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TO: California Energy Commission February 6, 2015
RE: Docket # 15-IEPR-01 General/Scope

The 2014 Integrated Energy Policy Report Update should address critical new information regarding California's nuclear power plants, nuclear waste storage and decommissioning.

Add requirements for dry cask storage systems

Current CEC policy is to support expedited removal of spent nuclear fuel from overcrowded spent fuel pools into dry storage containers. However, the CEC is silent on the requirements of these containers. Dry storage system requirements should be included in the IEPR. These systems should be maintainable and meet these minimum requirements. The current systems used in California do not meet these requirements.

1. Ability to inspect metal for corrosion, cracks and other potential aging factors.
2. Ability to repair to avoid replacing these $4 million dollar containers prematurely.
3. Not subject to stress corrosion cracking
4. Early warning monitoring system, prior to a radiation leak
5. Continuous radiation monitoring
6. Designed to last at least short-term (60 years), preferably long-term (160 years)
7. Includes defense-in-depth (e.g., no single point of failure)
8. Proven storage system, not experimental
9. A documented in-place recovery plan, in case of container failure.
10. Hardened on-site storage (e.g., store in reinforced concrete building)

New information makes this IEPR nuclear update urgent and critical.

NRC Decision on Continued On-Site Storage changes requirements.

On August 26, 2014, the Nuclear Regulatory Commission (NRC) Final Rule for Continued Storage of Spent Nuclear Fuel at existing nuclear power facilities recognizes the containers used for storing spent nuclear fuel need to meet on-site storage requirements for short-term (60 years), long term (160) and indefinitely.

The NRC has not completed their evaluation of existing canister designs to meet new on-site storage requirements.

Existing Containers Do Not Meet Minimum Requirements.

Southern California Edison plans to spend almost $1.3 billon of limited decommissioning funds for a dry storage system that does not meet the above minimum requirements, in spite of new information that makes it clear these canisters may fail premature and do not have an adequate aging management plan.

All California nuclear power facilities use thin canisters (1/2" to 5/8" thick) made from 304, 304L, 316 or 316L stainless steel. They were not designed for longer term storage. Aging management is not built-in and adequate aging management does not exist.

The leading technology used in most of the rest of the world is thick metal casks (approximately 9" to 20" thick) that meet the above requirements for storage and for transport and that have been in service over 40 years without appreciable degradation. The thin steel canister technology is an immature technology. Canisters at San Onofre were first loaded in October 2003.

This issue is even more urgent based on new information from a January 2014 partial inspection of two Diablo Canyon canisters. One of the canisters has all the conditions for chloride induced stress corrosion cracking (CISCC) after only two years of service, due to California's marine salt air.

The NRC thought this would not happen for at least 30 years. They thought the temperature of the canisters would be too high for salts to dissolve on the canister, creating the conditions for cracking. They were wrong.

Also, the NRC states that once cracks initiate, it will take at least 16 years for cracks to go through-wall. They plan to allow cracks up to 75% through-wall before the canister must be taken out of service.

However, there is currently no technology to inspect for corrosion and cracks in thin canisters filled with spent nuclear fuel. The NRC is giving the canister vendors 5 years to try to develop something. However, this will be imperfect, at best, given the requirement the thin steel canisters must remain inside the concrete overpacks/casks during the inspections (due to lack of gamma and neutron protection from the thin canisters). Inspecting for stress corrosion cracks is an inaccurate science even without this limitation.

It appears from the 2013 IPER (Chapter 6, page 205), current CEC nuclear storage policy was based at least partially on the National Academy of Sciences conclusions from the report Safety and Security of Commercial Spent Nuclear Fuel Storage: Public Report (2006). While I am in agreement with expedited removal of fuel from the overcrowded spent fuel pools, the IPER is silent on the requirements the dry cask system must meet. The 2006 NAS report does not provide sufficient detail on that issue and may not have had the information regarding the need for continued on-site storage or current information on stress corrosion cracking of thin steel storage canisters.

Decommissioning recommendations: evaluate long-term storage impacts.

The 2013 IPER (page 226) recommends that the CPUC require expedited transfer of spent fuel assemblies from wet pools to dry cask storage be included in the decommissioning process and the costs of this expedited removal be included in decommissioning funds before license renewal funding is granted. This does not address funding for the new NRC Continued Storage ruling for Diablo Canyon or for California's decommissioning nuclear plants (San Onofre, Humboldt Bay and Rancho Seco). The policy recommendations should be changed to:

1) require evaluation of the long-term impacts and costs of continued on-site storage.
2) address cost and other impacts for the following:
3) replacement storage systems,
4) maintainability requirements, including spent fuel pools, transfer pools
5) preparation of a cost/benefit analysis of all storage options, and
6) continuation of emergency planning.
7) Currently, decommissioned plants are allowed to destroy expensive spent fuel pools (the only current

method to replace defective canisters) and to eliminate all emergency planning, funding and off site notifications of a radiation release. (See recent December 2014 NRC decision on Humboldt Bay.)

The 2013 IPER (page 209 and 210) address nuclear liability coverage and other compensations available in case of nuclear radiation damage. This needs to be reevaluated in light of the NRC decision for continued on-site storage.

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Additional documentation available upon request from:

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