CALIFORNIA COASTAL COMMISSION
SOUTH CENTRAL COAST AREA
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March 19, 2015

Don Neal
Director of Corporate Environmental, Health and Safety
Southern California Edison Company
1218 South 5th Ave.
Monrovia, CA 91016

Re: **Coastal Development Permit Application #9-15-0228**

Dear Mr. Neal,

On February 20, 2015, California Coastal Commission (Commission) staff received your application to amend coastal development permit (CDP) #E-00-014 to allow for the construction of a new independent spent fuel storage installation (ISFSI) for San Onofre Nuclear Generating Station Units 2 and 3 (SONGS 2 & 3) spent nuclear fuel. Based on staff's improved understanding of the scope of the project after receiving the application, we advised you that a new CDP would be required. On March 6, 2015, we received a letter from your representative, Kim Anthony, reclassifying the application as a request for a new permit. For your reference, the application has been assigned the record number 9-15-0228.

The Commission staff has reviewed the submitted application materials, and has determined that the application is incomplete and cannot yet be filed. Additional information is necessary in order to meet the filing requirements contained in 14 CCR Section 13053.5(a) and to adequately analyze the proposed project under the policies of Chapter 3 of the Coastal Act. Please provide the following information to the Commission staff:

Project Plans & Site Information

1. *Project Plans.* Please submit two sets of project plans, drawn to scale, including both plan view and cross-sectional representations of the proposed project. Please also include reduced-size (8.5" x 11") copies of the plans.
2. *Licensed Area Map.* Please provide a SONGS site map indicating the boundaries of the Part 50 Licensed Area.

Project Duration

The project description does not specify the expected life of the ISFSI. Because there are currently no offsite facilities able to accept the spent fuel, we must base our review on the likelihood that the proposed ISFSI will remain on site in perpetuity.[1]

[1] Please note that this is the same approach the Commission used in evaluating the Diablo Canyon and Humboldt Bay ISFSIs. As noted in the Commission's Final Adopted Findings for the Diablo Canyon ISFSI (CDP #A-3-SLO-

3. *Contingency Measures.* Please describe contingency measures that Edison will implement if no permanent or offsite waste facility becomes available within the design lives of the ISFSI components or within the anticipated life of the proposed project site as determined based on the analyses of site hazards described below.

Alternatives Analysis

4. "*No Action" Alternative.* Please supplement the analysis (*see* Project Description, p. A-6) of the proposed project in comparison to the "no action" alternative of keeping spent fuel in the existing pools. In particular, please describe and provide evidence for the "safety benefits" and "greater margin of safety related to seismic risks" that the submitted Project Description ascribes to the proposed project. Please also comment on the feasibility of continued storage in the spent fuel pools in relation to planned decommissioning activities.

5. *Off-Site Alternatives*. Please provide a more complete explanation for the conclusion, contained in the Project Description, that locating the ISFSI on Camp Pendleton outside the currently licensed area is infeasible. The CDP application mentions some of the considerations in selecting an offsite location (e.g., licensing requirements, geologic studies), but does not explain why these factors would render such a site infeasible. Please address the extent to which "economic, environmental, social or technological factors … would prevent the project from being accomplished in a successful manner within a reasonable period of time" (Coastal Act definition of feasibility, Section 30108).

6. *On-Site Alternatives.*

    a. Please provide more detailed information on the criteria used to select the five on-site location alternatives (Reservoir, NIA, K Bldgs., MUD, South Yard) discussed in the Project Description. Were other on-site locations considered?

    b. Please provide an analysis of the relative merits, in terms of environmental impacts, long-term stability and structural integrity, and feasibility of (i) expanding the existing ISFSI using the existing horizontal cask configuration, (ii) replacing the existing ISFSI with a vertical storage design in the same location, or (iii) some combination of horizontal and vertical cask storage in the same location.

7. *Topographic Map & Site Cross Sections*. Please provide a map depicting the topography of the SONGS site, as well as cross-sectional views, extending from mean lower low water (MLLW) to the SONGS inland site boundary, that intersect the proposed project site and alternative locations (NIA, K Bldgs., MUD, and South Yard). These items are needed to enable Commission staff to evaluate on-site alternatives from a coastal hazards perspective.

8. *Feasibility Study.* Please provide a copy of (or documents related to) the "extensive feasibility study" referred to in the Project Description.

04-035), "…without evidence of a feasible and available alternative permanent storage site, the Commission must presume that the facility will remain in perpetuity, and the findings and conditions herein are based on this presumption."

9. *Technological Alternatives*. Please supplement the analysis contained in the HI-STORM UMAX Environmental Report to include consideration of the long-term stability, structural integrity and feasibility of an ISFSI facility using thick-walled dry storage canisters (e.g., CASTOR series) in comparison to the proposed technology.

ISFSI Structural Integrity

10. *Design Life of ISFSI and Casks.* What is the design life of the proposed multi-purpose storage canisters (MSCs)? What are the design lives of the other ISFSI structures, including cavity enclosure containers (CECs), closure lids, concrete foundation and ISFSI pads, and subgrade materials? Given the possibility that the project life could extend beyond the design life of the ISFSI and its various components, what measures is Edison proposing to replace or extend the useful lives of these components?

11. *Corrosion.* Please evaluate the potential for corrosion of stainless steel components (e.g., MSCs, CECs, closure lids) in the coastal environment surrounding SONGS, particularly over the longer timescales (decades to centuries) that the ISFSI may need to remain in place if a permanent storage solution is not developed. Please also specify what measures Edison is proposing to prevent, monitor for, and remediate structural deficiencies related to corrosion (e.g., cracking).

12. *Monitoring and Maintenance*. Please describe plans for monitoring and maintaining the structural integrity of the ISFSI system (and component MSCs) over the full life of the project, and provide evidence that sufficient funding exists to support these activities over the life of the project.

13. *Major Repairs.* In the event that major repairs or replacement of ISFSI components (including MSCs) become necessary, describe how these would be carried out, and what equipment and facilities would be needed in order to do this successfully.

Seismic Hazards

14. *Updated Analysis of Seismic Hazards.* The analysis of seismic hazards (e.g., ground shaking, liquefaction) contained in Attachment B of the permit application depends in part on older studies conducted prior to the approval of the original SONGS 2 & 3 ISFSI, does not clearly address the substantial body of new research conducted since 2001, and at times relies on the findings of key studies that were not included in the application materials. In order to ensure that seismic hazards at the project site have been evaluated using the best available information, please provide the following:

    a. A copy of the 2010 GeoPentech report entitled *San Onofre Nuclear Generating Station Seismic Hazard Assessment Program: 2010 Seismic Hazard Analysis Report*.

    b. A copy of the 2001 report (Geomatrix, GeoPentech, SCE) entitled *San Onofre Nuclear Generating Station Units 2 and 3 Seismic Hazard Study of Postulated Blind Thrust Faults*.

    c. An evaluation of recent research (post-2001) on seismic hazards in the vicinity of SONGS, addressing whether these new studies have altered the previous understanding of the existing hazard. This evaluation should include both academic studies and recent SCE-sponsored research on seismic hazards, such as

the studies undertaken pursuant to AB 1632, the Senior Seismic Hazard Assessment Committee process, paleoseismic assessments, and marine terrace mapping, among others.

15. *System Aging & Seismic Hazards.* Please discuss how the aging of the ISFSI system components, including potential corrosion or cracking of stainless steel components (e.g., MSCs), would affect the ability of the ISFSI to withstand a major earthquake while remaining functional.

Slope Stability

16. *Slope Stability Modeling.* Please provide any report or data resulting from the "previous modeling" of the stability of the slope northwest of the proposed project site, as referred to on p. B-4 of Attachment B, including runout of any potential landslides or debris flows. Please also describe the modeling results as they relate to other nearby alternative project sites.

17. *Monitoring & Maintenance*. Please describe any on-going monitoring and maintenance of the gunite-stabilized slope adjacent to the proposed project site, and evaluate the potential need for monitoring, maintenance and repair of this slope over the anticipated life of the project.

Hydrology/Hydrogeology

18. *Groundwater Level and Variability.* Section 2.5 of the SONGS Units 2+3 Final Safety Analysis Report (FSAR), included in the CDP application, provides limited information on groundwater level variability at the project site, based on measurements made from 1963–1975. In order to allow for a complete and updated evaluation of the hydrogeology of the site, please provide the following items:

    a. Copies of FSAR Section 2.4 and Appendix 2.5E.

    b. Any recent information or data on the variability of groundwater elevations at the proposed project site on relevant timescales (e.g., tidal, seasonal, interannual) and any observed long-term trends. Please address whether future sea level rise could result in higher groundwater levels.

    c. Current information on groundwater elevations and variability at alternative sites.

    d. Information on any additional studies that need to be undertaken to fully address water table variability and hydraulic connectivity to the ocean, now or in the future.

19. *Potential for Water Seepage into the ISFSI.*

    a. Please indicate whether groundwater could penetrate to the ISFSI subgrade and come into contact with the exterior surface of the CECs, and describe any potential consequences (e.g., metal corrosion, cracking) of prolonged contact with groundwater.

    b. Similarly, under what circumstances could surface water penetrate the ISFSI pad and seep into the subgrade?

c. Is there any geological evidence of seismically-activated seeps on site or in close proximity to the site? Under what circumstances could future seismic activity activate a seep that could penetrate to the ISFSI subgrade and come into contact with the exterior surface of the CECs?

d. What on-site monitoring could be undertaken to detect groundwater seeps or surface water penetration prior to any contact with the exterior surface of the CECs?

20. *Surface Water Contact with MSCs.* Please discuss the long-term consequences of surface water and airborne moisture contact with the exterior surfaces of the MSCs via the air vents.

Coastal Hazards

21. *Updated Analysis of Tsunami Hazards.*

a. Please provide an evaluation of recent research (since 2001) on tsunamis hazards in Southern California, and indicate whether these new studies have altered the understanding of tsunami hazards at SONGS (based on the older studies summarized in the SONGS 2+3 FSAR and the 1981 NRC Safety Evaluation Report referenced in Attachment B (p. 5) of the CDP application.

b. The California Office of Emergency Services Tsunami Inundation Map also referenced in Attachment B is an important new evaluation tool, but does not, taken alone, comprise a complete analysis of the tsunami hazard at this site. Please supplement the inundation elevation displayed on this map with a consideration of additional factors, including wave run-up, high tide, a significant storm event, storm surge and an appropriate amount of sea level rise, which could result in higher inundation elevations.

22. *Coastal Erosion Analysis.*

a. Please provide an estimate of potential bluff erosion rates at the project site in the absence of shoreline protection devices and with consideration for increased sea level rise. For the purpose of comparing alternative sites, please also provide estimated bluff erosion rates for the northern bluffs adjacent to the Reservoir and the southern bluff areas adjacent to the MUD Area and South Yard. Where multiple bluff substrates are present (e.g., terrace deposits above San Mateo Formation), please provide separate bluff-top and bluff toe erosion rates, as appropriate.

b. Please explain the basis of the "Coastal Bluff Erosion" line shown in Figure 11 in Attachment C of the CDP application. How was this line generated? What baseline was used (e.g., year zero), and what is the source of the listed range of erosion rates? Why does the erosion line extend onto the beach in front of the Reservoir?

c. Please provide the source (data, report, etc.) for the statement that "previous modeling on the Project Site indicated that the existing seawall is not necessary to prevent coastal erosion on the site." (p. B-6, CDP application Attachment B).

23. *Coastal Flooding and Sea Level Rise Analysis.*

    a. Please explain how the "Sea Level Rise Scenario" in Figure 11 (Attachment C) was generated. Does the 2100 projection assume any degree of coastal erosion? Why doesn't the 2100 inundation line follow the visible topographic features at the project site?

    b. Please provide projected inundation maps (without seawall) corresponding to the maximum water elevation scenarios in 2092 (+75 years) and 2117 (+100 years), from Attachment B. The maximum scenarios should consider all factors contributing to an elevated water level (long-term and seasonally-eroded beach, high tide, elevated water level due to El Niño and Pacific Decadal Oscillation, storm surge, and sea level rise) and the possible run-up from a significant storm event such as a storm that has a 1% or 0.2% probability of occurrence, as outlined in the Commission's Draft Sea Level Rise Guidance.

    c. Please also identify the range of dates when sea level rise could be expected to inundate the proposed project site or make it unstable or unsafe (again assuming no shoreline protection).

    d. Sea level rise is expected to continue well past the year 2100. Using longer-term projections for sea level rise (some of which are cited in the Commission's Draft Sea Level Rise Guidance), please examine potential longer-term impacts (erosion, flooding or wave impacts) from sea level rise for years 2200, 2300 or beyond.

    e. Please provide an evaluation of how expected future sea level rise would modify the tsunami hazard at the proposed project site.

24. *Consequences of Natural Disasters*. The CDP application materials indicate that the proposed ISFSI design and technology could tolerate inundation associated with a tsunami or other one-time extreme flooding event. Please describe whether the ISFSI (including the MSCs) would retain its structural integrity and continue to function under sustained or frequent flooding and wave impacts as could be projected to occur with future high sea levels and the failure of shoreline protection devices. Similarly, please describe the potential consequences if erosion exposed or undermined the subgrade ISFSI structure. If damages are possible as a result of future erosion or sea level rise, identify possible triggers that could provide ample warning that conditions were conducive to potential damage, and outline the monitoring that would be necessary to insure that these triggers are recognized.

Seawall

25. *Design Specifications & Analysis.* Please provide the design specifications and as-built plans of the existing seawall protecting the project site, and an engineering analysis evaluating the wall's ability to withstand (a) the maximum credible tsunami event (including forces, not just wave height), (b) the design basis earthquake followed by a large tsunami, (c) extensive beach erosion and scour, and (d) prolonged (and potentially continuous) exposure to scour, wave impacts and seawater contact under future high sea level conditions.

26. *Current Condition.* Please describe the current condition of the seawall. Has its condition changed since it was constructed? What aspects or elements of the seawall

have been monitored and with what frequency? For example, seawall changes that could be expected to occur and should be evaluated include instances of concrete cracking, corrosion of metal components, undercutting of the seawall toe, displacement or loss of rip-rap rock, etc.

27. *Maintenance & Monitoring*. If analysis shows that the existing seawall will be needed to protect existing development in danger from erosion, please describe the existing and proposed activities to maintain and monitor the condition of the seawall, and provide evidence that sufficient funds will be available to support these activities over the life of the project.

Water Quality; Construction Impacts

28. *NPDES Permit & BMPs.* Please provide a copy of the SONGS NPDES permit, including a listing of the specific parameters/limitations on waste streams and discharges, and a list or description of the BMPs used to reduce discharges and ensure compliance with NPDES limitations.
29. *Storm Water Management* Plan. Please provide a copy of the SONGS storm water management plan.
30. *Construction Noise Analysis.* Please provide the construction noise analysis that is briefly summarized in the Project Description (p. A-11).

In addition to these information requests, we'd like to discuss further with you Navy approval of the operation of an ISFSI on its land beyond the current termination date of Edison's existing easement. As always, please don't hesitate to call me if you have questions at (415) 904-5249.

Sincerely,

JOSEPH STREET
Environmental Scientist
Energy, Ocean Resources and Federal Consistency Division

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