029 in the 9/30/2018 estimates. Any further slippage in the schedule will cause actual liabilities to be higher than estimated.**

Source: DOE Annual Nuclear Waste Fund Audit Reports

Testimony of Prof. David G. Victor, Chairman of the San Onofre Community Engagement Panel, before the House Oversight and Government Reform Subcommittee on Interior, Energy and Environment

September 26, 2017

Subcommittee Chairman Farenthold, Ranking Member Plaskett, and members of the subcommittee, including Representative Issa and Representative Gomez, thank you for the invitation to testify today about the national problem of storage and disposal of spent nuclear fuel. About 35 years ago Congress laid out a plan for long-term disposal of spent fuel from the country's nuclear reactors: the Nuclear Waste Policy Act (NWPA) of 1982. Since passage of that law, the government has consistently failed to meet key deadlines to remove spent fuel from the 99 operating commercial reactors at 59 sites around the country.[1] Worse, there are now 17 reactors at 14 sites in 11 states that are no longer operating—reactors, such as at San Onofre in Southern California where the spent fuel will remain stuck onsite long after the rest of the site has been shut down and removed.[2]

The Department of Energy has collected upwards of $750 million annually from customers into a fund that amassed $46 billion dollars by late 2016, the most recent audit.[3] These funds were intended to defray the cost of removal and long-term disposal of spent fuel. Instead, the funds sit essentially idle. A series of lawsuits has halted those payments for many utilities, and some utilities are now being paid damages from taxpayer funds to recover the cost of continued storage of their spent fuel beyond the time when it was supposed to be accepted by the government.

For many years, this persistent failure to perform was, outside the nuclear utility industry, largely unnoticed. Nearly all reactors that were built kept operating. Unable to ship spent fuel to a permanent repository they left it on site—in pools and in dry cask storage.

The situation today is completely different. While most of the US nuclear fleet continues to operate, a growing number of reactors are in the midst of decommissioning. For these sites, the inability to remove spent fuel is particularly deplorable. Local communities have seen most of the jobs associated with these reactors, along with many other benefits, disappear. They are watching massive deconstruction projects remove reactors domes, buildings and other facilities. Yet they are still left with the spent nuclear fuel onsite, without a proper home and without any indications as to when it will eventually be removed. Some

[1] Kim Cawley, "Testimony: The Federal Government's Responsibilities and Liabilities Under the Nuclear Waste Policy Act," Before the Subcommittee on Environment and the Economy, Committee on Energy and Commerce, U.S. House of Representatives (3 December 2015).
[2] For detail see generally NUREG 1350. https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/
[3] Office of the Inspector General, DOE, "Audit Report," OAI-FS-17-04 (December 2016).

solutions to this problem are coming into focus, but they require changes to federal law as well as new investments where Congress and the Administration must work together.

I testify today as Chairman of the San Onofre Nuclear Generating Station (SONGS) Community Engagement Panel (CEP). SONGS Units 2 and 3 are the largest commercial reactors slated for decommissioning in the country, and the political environment around the plant is more intense than almost anywhere in the country. I serve in that role as a volunteer. I am also a Professor at the School of Global Policy and Strategy (GPS) at UC San Diego where I am also an adjunct professor in Climate, Atmospheric Sciences and Physical Oceanography at the Scripps Institution of Oceanography.

Back in 2013 when the operator of the plant, Southern California Edison (SCE) decided to decommission the facility it also set up this panel to open a two-way conduit between SCE (and its co-owners, San Diego Gas and Electric, the City of Anaheim and the City of Riverside) and the communities that would be affected by the decommissioning process. Over the last three years the CEP has provided exactly that function. It has offered ways for SCE to learn about the concerns of the communities—for example; the impact of shrinking the SONGS emergency planning systems, now that the plant poses a lower hazard to the community, on the budgets of first responders, hospitals and other essential public services. It also offers a way for SCE to help inform the communities about how decommissioning will unfold; the economic and environmental impacts, and the various strategies being adopted to mitigate adverse impacts. We meet quarterly and have 17 members (with one vacancy)—all volunteers, drawn from the local communities and a blend of public officials, representatives from environmental NGOs, business, labor, and other stakeholders. We are not a formal decision-making body nor do we have official oversight functions—there are plenty of other bodies with those powers and responsibilities.[4] I speak today as a private citizen who happens to be Chairman of the CEP, and I reflect on what we have learned over the three years of CEP operation.

Without a doubt, one topic has attracted the most attention at our CEP meetings and in the local communities: spent fuel. As in any community, there are many different views about a technology like nuclear power. With the closure of SONGS, I thought, that many of those diverging viewpoints would become moot and the communities could come together and focus on the best plan for decommissioning. Instead, many people have been shocked to learn that decommissioning of the plant does not mean removal of everything—the spent fuel remains because there is no place to send it. By not offering a practical place and method to ship spent fuel the Federal government has, through inaction, created a whole new array of acrimonious debates and controversy within local communities about how best to steward the spent fuel. I have observed and been in the middle of those debates for three years and the rest of my testimony outlines what I have seen and learned.

[4] For more, including documents and video from every meeting, see www.songscommunity.com

The importance of moving the fuel out of local communities at decommissioned sites.

First, I can't emphasize enough the importance of offering practical ways for decommissioned sites to move spent fuel out of their communities to other, more appropriate locations. Offering a practical route to that outcome would be enormously valuable to our communities. That route could involve finishing Yucca Mountain and allowing consolidated interim storage (CIS), also known as interim storage facilities (ISF), and I'll talk about that next. But people are most looking for is a viable plan that addresses an urgent problem—a problem that is not so pressing in communities with operating reactors but is vitally important to those where reactors are undergoing decommissioning and will have stranded spent nuclear fuel left with reduced security at the decommissioning site.

We are particularly concerned that the current arrangements at the Department of Energy (DOE) are opaque about which spent fuels will ship first. This problem has not been important to solve over the last few decades because there was no place to ship. Today that might be different and I would urge Congress to help DOE develop a more coherent set of priorities. The current "standard contract" for fuel shipments, while ambiguous, suggests that the oldest fuel will ship first. That approach will create an inefficient and incoherent shipment pattern—with canisters moved across a patchwork of sites, and no site happy with the outcome. We should put the decommissioned sites first because those sites are no longer generating spent fuel, in most cases are removing reactors and support buildings, and gain much smaller economic benefit from hosting these facilities. By contrast, sites with operating reactors will always have spent fuel in their reactor cores, fuel pools and dry cask pads. For all these communities, it is important to have a viable long-term plan for spent fuel removal; for decommissioned sites the imperative is particularly compelling.

Political Realism

We in the San Onofre communities have learned that the politics of finding solutions to this problem are difficult. For years, Yucca Mountain has been a political lightning rod in ways that have made it exceptionally difficult—at times, impossible—to move forward with that site. The prospect of Consolidated Interim Storage might prove politically more tractable because, when combined with consent-based siting, it allows communities to nominate themselves to become storage sites. Following the guidance of the bipartisan Blue Ribbon Commission (BRC) report, we are encouraged that a process of informed consent has emerged and led to two communities volunteering themselves for CIS facilities. Today, my sense is that one of those sites is viable and that it enjoys healthy support from much of the local communities. The other site is owned by a company that paused its licensing process due to a planned acquisition which most likely will leave their CIS operations by the wayside. The viable site is in New Mexico where the governor of New Mexico has given approval for this CIS facility. The local entity that owns the land Eddy-Lea Energy Alliance (ELEA) wants the facility that is set to monitor at least 10,000 dry storage canisters in partnership with Holtec International. The ELEA is composed of

cities of Carlsbad and Hobbs and the counties of Eddy and Lea. The community purchased the 1000 acres and has strong local support for the CIS facility. This is the model we must continue to pursue of the government working with communities to find volunteers who want to help deal with the national crisis of stranded spent nuclear fuel around the country. Earlier this year we hosted officials from ELEA at a CEP meeting, and I was impressed by the level of planning and awareness.

In the densely populated communities around San Onofre, our interest is to advance any responsible program that moves the spent fuel out of our neighborhoods as quickly as possible. For us, that means Yucca and CIS simultaneously. Over the last three years, we have learned three important things about how to pursue this goal.

First, the nation does not benefit from monopolies. To some degree, the problems at Yucca Mountain are the result of the country having just one option. As that option has faltered the whole nation's industry, along with communities around nuclear power plants, have suffered. The original plan, way back when the NWPA was signed into law, was to have two sites. Expedience in public sector spending and noxious politics whittled that roster down to one, and that outcome has been harmful. I am very concerned that the same will happen with CIS. Overall, the nation and the communities that are hosting spent nuclear fuel would benefit from having many options.

Second, and equally important, it is crucial that CIS be viewed as a complement to Yucca Mountain (and to other means of permanent spent fuel disposal—for example, deep borehole technology). I appreciate that over the last year that much of the newfound enthusiasm for acting on spent fuel is rooted in a desire to restart Yucca Mountain. But any realistic scenario for Yucca must deal with the reality that Yucca is still a long time coming. The site is not operational. Once operational, fuel will need repackaging so that casks with large numbers of fuel assemblies are put into smaller units with fewer assemblies and lower heat loads. All that will take time.

For the communities around San Onofre, those realistic delays in starting Yucca create the imperative for CIS. We want the spent fuel moved. For the nation as a whole, those delays offer an important logic for CIS: safety and saving money. It is much wiser to store spent fuel at a small number of large sites, far from population centers, than dozens of sites scattered around the country. Scientists at Oak Ridge National Laboratory have estimated the cost savings from a robust CIS program and found that we could avoid $15-30b in expenditure in light of expected delays in reopening Yucca Mountain.[5] Fiscal prudence demands that CIS be part of the overall strategy.

[5] For an overview see J. Jarrell "Does Consolidated Interim Storage Make Sense in an Integrated Waste Management System?" Oak Ridge National Laboratory, NEI Used Fuel Management Conference, May 2017, Savannah, GA. Numbers here are undiscounted. For discounting and sensitivity analysis see: Cost Sensitivity Analysis for Consolidated Interim Storage of Spent Fuel: Evaluating the Effect of Economic Environment Parameters (Cumberland et al., FCRD-NFST-

Third, the political coalitions around nuclear power are in flux when it comes to spent fuel. There is a well-known debate about the role of nuclear power in the nation's future energy mix, and active industry efforts to improve performance to keep as many of the existing fleet operational. There are also well-known battle lines drawn for and against nuclear power. What has impressed me about spent fuel is that those battle lines have shifted. Many groups that have been skeptical or outright against operational nuclear plants—such as the Natural Resources Defense Council and the Union of Concerned Scientists—are aligned in favor of finding smart strategies for storing spent fuel, including CIS. It is really important that the larger, heated and probably irreconcilable differences about operational reactors not cloud the fact that many more communities are coming together to find solutions to storing spent fuel.

For Congress, these three lessons suggest that the current efforts—far advanced in the House and still developing in the Senate—to amend the NWPA are profoundly important. As those efforts proceed it is important that the Yucca mission, which has attracted more attention and political energy, not leave CIS aside.

Toward a Long-term Strategy: the Roles of Stewardship and Transportation

Compared with three years ago, there has been striking progress, especially in the House, toward new legislation that would address many of the obstacles to restarting Yucca and also authorizing a new program of consolidated storage. While that is admirable, we also need to grapple with the consequences of a long delay in arriving at this point. It is also crucial to grapple with the fact that most people outside Washington are skeptical that Washington can organize and motivate itself to make practical changes in law and back those with reasonable appropriations. What I have seen in the local communities around San Onofre is concern that Washington is so broken that reasonable bipartisan legislation, such as smart amendments to the NWPA, can't survive the legislative process.

This skepticism has three practical implications. First, while there are some actions that DOE or NRC can do to advance consolidated storage and promote smart stewardship of the nation's spent nuclear fuel, the most important actions require a change in federal law. Getting House (HR 3053) and Senate versions into conference is essential, lest Congress itself be seen as a central obstacle to progress in what has been, so far, largely an Executive Branch failure to deliver on promises made to the American people—especially the people living within the foot prints of nuclear reactors. I have testified at the NRC about their efforts to streamline the regulatory process, which are admirable.[6] But the reality is that the NRC is already doing what

2016-000721, Rev. 1 ORNL/SR-2016/681) Available at https://curie.ornl.gov/content/cost-sensitivity-analysis-consolidated-interim-storage-spent-fuel-evaluating-effect-economic

[6] 2014. David G. Victor. Decommissioning at San Onofre: The Community Engagement Experience. Testimony to the Nuclear Regulatory Committee. For more information see

it can; even without streamlining of the regulatory process for decommissioned sites those sites are finding ways to cope with NRC procedures through exemptions. What everyone is waiting for is enabling federal law.

Second, because of these delays—and skepticism about when they will be resolved—the nation's nuclear sites are now gearing up to monitor and manage spent nuclear fuel casks in ways that were never intended. The original plan was that spent fuel would be removed from reactor cores, cooled in pools onsite, and then put into canisters and casks for brief local storage and expeditious removal. Because that last step in the chain has never happened, the canisters and cask systems are now aging in place. At the urging of the CEP, SCE has developed an extensive program for monitoring the casks and inspecting the canisters while they are on site.[7] Recent legal challenges and settlements have reinforced that effort.[8] We are fortunate in that other sites built dry cask systems before SONGS and we can learn from their aging management programs. To give you a sense of just how long the delays have extended, as of today several sites have seen the original 20 year NRC license for on-site dry cask storage run its course, with each getting a 40-year renewal. At the most recent CEP meeting we devoted the entire session to this topic.[9]

Third is transportation. There is an understandable tendency in Washington to do what can be done. This tendency has generated legislation that focuses on Yucca Mountain and brings CIS along. But we must focus, now, on the reality that all of these strategies will not work unless there are viable ways to move spent fuel from reactor sites to CIS and/or permanent repositories. The US Navy safely ships defense spent nuclear fuel and related materials around the country on a regular basis—thousands of shipments—using an effective and credible government planning system and emergency training for its routes. This system must be available to the DOE as it takes authority over spent nuclear fuel transportation. The NRC has procedures ready for use in this area (NUREG 0725). Safe transportation of spent commercial reactor fuel is not a technical problem, but it is one that needs careful administrative planning and political awareness.

A serious transportation plan would have several elements:

- A program for testing and building railroad cars for moving spent fuel casks. This is a DOE responsibility, and with current appropriations DOE will test a prototype rail car (along with other support cars) over the next 2 years. That's good news, but there are

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https://www.nrc.gov/reading-rm/doc-collections/commission/slides/2014/20140715/victor-20140715.pdf

[7] 2014. David G. Victor. Safety of long-term storage of spent nuclear fuels at SONGS. Report of the Chairman of the Community Engagement Panel of the SONGS. For more information see https://www.songscommunity.com/docs/LongTermStorageofSpentFuel_120914.pdf

[8] 2017. Citizens Oversight, Inc. V. Southern California Edison. For more information see https://www.songscommunity.com/doc_library_settlement.asp

[9] 2017. 3Q Meeting of the Community Engagement Panel. Oceanside, California. For more information see http://www.songscommunity.com/091417CEPMeetingAgenda.pdf

no appropriations to build a fleet of these cars as will be needed to move spent fuel expeditiously. Elsewhere I have outlined the state of play and costs, which are small. [10]

- The states and regions must get ready. When DOE was planning to move waste from the nuclear weapons sites—such as in Colorado and Washington—state and regional officials got organized to help plan routes, safety and procedures. The states where these sites were shipping nuclear materials had an incentive to make this work because they wanted the sites cleaned up. By contrast, very little to none of the necessary spadework for local, state and regional planning of spent fuel shipments has been done. There is legislation in California that would help.[11] The CEP has reached out to the California Energy Commission on this topic.[12] And the Western Governors Association could easily be tapped—as could regional state associations in other parts of the country. The problem is that nobody has believed that serious solutions for spent nuclear fuel would be forthcoming. Now that they are, the transportation planning processes must gear up—with a key role for the Federal government.

All the authority needed to fix this problem does not rest with Congress but many are looking to Congress for leadership and initiative in getting the process started. A good start would be to ensure that a title on transportation is included in NWPA Amendments (inserted, presumably, in Conference), appropriations to build the needed railcar system are included in a timely way (probably starting next fiscal year), and the states are encouraged if not mandated to get organized. Under plausible yet optimistic scenarios, CIS facilities could be open in the early 2020s. Spent fuel at SONGS (and many other sites) would be ready for shipment then. It would be a pity if all the work done to open storage and permanent disposal facilities falters for lack of attention to transportation.

Final Words

In a large and diverse nation such as ours, there always seems to be a more pressing and urgent matter that captures political attention. Meanwhile, critical questions about the nuclear industry and its infrastructure remain unanswered for decades while leaving un-spent billions of dollars. Inaction has pushing these questions to future generations to answer.

These delays only succeed in creating distrust in the ability of government to find a workable solution, anger towards the plant operators and creates an impossible future for those communities that involuntarily host these sites. All we ask is that those who can act and make a difference, do so with all possible urgency.

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[10] David Victor, Tim Brown and Dan Stetson, "Participants in 12 June telephone call with DOE to discuss transportation of spent nuclear fuel," 26 June 2017, see www.songscommunity.com

[11] 2017. Nuclear Waste Policy Amendments Act of 2017. For more information see https://www.congress.gov/bill/115th-congress/house-bill/3053

[12] Letter from David Victor, Tim Brown and Dan Stetson to Robert Weisenmiller, Chairman of the California Energy Commission, 12 December 2016. see www.songscommunity.com

A plan for smart removal of spent nuclear fuel from the nation's commercial reactors is now coming into focus. It will require new legislation and a new focus by the federal government, as well as the states and regional planning authorities.

I see three steps as essential. First, the political deal must be done that allows for consolidated interim storage, and that deal as far as I can tell centrally requires restarting the Yucca Mountain process. Yucca and CIS should be seen as complements to each other. Politically they are combined; economically and technically they are also combined because interim storage allows for a more rational long-term strategy that includes opening a permanent storage facility. Second, a fresh look at the priorities for removing spent fuel is needed. When options for sending the fuel become viable there will be much more fuel ready to move than the system can handle. We think decommissioned sites should be high in the queue. Third, a viable strategy for transportation is needed—a topic that has been orphaned by the lack of suitable places to send the fuel. Transportation requires some funds (small, mainly for rail cars and planning) and crucially that federal, state and other officials begin working together on strategies.