Compilation of Recent CEP Communications
6/14/2017 to 9/12/2017

Legislation

From: David G. Victor
Sent: Thursday, July 27, 2017 5:55 PM
To: Marni Magda ; Manuel Camargo
Subject: (External):FW: senate appropriations mark

Manuel
Can you pls share this with the CEP in next circular.
@Marni: fyi—useful news below and attached

best
david

From: "Maheras, Steven J"
Date: Saturday, July 22, 2017 at 1:12 PM
To: "David G. Victor" , "Quinn, Ted"
Subject: senate appropriations mark

David and Ted--
Attached is the Senate mark of the F2018 Energy and Water appropriations bill. The report actually has the numbers (p. 76-77). Integrated Waste Management would get $35M. These activities are under Melissa Bates and Kelli Markham, under Andy Griffith. The "funding should be used to implement plans to consolidate spent nuclear fuel from around the United States to one or more private or government interim central storage facilities. Priority shall be given to accepting spent nuclear fuel from shutdown reactors, and to accelerating the development of a transportation capability to move spent fuel from its current storage locations. Within funds provided, the Committee recommends up to $10,000,000 for the Secretary, within existing authorities, to contract for the management of spent nuclear fuel to which the Secretary holds the title or has a contract to accept title, which includes contracting with a private company for consolidated interim storage of spent nuclear fuel."

Research activities would get $65M. These activities are under Bill Boyle, also under Andy Griffith.
S1609 requires a consent-based approval process for geologic disposal, and also implies consent for interim storage, i.e., see page 50.

Steve Maheras
Pacific Northwest National Laboratory

Attachments:
1-FY 2018 Energy and Water Development Appropriations Act S.1609
2-FY 2018 Energy and Water Development Appropriations Act Report 115-132
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Transportation

From: David G. Victor
Sent: Monday, June 26, 2017 12:22 PM
To: Manuel Camargo
Cc: Tim Brown ; Dan Stetson ; Marni Magda ; Ted Quinn ; Tom Palmisano ; Jerry Kern
Subject: (External):memo on discussions with DOE on transportation of spent nuclear fuel

Manuel

A couple weeks ago Tim, Dan and I spoke with some folks at DOE about preparations to transport spent nuclear fuel, notably to consolidated interim sites such as in NM or TX. The CEP has periodically raised concerns that even as progress is made on the CIS sites that we need to help ensure there is a strategy for reliably and safely getting the spent fuel moved.

Below is a memo that reports on the DOE conversations, along with some action items. Can you pls circulate to CEP when convenient. Also, can you and I coordinate, not least, on a fresh outreach to the CEC to follow up our letter earlier this year. Also, next time the CEP looks at CIS we should probably raise the transport issue.

It probably also makes sense to cycle back with our elected representatives in DC to share our concerns—in particular, on the transport front it is striking that current funding is plausibly on track to get a tested railcar by 2019 but then not build any more. This is a federal responsibility and not an expensive one (the Atlas railcar is perhaps $1.5m per copy once the first one is built). It would radically reduce the ability of the nation to move spent fuel from stranded sites such as San Onofre if we didn't build many/any rail units beyond the first one that is currently funded.

I copy three members of the CEP who have been especially active on these topics-Marni, Ted and Jerry—as I know they will be interested in this readout.

Best
David

Participants in 12 June telephone call with DOE to discuss transportation of spent nuclear fuel

From the federal government:
Melissa Bates (DOE official; worked closely with John Kotek around his visits to SONGS; works in office at DOE that does interim storage and “back end” of the fuel cycle)
Erica Bickford (DOE, works with Melissa on outreach to stakeholder groups related to transportation planning)
Mary Woolen (consultant at DOE; formerly at NRC with Alison McFarlane)
Steve Maheras (PNNL—has been vital in helping the CEP understand what is going on at DOE and the national labs)

From the CEP
David Victor
Tim Brown
Dan Stetson

Notes from the conversation.

These notes are by DGV and include my interpretations—they are not quoted/attributed to anyone else on the call.

Both DOE officials were at the DOE site visit June 2015 and we met them during that visit

DOE has the National Transportation Stakeholder Forum (NTSF) --its main mechanism for engaging state and tribal groups. The NTSF meets annually (last meeting was last week in Pittsburgh). There are various ad hoc working groups, such as the Spent Nuclear Fuel Rail/Routing Ad Hoc Working Group (Bickford runs that). That ad hoc working group is ALREADY ACTIVE looking at issues that are relevant for potential routings. Membership is voluntary based on recommendations from the states and tribes (state reps are designated by the governor—in some states there is a secondary person that specializes in rail related issues). The group seems to be very small right now. So far, there is no official CA engagement. Justin Cochran at the California CEC has been POC for CA, but is not official member.

There is also an NTSF ad hoc working group focused on how DOE will provide (as required by law) technical assistance and training funds to state and tribal jurisdictions through which spent nuclear fuel is transported. (Justin Cochran is California's designee. He is also engaged with the Western Interstate Energy Board's High Level Radioactive Waste Committee, which is committee of western state representatives organized to address spent fuel transport issues in their region.)

The regulatory environment has a series of overlapping (mainly federal) regulations—along with state oversight where that exists. (California has its own, additional oversight with safety inspections, etc. So far, DOE has no concerns about the draft legislation working through CA on this topic.) Some things to keep on our radar: if the state imposes extra security or regulatory requirements or other rules that require stopping shipments at state borders (e.g. to change security officials or for inspections) that will slow and complicate shipping. Also of concern: possible state rules on casks that could turn California into its own market—those could slow down our ability to move fuel from CA sites. Currently nobody is seriously talking about CA-unique cask rules, to my knowledge.

If transportation is done under a federal program, overall security for the shipments will be provided by DOE. NRC oversees approval (ie, certification) for each spent fuel package. DOT regulates rail transport. There are some other pipeline and rail safety rules for hazardous

shipments as well. (In the federal world, pipeline and railroad safety regulation are often combined.) Particularly notable is that NRC has done extensive work on oversight of safety and security of spent nuclear fuel shipments, and the military is already running many such shipments with their own oversight (which meets or exceeds NRC standards). Steve Maheras has shared with me NRC rules (and a plain English version of those rules) for anyone who is interested.

Stakeholder Tool for Assessing Radioactive Transportation (START). DOE has a web based tool—currently a govt, expert tool that helps organize all transport related info and visualize it. Long story short: the viable rail routes run north and probably to BNSF mainlines that then go east to NM/TX. They are working on a publicly available version of the tool. In planning transport schedules and routes, there are lots of factors in play. When it comes to schedules—that is, which fuel moves when, which is what we care most about—it seems that the key factors will be a) the standard contract; and b) the resources available for shipment such as rail cars and security. **Key point for SONGS: we have a keen interest in ongoing efforts to change the standard contract and also a keen interest in getting adequate appropriations so that the federal government can move as much spent fuel as possible when CIS sites are open. More on this below.**

Railcars: prototypes will be developed and fabricated by 2019 for testing. Bottom line: rail car program is on schedule for providing one fully tested and operational cask car plus other related support cars ready by 2022. That would allow shipment system that could (depending on distances traveled) for 1-2 shipments per week OF ONE CASK PER SHIPMENT. In addition, it would be necessary to acquire transport casks, which are reusable (except at Humboldt Bay, which are combined storage/transport casks). Planning the acquisition of the transport casks is important because there are 17 different configurations of rail transportation casks for moving the 51 different types of canisters that hold commercial spent fuel in the US. (Note: Each vendor will design, fabricate and get regulatory approval for their own transport casks.) The transport casks are completely reusable (probably lifetime of 30 years and annual testing)

With secure funding through FY18 and likely funding thereafter DOE will end up with 1 cask car and two buffer cars and an escort car. That's it. For reference: once the first transport car is operational it would cost about $20M to buy another set of cars that would have 5 transport cars (that set would include 6 buffer cars, 5 "Atlas" cask cars and one escort car). Note that the Atlas rail car and buffer car designs will be publically available, but transportation cask designs are proprietary. **Action: when members of Congress ask about what they can do we should put appropriations for the out years (2022 and beyond) on that list. And because some of the needed items—like rail cars and transport casks—have long procurement times, as a practical matter starting around FY19 appropriations is where new money is needed. The money is not huge, but it would really harm our interests if the railcar capacity ends up stuck at 1. While doing that, we should also reiterate our keen interest to refresh the rules for shipping spent fuel to put shutdown sites at high priority. Rep. Peters helpfully raised that topic at a recent hearing and we need more attention to this topic.**

It looks like DOE is no longer committed to consent-based approaches to siting interim storage or repository (ie, Yucca Mtn). This is still in flux as senior management is selected at DOE.

A CEP member, Marni Magda, flagged that we should ask DOE about the TMI material at INL (about one-third of the reactor core from the unit at TMI that had the accident). We have been reading in the news about the recent notification to renew the 20-year license. DOE says that is a normal license renewal. This renewal would not give that fuel any special priority for moving and is tied to the legal obligations of the 2035 Settlement Agreement.

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Used Fuel Management

From: Manuel Camargo
Sent: Monday, July 03, 2017 10:28 AM
To: Bill Horn ; Dan Stetson (Nicholas Endowment) ; David G. Victor ; Donna Boston ; Garry Brown ; Jim Leach ; Jerry Kern ; Marni Magda ; Pam Patterson ; Martha McNicholas ; Paul Wyatt ; Rich Haydon; Supervisor Lisa Bartlett ; Ted Quinn ; Tim Brown (San Clemente) ; Tom Caughlan ; Val Macedo
Cc: Catherine Curtis ; Esther Soto ; JAMES MADIGAN ; Julie C Holt ; Larry Rannals ; Liese Mosher ; Lindsay Stigall ; Manuel Camargo ; Marisol Eaton (SD County) ; Maureen Brown ; Mike Rose ; Mike Sappingfield ; Phil Herrington ; R.O. Nichols ; Steve Carlson (UCSD) ; Tanya Flink ; Tom Palmisano ; Victor Cao (OC) ; Karalee Darnell ; Roderick Brewer
Subject: FYI - L.A. Times Story on Used Nuclear Fuel

All,

Sharing a comprehensive story on used fuel that ran on the cover of the *Los Angeles Times* yesterday, July 2. Provided for your awareness.

Best regards,

Manuel

Manuel C. Camargo Jr.
Principal Manager, Strategic Planning
SONGS Decommissioning
Southern California Edison

Attachment:
3-LA Times Story: 1,800 tons of radioactive waste has an ocean view and nowhere to go, July 2, 2017

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From: David G. Victor
Sent: Wednesday, June 28, 2017 8:53 PM
To: Tom Palmisano ; Gary Headrick
Cc: Driscoll, Neal ; Dan Stetson (NE) ; Manuel Camargo
Subject: (External):Re: (External):Follow up on discussions

Thanks, much, Tom and Gary for this helpful exchange. Manuel, can you pls share a copy with the next CEP circular. All best david

From: Tom Palmisano
Date: Wednesday, June 28, 2017 at 8:16 PM
To: Gary Headrick
Cc: Neal Driscoll , "David G. Victor" , Dan Stetson , Manuel Camargo
Subject: Re: (External):Follow up on discussions

Gary,

I apologize for the delay in responding to your email.

First, let me reiterate our invitation to host you on site for a tour and discussions. Your questions in the email warrant a more detailed discussion rather than a short response in an email. I'll provide some responses below, however, I urge you to come to the site for a tour and discussion. Please look at your calendar for some time later in July or August when we can accommodate you.

Tom

Some specific responses to your comments:

Comment from your email: The matter of understanding the reliability of welded canisters cannot be overstated. This is not about the other study examining condition of the fuel from bolted casks, but the condition of the unwelded canister itself. This is critical to our understanding just how much time we may have left before there may be a leaking canister in our midst. It's not long, if Donna Gilmore's research is accurate. Why must this take so long to get preliminary results? We don't have years to find out, because by then, it may be too late.

Response: I appreciate your concern and Donna's viewpoints. The material shared previously is related to an EPRI and NRC study about how high burnup fuel will potentially be affected while in a dry storage canister. This is important confirmatory research, however, as you recognize this is not about the canister performance it is about the fuel rod performance. The industry and the NRC has high confidence in canister performance during the currently licensed periods. The NRC also has requirements which must be met during subsequent licensing periods for the canisters to monitor their performance. The NRC refers to these as "Aging

Management Plans" for renewing the license for the canisters beyond the initial 20 year license. We have commissioned a study by MPR associates to summarize the current experience with dry fuel storage canisters and the related aging issues. We expect to discuss this at the 3rd quarter CEP meeting. I think this will provide some answers on expected canister reliability. We will also be discussing our current work to develop the inspection capability for the canisters in that CEP meeting.

The following is some information on the current and future canister system for SONGS:

i. There are a number of intervals the address the life span of spent fuel canisters at SONGS, as follows:
    1. Service life: 100 years
    2. Design Life: 60 years
    3. Warranty: NUHOMS 10 years, UMAX 30 years
    4. NRC license renewal: intial license is for 20 years; license renewal is in 20 or 40 year increments.

ii. Service Life is based on nominal expected environmental conditions and represents a best estimate of canister life time including any planned maintenance. Design Life is based on the canister being exposed to the assumed worst case environmental conditions and represents the shortest expected canister life time. NRC license renewal period is typically 20 years for most dry used fuel storage systems (when licenses are renewed after the first 20 years, the NRC typically reviews site specific inspection results to provide added assurance that the dry used fuel storage equipment is operating as expected).

Comment from your email: At the last CEP meeting, you stated that we don't need to be concerned about criticality events because they have been eliminated by design, or something to that effect. Could you please clarify and indicate if there are any provisions on site to deal with a criticality event?

Response: First, let me elaborate on how we prevent an inadvertent criticality event in the spent fuel pool or the dry cask canisters.

In SONGS Units 2/3 spent fuel pools, criticality is prevented by maintaining physical separation of fuel assemblies with the spent fuel racks, utilizing administrative control of fuel placement within the spent fuel racks, and ensuring sufficient soluble neutron absorbers in the cooling water. The racks were also built with neutron absorbing material in the rack structure. Spent fuel parameters are continuously monitored. Since the spent fuel is in the fuel subject to the controls described, and we are not adding additional fuel to the pools, there is no plausible way for a criticality event to occur.

In SONGS Dry Cask Storage Systems, criticality is similarly prevented by maintaining physical separation within the DSC fuel storage basket that utilizes neutron absorbing materials between the cells, utilizing detailed storage loading patterns, and ensuring sufficient soluble neutron absorbers are in the cooling water as the DSC is loaded with spent fuel in the spent fuel pool. DSC critical parameters (temperature) are also continuously monitored. By following these precautions, there is no plausible way for a criticality event to occur.

These types of controls and design features have been used at SONGS and other commercial nuclear plants for years and are proven techniques.

If one were to postulate a hypothetical "what if" question about if an inadvertent criticality would occur, we would detect it by rising radiation levels and we would add soluble neutron poison to the water in the spent fuel pool or dry storage canister to top the reaction. I emphasize this is a very hypothetical question for an event which is not plausible given the design features and controls I described.

I'd be happy to discuss this in more detail when you visit the site.

Comment from your email: I've made what seemed to be a reasonable request from Neal Driscoll about vertical and horizontal movement at SONGS in both a 7.0 quake and a 7.4. He indicated that this information was not readily available, but would ask you about getting that for me. I'm surprised there is nothing you can provide immediately, since Edison has determined that the spent fuel pools would survive a 7.4 quake. Please send any technical documents to support that claim and also authorize Neal to provide me with the specific information I requested. Hopefully there is an animation that could be generated by the updated 3d model. If not, I can generate my own if I just know how much the site could move in any direction and duration for these two scenarios.

Response: We've discussed the seismic design criteria for SONGS several times in CEP meetings. Your request of Neal Driscoll to provide information on the vertical and horizontal movement at SONGS is not part of his scope of work and I'm not going to authorize him to perform work outside of his scope. I am attaching some NRC documents related to the original seismic design bases for SONGS 2&3 and links to some later NRC information. As we have discussed at CEP meetings, the seismic response of the site structures is analyzed in terms of peak ground acceleration. That acceleration is then used to analyze the response of the various buildings to ensure they meet their design criteria. It is not as simple as saying the building moves "x" amount in the horizontal direction and "y" amount in the vertical direction. This needs to be a more detailed discussion than a simple email response and I would be glad to have our engineers provide briefing during a site visit to explain how the site response to a seismic event is analyzed

Please see the following references for your information:

Included here are three sets of publicly available materials that document the seismic design basis for the San Onofre site, including the spent fuel pools that remain in operation today. These are:

iii. U. S. Nuclear Regulatory Commission, Safety Evaluation Report (Geology and Seismology) related to the operation of San Onofre Nuclear Generating Station, Units 2 and 3, dated December 1980. See attached cover letter and report. This is publically available material, although we haven't found a direct online link to the pdf file. It can be ordered through the NRC for a nominal fee but the material is provided here for your convenience. This material establishes the original design basis for San Onofre as a magnitude 7.0 earthquake on the Newport-Inglewood/Rose Canyon (NI-RC) fault. The NRC Safety Evaluation Report includes reference in Section 2.5.2.1 that the staff approved the design basis of 0.67g for San Onofre as being "appropriately conservative."

iv. SCE Response to the Request for Information, SONGS 2&3 – Seismic Design Basis Assessment, dated September 24, 2002 (NRC letter Response, https://www.nrc.gov/docs/ML0225/ML022540100.pdf), (Report, https://www.nrc.gov/docs/ML0201/ML020100338.html). This second set of material was developed in response to the postulated Oceanside Blind Thrust Fault (OBT) that was raised as an issue during the California Coastal Commission hearing for the first ISFSI construction at San Onofre. The report evaluated the purported OBT (including the possibility of a magnitude 7.5 earthquake along the fault) using a hazard/probabilistic methodology. The NRC concluded in a letter to Patricia Borchmann dated September 27, 2002, that "the NRC staff concurs with SCE's assessment that the postulated blind thrust faults do not appreciably change the seismic risk at SONGS." Recall that the more recent research by the Scripps Institution of Oceanography found that the OBT does not exist, but rather the subject faults are strike-slip in nature.

v. GeoPentech, 2010 Probabilistic Seismic Hazard Analysis Report, dated December 2010 (Report, http://www.energy.ca.gov/ab1632/documents/status-reports/SCE/SCE_Evaluation_of_AB1632_Report_Recommendations-appendices.pdf). This third set of reference material captures seismic research performed in 2010. This research postulated a magnitude 7.5 earthquake along the NI-RC fault. Peak ground acceleration is provided, but is only related to annual frequency of exceedence.

From: Gary Headrick on behalf of Gary Headrick
Date: Thursday, June 15, 2017 at 5:31 PM
To: Tom Palmisano
Cc: "Driscoll, Neal" , David Victor , "Dan Stetson (NE)" , Manuel Camargo
Subject: (External):Follow up on discussions

Tom,

I want to speak to you directly about some unfinished business in the hopes of keeping things moving before the next CEP meeting. I don't expect you will be answering all of the questions we submitted back on 2/16/17, but there are these few most important ones that do need to be responded to in writing, since time at meetings is not nearly sufficient.

On March 25, David Victor said in an email to me, "The unweld cask effort is an ongoing research project—what I have is a summary of where they stand, not final results which are years down the road. There is a group of emails that Manuel has on hand for the CEP and one in that pile concerns this matter. When they go to the CEP I will send to you."

The matter of understanding the reliability of welded canisters cannot be overstated. This is not about the other study examining condition of the fuel from bolted casks, but the condition of the unwelded canister itself. This is critical to our understanding just how much time we may have left before there may be a leaking canister in our midst. It's not long, if Donna Gilmore's research is accurate. Why must this take so long to get preliminary results? We don't have years to find out, because by then, it may be too late.

At the last CEP meeting, you stated that we don't need to be concerned about criticality events because they have been eliminated by design, or something to that effect. Could you please clarify and indicate if there are any provisions on site to deal with a criticality event?

I've made what seemed to be a reasonable request from Neal Driscoll about vertical and horizontal movement at SONGS in both a 7.0 quake and a 7.4. He indicated that this information was not readily available, but would ask you about getting that for me. I'm surprised there is nothing you can provide immediately, since Edison has determined that the spent fuel pools would survive a 7.4 quake. Please send any technical documents to support that claim and also authorize Neal to provide me with the specific information I requested. Hopefully there is an animation that could be generated by the updated 3d model. If not, I can generate my own if I just know how much the site could move in any direction and duration for these two scenarios.

Finally, I do appreciate the many invitations I've had to tour the facility and I intend to do that when my schedule allows. It looks like that will be a few weeks from now.

I've attached our original list of questions in case you can address them also, except for the ones that Neal has answered already.

Thanks,
Gary

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From: Manuel Camargo
Sent: Monday, June 12, 2017 5:57 PM
To: Bill Horn ; Dan Stetson (Nicholas Endowment) ; David G. Victor ; Donna Boston, Garry Brown; Jim Leach ; Jerry Kern ; Marni Magda ; Martha McNicholas ; Pam Patterson ; Paul Wyatt; Rich Haydon ; Supervisor Lisa Bartlett ; Ted Quinn ; Tim Brown (San Clemente) ; Tom Caughlan ; Val Macedo
Cc: Catherine Curtis ; Esther Soto ; JAMES MADIGAN ; Julie C Holt ; Larry Rannals ; Liese Mosher ; Lindsay Stigall ; Manuel Camargo ; Marisol Eaton (SD County) ; Maureen Brown ; Mike Rose ; Mike Sappingfield ; Phil Herrington ; R.O. Nichols ; Steve Carlson (UCSD); Tanya Flink ; Tom Palmisano ; Victor Cao (OC)
Subject: FYI - SCE Identifies Training Procedure Error at San Onofre

CEP Members,

I write to make you aware that SCE has taken corrective action at San Onofre after an internal audit identified a training lapse at the site. The NRC noted the Level IV, non-cited violation, which has the lowest safety significance, in a regular inspection report of San Onofre to be released this week. The NRC report is attached for your reference.

The violation was issued after an employee, a certified fuel handler, did not complete requalification training within 90 days as required under new, industry best-practice requirements SCE instituted in 2015. The employee mistakenly thought he had until the end of the year to complete the training. An internal quality assurance audit in September 2016 identified the lapse, and the employee, who has 36 years of experience, completed the training within two days.

Best regards,

Manuel

Manuel C. Camargo Jr.
Principal Manager, Strategic Planning
SONGS Decommissioning
Southern California Edison

Attachment:
4-NRC letter to SCE regarding May 8-11, 2017 Inspection

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Decommissioning General News

From: David G. Victor
Sent: Monday, July 31, 2017 10:12 AM
To: Abdulla, Ahmed ; Ted Quinn ; Manuel Camargo ; Tynan, George ; Tom Palmisano
Subject: (External):some interesting, not unexpected, news from SCANA to stop work on their plants

Attachment:
5-South Carolina Electric & Gas Company to cease constructions and will file Plan of Abandonment of the new nuclear project

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From: Maureen Brown
Date: Tuesday, September 12, 2017 at 6:52 AM
Subject: FYI: LA Times editorial on SONGS settlement/used fuel

Opinion; Editorials
There's no great answer for nuclear waste, but almost anything is better than perching it on the Pacific
The Times Editorial Board
11 September 2017

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

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

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

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

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

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

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

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

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

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

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Additional Attachments:

6-Extension sought for storing Three Mile Island debris, Associated Press
7-Yucca: Still facing a long and grinding road to approval, Energy Daily
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