

**To:** Nuclear Regulatory Commission

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**Subject:** Docket ID NRC-2014-0223 Southern California Edison Company; San Onofre Nuclear Generating Station, Units 2 and 3; Post-Shutdown Decommissioning Activities Report

Regulation (10 CFR 50.54(bb)) requires funding adequacy be demonstrated to support the irradiated fuel management plan. The San Onofre Unit 2 and 3 Post-Shutdown Decommissioning Activities Report (PSDAR), the Site Specific Decommissioning Cost Estimate (DCE), and Irradiated Fuel Management Plan (IFMP) dated September 23, 2014 do not adequately address this. This overview of Southern California Edison's (SCE) planned decommissioning activities, schedule, projected costs, and environmental impacts for SONGS Units 2 and 3 do not adequately address this and many other critical issues.

The PSDAR, DCE and IFMP do not consider the cost and other impacts of the NRC's August 26, 2014 Final Rule on Spent Fuel Storage, regarding potential indefinite continued storage of spent fuel at nuclear power plants around the country, including San Onofre. The NRC decision recognized there may not be a geological repository for the foreseeable future. Southern California Edison ignores this fact in their PSDAR, DCE and IFMP. Instead, they assume the Department of Energy will start picking up spent fuel from San Onofre in 2024 and provide no contingency for what the NRC recognizes as an unlikely event.

Contingency funding and planning should be included by Edison to address both short term (60 years) and long term (160+ years) storage at San Onofre. This includes aging management, replacement or repair of failed canisters or other storage systems, radiation and early warning monitoring for aging dry storage systems.

The spent fuel pool and transfer pool systems should remain until another method is in place for reloading spent fuel assemblies into another canister/cask. No "hot cells" exist that are large enough for reloading spent fuel into another canister/cask. Costs for maintenance and replacement of canisters/casks need to be included in this plan.

The railroad tracks and related systems should not be removed, so that the fuel can eventually be transported without incurring additional costs.

Provision for and costs for long term radiation monitoring need to be included, preferably a system with on-line access by the public. The current system of quarterly radiation monitoring by an employee with a "monitor on a stick" is no longer acceptable given the new long term storage requirements.

The NRC needs to complete their analysis of the impacts of the NRC Continued Storage decision on current NRC regulations and guidance. Revised regulations and guidance should be completed prior to a decision on Edison's PSDAR, DCE and IFMP. The NRC needs to fully comprehend the long-term performance of dry storage systems under multiple hazards (e.g. earthquakes, tornados, tsunamis, and marine and other corrosive environments combined with aging effects) before relying on these systems for extended storage. The cost of this longer term storage needs to be addressed in decommissioning plans, including but not limited to the following NRC NUREG's:

- **NUREG-1536**, “Standard Review Plan for Spent Fuel Dry Storage Systems at a General License Facility,” Final Rev. 1, July 2010 ML101040620
- **NUREG-1567**, “Standard Review Plan for Spent Fuel Dry Storage Facilities,” ML003686776
- **NUREG-1927**, “Standard Review Plan for Renewal of Spent Fuel Dry Cask Storage System Licensees and Certificates of Compliance” ML111020115
- **NUREG/CR-6407**, “Classification of Transportation Packaging and Dry Spent Fuel Storage System Components According to Importance to Safety, February 1996 <http://www.nrc.gov/reading-rm/doc-collections/nuregs/contract/cr6407/>

The decommission trust funds were never intended to provide short or long term funding of spent nuclear fuel and money has not been budgeted for this.

Priority spending of funds should be for dry cask storage systems designed for long term storage. The NRC has not completed their analysis on this issue. No funds should be approved for destruction of the facility or dry cask systems until this issue is adequately resolved.

Due to the new requirement of extended dry storage on site, there are many uncertainties as to the viability of storage and transporting of fuel after short and long term dry storage that need to be addressed, especially for high burnup fuel. These should be addressed before approving any decommissioning plan. Examples:

1. A Diablo Canyon thin (1/2”) Holtec canister (located at the Pacific Coast) was found to have conditions for stress corrosion cracking after only two years of use.
2. There is currently no technology in place to inspect for corrosion or cracks in these thin canisters none to repair them.
3. The NRC plans to revise NUREG-1927 to allow 5 years for the vendors to develop inspection technology. However, this will be challenging, given the limited access to thin canisters inside the concrete overpacks/casks.
4. The thin canister systems do not have early warning monitoring BEFORE a radiation leak. Welded lid canisters were never designed for this and never designed to be replaced or stored long-term.
5. There is no seismic rating for cracked canisters, yet the NRC plans to allow up to a 75% crack (proposed for NUREG-1927 based on NRC technical meetings in July/August 2014). Seismic analysis is needed for this. That is not addressed in SCE’s costs and plan.
6. The cost of replacement canisters/casks is not included.
7. The inflation cost of the canisters/casks and other systems have not been considered. For example, the average price per cask at the Prairie Island ISFSI increased by 734% in less than 25 years – from \$812,500 in 1990 to \$5.96 million in 2013 (see ML14323B022). Should the NRC assume that per cask costs will increase by this same percentage every 25 years? Edison had estimated \$400 million for the remaining 100 dry storage systems needed. However, these latest documents show even higher numbers.
8. The NRC should survey actual costs being paid for current canister/cask systems and compare this to the initial dry storage system costs. Edison has refused to share the cost of the new UMAX dry storage system with the public. However, the “spent fuel storage and management” category totals over a billion dollars (\$1,276,196,000).
9. Where are the costs for the transfer and transport canisters/casks?
10. Will the fuel assemblies be retrievable? If not, how will this be handled and what will that cost?

SCE needs to obtain numerous federal, state and local permits. Some of these may significantly impact the decommissioning plan and funds. Examples:

1. If the State Lands Commission (SLC) does not approve leaving the once-through cooling conduits in the ocean, this will significantly change the costs and may trigger the need for a major environmental impact analysis. The Unit 1 conduits were approved to stay at the bottom of the ocean, but the reasons and case may not apply for the Unit 2 and 3 conduits.
2. The SLC holds SCE liable for future potential costs for Unit 1 conduit removal, if a decision is made later that the Unit 1 conduits must be removed. Where is the cost provision for this for the Unit 2 and 3 conduits?

*Paragraph 14 of the Easement Lease P.R.C. No. 3193.1 with the California State Lands Commission for the site of the offshore circulating water conduits was amended effective October 20, 2005 to no longer require the complete removal of the conduits. Under the amended agreement, SCE and SDG&E will be required to remove all vertical structures that protrude above the seafloor, and to install mammal barriers over each resulting opening. The remainder of the conduits located below the seafloor will remain in place. Upon termination of the Easement Lease, SCE and SDG&E will enter into a Lease Termination Agreement that will include a requirement to provide sufficient financial assurance to respond to remove all or part of the remaining conduits to the extent that they become a public safety hazard at any time in the future.*

[https://www.pge.com/regulation/NuclearDecomCostTri2012/Testimony/SCE/2012/NuclearDecomCostTri2012\\_Test\\_SCE\\_20121221\\_257992.pdf](https://www.pge.com/regulation/NuclearDecomCostTri2012/Testimony/SCE/2012/NuclearDecomCostTri2012_Test_SCE_20121221_257992.pdf)

3. The Unit 1 cost for partial dismantlement of the Unit 1 conduit was \$10,157 2008 dollars, plus 340 man hours, plus 7776 cubic feet of clean waste (ML12248A273). Where are the cost estimates for Unit 2 and 3 for the partial dismantlement option?
4. Edison proposes a new cooling system for the spent fuel pools. However, there are no details (even high level details) on this system.
5. The California Coastal Commission must approve a permit. Edison has chosen the Holtec UMAX below ground system. This requires a major geological change to the dry storage system installation. No details have been provided on the layout of this system. No geological study has been done for this sensitive area. The coastal cliffs are subject to erosion and slides. This is a major design change from the current above-ground NUHOMS horizontal storage system. The Holtec UMAX system is a new design that has only been used at Humboldt Bay and only for lower burnup spent fuel storage, making it more of an experimental system.

The reports mention digging is needed below 3 feet for the decommissioning, but does not say how deep. What is the depth and what are the implications from a cost, timeline and potential government approvals that may be needed?

Costs should be broken out in more detail. "Black box" estimates are considered poor project management.

SCE has submitted testimony to the CPUC on the Nuclear Decommissioning of SONGS 2 and 3, 12/10/2014 [https://www.sdge.com/sites/default/files/regulatory/SCE-1\\_0.pdf](https://www.sdge.com/sites/default/files/regulatory/SCE-1_0.pdf) It states:

*SCE plans to install stand-alone cooling systems for the SONGS 2 and 3 spent fuel pools. The installation of these stand-alone cooling systems will transition the pools into "spent fuel pool islands" and allow SCE to de-activate their original plant cooling systems, and thereby isolate the pools from the Pacific Ocean. SCE plans to*

*complete the Spent Fuel Pool Islanding project by mid-year 2015. The completion of this project will eliminate the need and cost to continue to operate and maintain the original plant cooling systems, and allow them to be decommissioned.*

This is insufficient detail to know the impacts of this new system. It also doesn't address any contingency for reloading fuel.

On Page 25 of this CPUC testimony, it states the *DOE has not committed to accept SCE's canistered spent fuel. But for purposes of this estimate, it is assumed that an SCE-funded dry storage facility will not be necessary.* This is not a reasonable or conservative assumption.

Southern California Edison has not demonstrated they have an adequate plan or adequate funding based on the plans they submitted and as required under regulation (10 CFR 50.54(bb)), and as needed due to the August 26, 2014 NRC continued on site storage decision for possible indefinite on-site storage.

Additional References:

Diablo Canyon: conditions for stress corrosion cracking in 2 years, October 23, 2014  
<https://sanonofresafety.files.wordpress.com/2011/11/diablo canyon scc-2014-10-23.pdf>

Reasons to buy thick nuclear waste dry storage casks and myths about nuclear waste storage, December 8, 2014  
<https://sanonofresafety.files.wordpress.com/2014/10/reasonstobuythickcasks2014-12-08a.pdf>

Dry Cask Storage issues, September 23, 2014  
<https://sanonofresafety.files.wordpress.com/2011/11/drycaskstorageissues2014-09-23.pdf>

NRC Approves Final Rule on Spent Fuel Storage and Ends Suspension of Final Licensing Actions for Nuclear Plants and Renewals, August 26, 2014  
<http://pbadupws.nrc.gov/docs/ML1423/ML14238A326.pdf>