



December 19, 2018

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VIA E-MAIL AND U.S. MAIL

California State Lands Commission
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825
Attn: Cynthia Herzog, Senior Environmental Scientist
Cynthia.Herzog@slc.ca.gov

Re: SONGS Units 2 & 3 Decommissioning Project – Additional Information

Dear Ms. Herzog:

On behalf of Southern California Edison Company (“SCE”), San Diego Gas & Electric, the City of Anaheim and the City of Riverside (collectively, the “Participants”), this letter provides and encloses additional information responsive to comments received on the *Draft Environmental Impact Report for the San Onofre Nuclear Generating Station (SONGS) Units 2 & 3 Decommissioning Project* (the “DEIR”).

In particular, to evaluate whether any infrastructure necessary to protect the SONGS ISFSI from inundation should be maintained, at least one comment suggests that the California State Lands Commission (“CSLC”) analyze potential mean sea level rise (“MSLR”) and groundwater impacts using the recently developed “H++” scenario, a new extreme forecast of future MSLR conditions developed by the California Ocean Protection Council. (See August 30, 2018 letter from Surfrider Foundation, at p. 8.) However, additional analysis is unnecessary for multiple reasons.

As a preliminary matter, the Proposed Project does not involve alterations to the ISFSI, and the ISFSI has been fully constructed pursuant to review and approval by the California Coastal Commission (“CCC”). In fact, the CCC considered the potential effects of future MSLR as part of its review of the proposed Holtec ISFSI in 2015 when it approved a Coastal Development Permit (“CDP”), and the CCC specifically included a condition requiring SCE to return to the CCC in 2035 for a re-evaluation of the Holtec ISFSI in light of updated projections at that time. The fact that the CSLC is acting as the lead agency conducting a CEQA review for the Proposed Project now does not provide a basis to revisit the previous approval for the separate and distinct ISFSI. (Pub. Resources Code § 21004 (CEQA does not confer additional authority not already within the powers of a permitting agency); *Benton v. Board of Supervisors* (1991) 226 Cal.App.3d 1467, 1476-1477 (where rights under a permit have vested, agency is precluded from reevaluating the previous environmental review).) Nevertheless, SCE provides the following information to address comments regarding the H++ MSLR scenario.

First, although the H++ scenario predicts substantial *long-term* changes in MSLR, it only results in a MSLR change of 3.2 inches compared to what the California Coastal Commission previously predicted would occur through year 2035. (See Attachment A, a letter from Coastal Environments, Inc., a firm with extensive expertise in coastal process issues, at p. 2.) That timing is noteworthy because, as discussed above and as noted in the DEIR, the Participants must return to the Coastal Commission in 2035 for a renewed evaluation of the ISFSI that will incorporate, among other things, the demonstrated effects of MSLR at that time. (See DEIR, at p. 1-10.) In support of the CDP that established that requirement, Coastal Commission staff found that any ISFSI exposure to groundwater through 2035 would be minimal and would not undermine the structural integrity of the ISFSI through 2035. (See Attachment B, an excerpt from the 2015 Holtec ISFSI CDP Staff Report, at p. 9 of 12.) Given that the H++ scenario only results in a minor 3.2-inch difference in MSLR forecast through 2035, any changes to the potential for groundwater inundation at the ISFSI would be negligible by that time.

Second, the previous analysis of coastal processes prepared by Coastal Environments, Inc. and submitted to CSLC already considered potential wave runup and overtopping at levels up to 4.2 meters higher than current mean sea level, and found that even then, no flooding of the ISFSI would occur as long as the seawalls remained in place. (See Attachment A, at p. 1.) Because the H++ scenario forecasts MSLR of about 3.1 meters through 2100, likewise no flooding of the ISFSI would be expected under that scenario, as long as the seawalls remain in place. The Proposed Project does not include any removal of the seawalls at SONGS.

For these reasons, there is no reason to incorporate the H++ scenario into CSLC’s review of the Proposed Project.

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The Participants appreciate CSLC staff's review of the Proposed Project, and we look forward CSLC's consideration of the Final EIR and lease amendment to facilitate the decommissioning of SONGS.

Sincerely,



Robert Pontelle
Senior Attorney
Southern California Edison Company

cc: Lucinda Calvo (*via e-mail only*)

Attachments A-B

Attachment A

30 November 2018

Mr. Ron Pontes
Southern California Edison
P.O. Box 128, MS D3D
5000 Pacific Coast Highway
San Clemente, CA 92672
Subject: H++ MSLR Scenario and Coastal Processes at SONGS

Dear Mr. Pontes:

In response to your question concerning the present need to consider the extreme future mean sea level rise (MSLR) scenario labelled “H++” in the recent Ocean Protection Council (OPC) State of California Sea-Level Rise Guidance document (OPC 2018), we have provided the following information and perspective. In our two reports (Elwany *et al.* 2016, 2017) that evaluated the coastal processes important to inform decision-making related to the end-state associated with deconstruction of the San Onofre Nuclear Generating Station (SONGS), we considered four MSLR scenarios that respectively reach 1.0, 1.42, 1.67, and 2.0 m by 2100 relative to 2000.¹ The range of rise we considered, 1-2 m by 2100, is similar to the range in the newest OPC (2018) guidance not including H++. These four scenarios were chosen because in our opinion they best reflected the most plausible range of MSLR by 2100 as represented by California Coastal Commission (CCC) and Department of Defense (DoD) guidance, namely CCC (2015) and Hall *et al.* (2016).

The H++ scenario projects MSLR of 3.1 m by 2100 relative to 2000. This scenario was not applied in the Elwany *et al.* (2017) modeling work, first because the State of California sea level rise policy guidance was still evolving at the time the scenarios were chosen in Elwany *et al.* (2016), and second because it was not within the MSLR range required for consideration by the agencies at that time. The H++ scenario arose from advances by DeConto and Pollard (2016) suggesting that the West Antarctica Ice Sheet could melt faster than previously recognized. The H++ scenario was adopted in the 2018 Fourth Californian Climate Change Assessment (Pierce *et al.* 2018) and in the accompanying OPC (2018) guidance. However, unlike the other scenarios, OPC (2018) states in part:

“This is an unknown probability, high consequence scenario such as would occur if high rates of Antarctic ice loss were to develop *in the last half of this century.*”

While our 2016 and 2017 analyses did not specifically incorporate the H++ scenario separate from other considerations, we did analyze the potential for runoff and overtopping of the existing sea walls at SONGS for MSLR up to about 4.2 m. In that analysis, we found that no flooding from overtopping is expected even under this extreme condition, as long as the seawalls currently fronting Units 2 and 3, and the former Unit 1, now partly occupied by the Independent Spent Fuel Storage Installation (ISFSI), remain in place.

¹ In order of increasing magnitude these were termed: DoD1.0, RCP4.5, CCC1.67, and DoD2.0.

It is our understanding that Southern California Edison (SCE) is required to reassess coastal conditions as part of potential permitting procedures in 2035. We therefore evaluate the differences between the H++ MSLR trajectory and the highest two scenarios we previously considered, namely CCC1.67 and DoD2.0 from 2000-2050, including 2035.

Table 1 below summarizes the respective projected MSLR values for the five scenarios mentioned for selected years from 2000-2050. The H++ trajectory values are specified in OPC (2018) for 2000, 2030, and every 10 years after through 2150. For the purposes of Table 1, values for years in between those already specified by OPC were calculated by applying commonly used quadratic curve fitting. As shown in Table 1, MSLR between 2000 and 2035 would be 0.45 m in the H++ scenario, a difference of only 8 cm (3.2 in) from the 0.37 m (14.8 in) MSLR in the CCC 1.67 scenario. From 2000-2050 the range is larger, about 0.61 m to 0.85 cm, but still a modest difference of 24 cm (9.6 in). Additionally, the response of underground water elevation nearby the coast will vary in response to mean sea level rise by a value equal to the change in mean sea level (Rotzoll and Fletcher, 2013; Hoover et al., 2017). Therefore the difference in estimating underground water elevation in 2035 by scenarios H++ and CCC 1.67 is 8 cm (3.2 in).

We also emphasize the three major underlying uncertainties in future MSLR projections, namely: 1) Uncertainty in what humans may or may not do in the future to curb greenhouse gas emissions; 2) the imperfectly understood physical processes, especially polar ice melt; and 3) the natural inter-annual fluctuations of sea level. We use mean sea level (MSL) measurements to also illustrate the third uncertainty associated with determining which of the various projections is being reflected by actual MSLR.

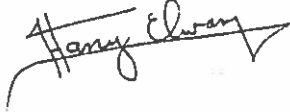
Figure 1 shows MSL measurements that begin in 1925 at the La Jolla tide gauge (black rhomboids). These annual average MSL data suggest that natural variability is about the same as the present differences between scenarios (colored projections). Note that the highest MSLs occur during El Niño or otherwise warm years, most notably 1941, 1957-59, 1983, 1997, and 2014-15. The differences between warm-year highs and cooler lows range up to about 0.12 m. At the moment, the range between the five future MSLR projections shown in Table 1 and plotted in Figure 1 is about the same. By 2035 we expect this range to approximately double as the higher and lower emissions scenario projections increasingly diverge. In other words, it will become progressively more apparent between now and 2035 where MSL is headed. In the interim, the actual magnitudes of MSLR and the differences between currently accepted State guidance scenarios are expected to remain relatively modest.

If you have any further questions or comments, please contact us at 858-459-0008 or via e-mail at hany@coastalenvironments.com.

Mr. Ron Pontes
Southern California Edison
Subject:
30 November 2018
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Sincerely,

COASTAL ENVIRONMENTS, INC.

A handwritten signature in black ink, appearing to read "Hany Elwany", with a stylized flourish at the end.

Hany Elwany, Ph.D.
President

A handwritten signature in black ink, appearing to read "R. E. Flick", with a stylized flourish at the end.

Reinhard E. Flick, Ph.D.
Oceanographer

Table 1. Summary of MSLR scenario values 2000-2100 (meters).

Year	DoD 1.0	RCP 4.5	CCC 1.67	DoD 2.0	H++
2000	0.00	0.00	0.00	0.00	0.00
2010	0.05	0.01	0.08	0.06	0.06
2020	0.08	0.05	0.19	0.15	0.18
2030	0.15	0.12	0.30	0.26	0.34
2035	0.18	0.16	0.37	0.35	0.45
2040	0.22	0.22	0.45	0.42	0.57
2050	0.32	0.33	0.61	0.60	0.85
2070	0.54	0.63	0.97	1.06	1.6
2100	0.98	1.41	1.67	1.98	3.1

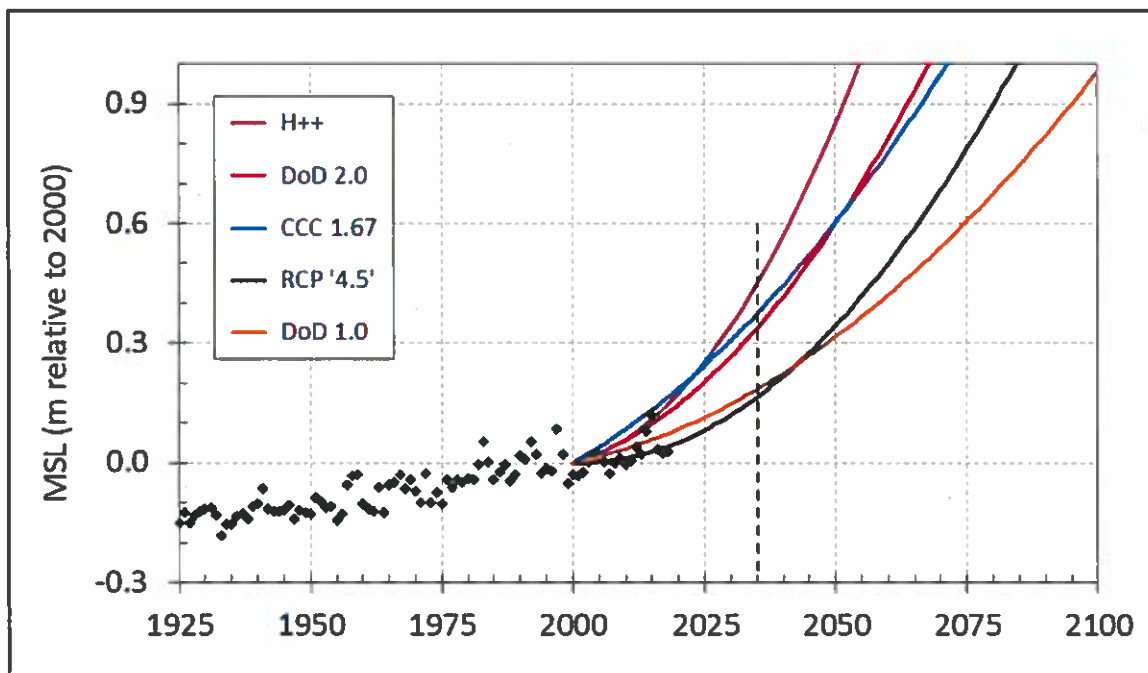


Figure 1. Annual mean sea level as measured at La Jolla tide gauge (black symbols, 1925-2018) and as projected from 2000 for five scenarios (see text). Highest measured MSL generally occurs during El Niño years. Broken vertical line indicates 2035.

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Attachment B

CALIFORNIA COASTAL COMMISSION

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Tu14a

Filed: 6/11/15
180th Day: 12/8/15
Staff: J. Street - SF
Staff Report: 9/25/15
Hearing Date: 10/6/15

STAFF REPORT: REGULAR PERMIT

Application No.: 9-15-0228

Applicant: Southern California Edison Company

Location: San Onofre Nuclear Generating Station, San Diego County.

Project Description: Construct and operate an Independent Spent Fuel Storage Installation (ISFSI) to store spent nuclear fuel from SONGS Units 2 and 3.

Staff Recommendation: Approval with conditions.

SUMMARY OF STAFF RECOMMENDATION

Southern California Edison Company (SCE) proposes to construct and operate a temporary facility to store spent nuclear fuel produced at the San Onofre Nuclear Generating Station (SONGS), on Camp Pendleton, in northern San Diego County (**Exhibit 1**). The facility, known as an Independent Spent Fuel Storage Installation (ISFSI), would consist mainly of a partially-below grade concrete and fill berm surrounding an array of 75 fuel storage modules, which would contain and protect stainless steel casks filled with spent fuel. The ISFSI would be located within the SONGS North Industrial Area (NIA), the former site of the decommissioned Unit 1 power plant, adjacent to and seaward of an existing ISFSI facility permitted in 2001 (**Exhibit 2**).

SONGS Units 2 and 3 were shut down in 2012, and some 2668 spent fuel assemblies remain in wet storage pools in the Units 2 and 3 fuel handling buildings. This fuel is highly radioactive and requires secure storage for thousands of years to prevent harm to humans and the environment.

As discussed at length in the September 25, 2015 staff report, Commission staff evaluated the vulnerability of the proposed project to geologic hazards, including earthquakes, erosion, and coastal flooding, and concluded that the proposed project, with the adoption of **Special Condition 2**, would minimize hazards to life and property and assure stability and structural integrity consistent with Section 30253 of the Coastal Act. No changes to the staff recommendation are proposed in response to comments regarding these hazards.

Commission staff also evaluated the hydrogeology of the project site and reviewed monitoring well data provided by SCE (SCE 2015b). At the two monitoring wells within the proposed ISFSI footprint, the water table elevation varies by approximately 0.7 feet above and below a mean elevation of about +5.4 feet MLLW, indicating that, at present, natural variability in the water table is not likely to bring groundwater into contact with the base of the concrete ISFSI foundation pad (at +7.5 feet MLLW). Increases in the water table elevation related to sea level rise could potentially lead to intermittent lead to groundwater contact with the base of the ISFSI toward the end of the proposed 35-year life of the project. However, the design of the ISFSI is such that there are multiple barriers, including the 3-foot thick foundation pad and the steel cavity enclosure container (CEC), between the groundwater and the fuel storage casks, and limited contact with groundwater would not undermine the structural integrity of the ISFSI during the proposed project life. Furthermore, as a part of **Special Condition 2**, SCE would be required to evaluate current and future coastal hazards, including the effects of groundwater intrusion, as part of its CDP amendment application should it wish to retain the ISFSI in its proposed location beyond 2035.

Comments Related to Site Alternatives

Comments submitted by Michael Aguirre and Ray Lutz argue that SCE has not adequately explored alternative project locations off of the SONGS site. Mr. Lutz's comments include an extensive discussion of the benefits of siting the project away from the coast, and present a conceptual analysis of a hypothetical ISFSI site in the Mojave desert. In their comments, Ms. Gilmore and Ms. Lynch stated that the potential future alternative (discussed in the staff report) of relocating the ISFSI within the SONGS site would require a major expense and would greatly increase the current estimate of decommissioning costs.

As discussed in greater detail in the staff report, Commission staff has reviewed SCE's analysis of off-site alternatives and agrees with the conclusion that such alternatives are either unavailable or infeasible. No off-site federal permanent repository or private interim storage facility currently exists, and there is no prospect of such a facility becoming available in the near term. Nor is there another inland nuclear power plant with an existing ISFSI that is willing to or licensed to accept spent fuel from another site. Finally, there is no other site under SCE's control that is licensed for the siting of an ISFSI or at which an ISFSI could be developed in a reasonable period of time.

The staff recommendation is based on findings that the proposed project, as conditioned, would be consistent with Coastal Act policies related to geological hazards, the protection of marine and visual resources, and public access and recreation, excluding matters of radiological safety, and does not evaluate the potential cost of any future relocation of the ISFSI within the SONGS site. **Special Condition 2** requires that SCE evaluate the merits and feasibility (including costs)