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ADDENDUM

May 10, 2023

TO: Coastal Commissioners and Interested Parties

FROM: Cassidy Teufel, Acting Deputy Director
Tom Luster, Senior Environmental Scientist

SUBJECT: Addendum to Staff Report for CDP Application A-3-SLO-04-035-A1
(Pacific Gas and Electric Company)

This addendum provides recommended modifications to the April 26, 2023 staff report, including proposed changes to several Special Conditions and to the Findings. It also responds to a joint letter (dated May 5, 2023) by the Surfrider Foundation and the Santa Lucia Chapter of the Sierra Club, which were the only comments received prior to staff completing this addendum. The letter expresses support for PG&E's proposal to install the Orano spent fuel storage system within the ISFSI. It also requests that the Commission require additional public access as mitigation for this project beyond the access mitigation that the Commission required in its original 2005 CDP approval.

Recommended changes to the staff report include extending the proposed permit term for the ISFSI's presence from 2030 to 2035, which would make this permit term more consistent with the terms the Commission recently established in its October 2022 and October 2015 approvals of CDP Amendment No. E-00-014-A2 and CDP No. 9-15-0228, respectively, for similar waste storage facilities at the San Onofre Nuclear Generating Station. Other changes include several throughout the Findings to clarify the amount of spent fuel expected to be stored at the ISFSI by the end of Diablo Canyon's currently licensed operations. In particular, this addendum clarifies that this CDP would authorize storage of spent fuel from any fuel assemblies loaded into the reactors before the current power plant license periods expire (i.e., November 2, 2024 for Unit 1 and August 25, 2025 for Unit 2). Thus, if the Nuclear Regulatory Commission (NRC) relicenses the power plant to allow operations beyond August 25, 2025, storage of fuel loaded after that relicense period would be outside the scope of this CDP's authorization.

There are also several minor changes to clarify Special Condition language or to make that language more specific. The recommended edits are shown below in ~~strike through~~ and **bold underline** text. These changes do not modify staff's recommendation that the Commission **approve** the proposed project as conditioned.

RECOMMENDED REVISIONS

Modified Executive Summary

Page 3, indented note:

“**Note:** The proposed project described herein relates to Diablo Canyon’s existing NRC-licensed ISFSI operations only and addresses the storage of the spent fuel from assemblies that ~~has~~**have** been, or will be, loaded into the reactor generated from now until the end of the power plant’s current license periods, which end on November 2, 2024, for Unit 1 and August 25, 2025, for Unit 2. The storage of any spent fuel from fuel assemblies loaded into Diablo Canyon reactors that ~~may be generated~~ during any potential extended operations beyond August 25, 2025, or future relicensing for power generation at Diablo Canyon pursuant to California Senate Bill 846 (2022) (“SB 846”) or otherwise is, therefore, outside of the scope of this CDP amendment and is not authorized by this CDP amendment. Furthermore, this CDP amendment limits the presence of the ISFSI to a term no later than ~~2030~~**2035**, as discussed below.”

Page 4, first full paragraph:

“These effects, and the Special Conditions needed to address them, are described in the Findings below. First, Special Condition 2 from the original CDP is modified to limit authorization of this ISFSI to no later than ~~2030~~**2035** unless PG&E applies for a new or amended CDP that addresses the ongoing transportability of the storage units, evaluates offsite storage that may become available, and assess the ongoing effects of climate change and sea level rise on offsite transportability. This would allow the Commission to consider updated projections of coastal hazards and the status of offsite interim storage facilities if PG&E applies for an extended authorization of the ISFSI beyond ~~2030~~**2035**. In addition, SB 846 sets out an option of potentially relicensing and extending (instead of decommissioning) Diablo Canyon’s power generation operations to October 31, 2029 for Unit 1 and October 31, 2030 for Unit 2. Any relicensing of Diablo Canyon’s power generation operations at this point remains uncertain; however, an approval for relicensing of the power plant could potentially require PG&E to make modifications to the ISFSI to store additional spent fuel or to move all or some of the spent fuel stored in the ISFSI to an off-site storage facility if one is developed and becomes available. Modifications to the ISFSI to increase capacity would, however, require a CDP amendment. Thus, it is appropriate to limit the term of this proposed CDP amendment to ~~2030~~**2035**.”

Modified Special Conditions

Special Condition 2, first two paragraphs:

“Decommissioning or Changes to the ISFSI: This permit does not authorize development activities associated with any potential decommissioning of the ISFSI or changes to the ISFSI not described in the approved permit, as amended. The Permittee shall submit a new coastal development permit application or amendment to this permit if such activities are proposed.

Unless extended by action of the Commission pursuant to an application submitted prior thereto, this permit shall terminate and be of no further force and effect on December 31, ~~2030~~ **2035**. No later than twelve months before that date, the Permittee shall apply for an amendment to this coastal development permit to retain, remove, or relocate the spent fuel located at the ISFSI facility... “

Modified Special Condition 8:

“Aging Management Program **and Monitoring and Inspection Program** Review and Reporting of Inspection Results.

- a. Upon receipt by the Permittee of the Nuclear Regulatory Commission’s approval of a license extension for the ISFSI, which Permittee shall promptly provide to the Commission, the Permittee shall fund an independent, third-party review of the following in the **Holtec system** Aging Management Programs (“AMPs”) **and the NRC-required Orano system Monitoring and Inspection Program (collectively, the “Programs”)** relevant to the ISFSI: (1) the canister inspection, monitoring and maintenance techniques that will be implemented, including prospective non-destructive examination techniques and remote surface inspection tools; (2) the type of data that will be collected and the reporting frequency; (3) all available evidence related to the physical condition of the canisters and their susceptibility to degradation processes such as stress corrosion cracking, including any available, pre-existing inspection documentation, photographs, and videos; and (4) remediation measures that will be implemented **consistent with NRC requirements**, including the submission of a coastal development permit amendment application, if the results of the canister inspection and maintenance do not ensure that the fuel storage canisters will remain in a physical condition sufficient to allow on-site transfer and offsite transport for the term of the project as authorized under Special Condition 2.
- b. The third-party reviewer(s) shall be selected by the Executive Director, and the Executive Director shall have full discretion for the development and completion of products resulting from this review. All such products provided to the Permittee shall also be provided concurrently to the Executive Director. The Permittee’s provision of funds: (1) shall not in any way be contingent on the hiring of any specific person or firm; (2) shall not be dependent on the work product, including but not limited to any recommendation of any person

- hired to review the **AMPs Programs**, (3) shall not be dependent on the result of any Commission action pertaining to the Permittee's CDPs; and (4) shall not exceed \$200,000.
- c. The independent third party must have qualifications that include the following:
- i. No current (or within the prior year) direct employment or other direct financial benefit provided by the Permittee **or by opponents to the Permittee's licenses in current (or concluded within the prior year) NRC regulatory proceedings.**
 - ii. Degree in engineering with commercial industry work experience and familiarity with non-destructive examination techniques and weld repairs.
 - iii. Disclosure of work done regarding spent fuel storage or transportation, or related topics, including within California or nationally.
 - iv. Understanding of technical and regulatory aspects of spent nuclear fuel handling and storage systems, including: aging mechanisms, effects, and management, maintenance, or surveillance programs; spent nuclear fuel container transportability; Nuclear Regulatory Commission (NRC) regulations and technical reports (i.e., NUREG-1927 "Standard Review Plan for Renewal of Specific Licenses and Certificates of Compliance for Dry Storage of Spent Nuclear Fuel") and related publications; American Society of Mechanical Engineers (ASME) standards and requirements; and other related subjects.
 - v. Prefer familiarity with the types of spent nuclear fuel handling and storage systems used at SONGS.
- d. The findings of the independent, third-party review shall be reported in writing to the Executive Director by February 1, 2025. Additional time may be provided for the independent, third-party review by the Executive Director based on reasonable cause and demonstrated progress. If the Executive Director's review, informed by the report prepared by the independent, third-party reviewer, indicates that additional and/or different inspection, evidence, reporting, and/or remediation measures from those in the **AMPs Programs** should be taken to ensure that spent fuel storage canisters will remain in a physical condition sufficient to allow offsite transport and remain transportable for the full life of the authorized project, the Executive Director shall provide a written list of those additional and/or different inspection, evidence, reporting, and/or remediation measures to the Permittee and one of the following shall occur:
- i. The Permittee shall, within 180 days of receiving the written list from the Executive Director, modify the **AMPs Programs** and/or their Implementing Procedures to incorporate the inspection, evidence, reporting, and/or remediation measures recommended by the Executive Director and seek any required NRC approval of such modification by that date. The Permittee shall submit any such modified **AMPs Programs** to the Executive Director for review and approval upon approval by the NRC; or

- ii. The Permittee shall, within 180 days of receiving the written list from the Executive Director, submit a complete application to the Commission for a CDP amendment for continued authorization of the ISFSI in a manner consistent with the additional and/or different inspection, evidence, reporting, and/or remediation measures identified on the written list provided by the Executive Director.
- e. As part of the ~~AMPs~~ **Programs**, the Permittee shall perform required inspections of the ISFSI and spent fuel canisters, as determined through the above recommendations by the independent, third-party reviewer, and in no case **starting** later than March 1, 2028, unless that deadline is extended for good cause by the Executive Director. **The inspections shall be conducted no less frequently than once every five years after the initial inspections.** The Permittee shall provide a report to the Executive Director within 180 days of the completion of each canister inspection. The report shall contain the following:
 - i. Information regarding the canisters inspected and their location within the ISFSI.
 - ii. Inspection results and analysis, including trending of the data as compared to any previous inspections.
 - iii. Any corrective actions taken as a result of the inspection.
 - iv. Evaluation of the inspection interval, and whether inspection intervals will be adjusted based on the inspection data collected.
 - v. Evaluation of the inspection data to determine if canister degradation is proceeding at a rate which may impact the canister ability to be transferred on-site or transported offsite during the term of the project as authorized under Special Condition 2.
 - vi. A summary of the ISFSI facility system inspections.
 - vii. The results of any updated statistical analyses incorporating data from the inspection.”

Modified Special Condition 9:

“Ongoing Reporting on Alternative Waste Storage Facilities. The Permittee shall submit an annual report for the Executive Director’s review and approval beginning no later than ~~December 31, 2023~~ **180 days after issuance of the NRC’s ISFSI license renewal** that includes:

- a. The status of the Permittee’s efforts to identify and evaluate alternative offsite facilities where spent fuel canisters stored at the Diablo Canyon ISFSI may be accepted. These may include, but are not limited to, commercial consolidated interim storage facilities and permanent disposal facilities;
- b. The Permittee’s activities to advance the establishment of offsite facility locations and the status of Permittee’s efforts to secure an offsite facility to accept those spent fuel canisters;
- c. Information on the United States Department of Energy activities related to the federal spent nuclear fuel management program;

- d. Information on ~~Congressional activities~~ **introduced or enacted federal legislation or Congressional hearings** to address needed changes to federal legislation **regarding spent nuclear fuel management; and,**
- ~~e.~~ Current information and status of transportation planning to facilitate the transfer of canisters offsite **once an offsite facility is licensed;** and
- f. ~~International developments related to spent fuel management and their relevance to the domestic spent fuel management program.~~

Modified Special Condition 10:

“Transport Route Monitoring and Alternatives Assessment. AT LEAST 60 DAYS PRIOR TO THE FIRST HORIZONTAL STORAGE MODULE DELIVERY, the Permittee shall provide for Executive Director review and approval a proposed monitoring program describing the measures it will implement to assess conditions on and along all roadways within the coastal zone expected to be used to transport spent fuel to any off-site locations, including the Diablo Canyon entrance road and Avila Beach Drive. The proposed measures are to be sufficient to determine whether the roadways will remain suitable at all times during the term of this permit amendment to allow transport spent fuel from the Diablo Canyon ISFSI to a suitable offsite storage facility. The monitoring program shall be developed by a licensed professional engineer in conjunction with the County of San Luis Obispo. The program shall identify how the Permittee will conduct monitoring sufficient to detect and anticipate effects of hazards resulting from climate change and sea level rise that may affect the roadways capacity to transport spent fuel to off-site locations. It shall also describe how monitoring will be modified as needed to detect any projected increase in those hazards before they occur to provide an “early warning” system for any needed changes to these roadways. The proposed program shall also provide for submitting reports to the Executive Director ~~at least~~ annually that describe the results of ongoing monitoring, ~~that describe all maintenance and repair activities conducted on these roadways~~ that describe all conditions that could affect the transport of spent fuel, and that describe any expected changes resulting from that monitoring or from updated sea level rise and climate change projections.

The program is to also identify feasible alternatives that may be necessary to ensure offsite transport, including measures to improve these roadways, such as regrading, elevating, relocating, etc., and alternative transport methods if it becomes infeasible to modify these roadways, such as alternative routes or methods of transport (e.g., barging). The program is to also identify how the Permittee will work with the County of San Luis Obispo if any of these measures would require a new or modified coastal development permit.

Upon Executive Director approval, the Permittee shall implement the program as approved.”

Modified Special Condition 11, last paragraph:

“Upon the Executive Director’s approval of the Plan, the Applicant shall implement the Plan as approved. If the Executive Director determines that any of these measures would require a coastal development permit, the Applicant shall, within ~~60~~ **120** days of that determination, provide a complete application to amend this permit in a manner necessary to implement these measures. **The Executive Director may extend this deadline for good cause.**”

Revisions to Findings

The first four revisions below relate to the staff report’s description of the amount of spent fuel expected to be stored in the ISFSI by the end of Diablo Canyon’s currently licensed operating period, which runs until November 2024 for Unit 1 and August 2025 for Unit 2. Each reference is modified as shown below to clarify that the ISFSI and its storage units are sized to accommodate all the fuel assemblies PG&E expects to load into the two reactors by the end of the license periods.

Page 14, top of page:

“PG&E designed the currently approved ISFSI to accommodate only the spent fuel PG&E expected to be generated ~~at~~ **from fuel assemblies loaded into** Diablo Canyon **reactors** during the power plant’s current license periods (i.e., until August 2025).”

Page 14, end of third paragraph:

“Therefore, if Diablo Canyon’s power generation operations continue beyond August 2025 as a result of NRC’s consideration of PG&E’s anticipated request for relicensing, any ~~additional spent fuel generated beyond~~ **fuel assemblies loaded after** August 2025 would likely require a new or expanded ISFSI or would require PG&E to store that additional fuel in spent fuel pools at the power plant for an indefinite period.”

Page 16, beginning of first full paragraph:

“The modifications proposed through this amendment are meant to address only the spent fuel generated **from fuel assemblies loaded** during Diablo Canyon’s current license periods.”

Page 16, third paragraph:

“The Orano system is similar to the existing Holtec system being used in the ISFSI in that the spent fuel is stored in canister/cask units, although the Orano system stores these units in Horizontal Storage Modules (“HSMs”), which are reinforced concrete vaults about 25 feet long and 20 feet tall (see Exhibit 3), instead of vertical modules

for the existing Holtec system. These proposed HSMs would be placed side-by-side on the currently unused portion of the existing ISFSI pad (see Exhibit 4). Each Orano unit holds 37 fuel assemblies as compared to the 34 stored by the Holtec units, so the remaining spent fuel to be generated ~~through~~ **from fuel assemblies loaded in the reactors by** August 2025 can be fully accommodated within the existing ISFSI footprint that was designed for the Holtec system. Even with this amended permit and the availability of the new Orano system, PG&E may choose to continue its use of the Holtec system for some period of time. However, even with the modifications proposed in this requested permit amendment, the ISFSI would not have the capacity to store fuel ~~generated during power plant operations extending beyond~~ **from fuel assemblies loaded after** the current NRC-approved August 2025 operating term.”

Page 17, last paragraph:

“PG&E expects to start ~~work~~ **modifying the ISFSI surface** in ~~June~~ **by** 2025 and ~~complete placement of~~ **loading casks in** the HSMs by March 2026.”

Standard of Review, page 18, second paragraph:

“The NRC has exclusive jurisdiction over radiological aspects of Diablo Canyon and the ISFSI. Under federal law, the state is preempted from imposing upon operators of nuclear facilities, **including ISFSIs**, any regulatory requirements concerning radiation hazards and nuclear safety. The state may, however, impose requirements related to other issues. The U.S. Supreme Court, in *Pacific Gas and Electric Company v. State Energy Commission*, 461 U.S. 190, 205 (1983), held that the federal government has preempted the entire field of “radiological safety aspects involved in the construction and operation of a nuclear plant, but that the states retain their traditional responsibility in the field of regulating electrical utilities for determining questions of need, reliability, costs, and other related state concerns.” The Coastal Commission findings herein address only those state concerns related to conformity to applicable policies of the LCP and Coastal Act, and do not evaluate or condition the amendment with respect to nuclear safety or radiological issues.”

Site hazards, page 22, first paragraph

~~Although~~ PG&E’s ISFSI license application to the NRC includes **site-specific** aging management programs that include inspection and maintenance procedures for the **Holtec** storage systems.¹ In addition, PG&E will implement an NRC-approved inspection and maintenance program specific to the Orano storage system. **In addition**, the Commission is including in this amendment a condition to ensure the storage units remain transportable. This condition is similar to the condition the

¹ **“The NRC requires licensees to develop and implement site-specific aging management programs by requiring a plan for monitoring and inspection of the storage canisters (among other requirements) for systems that have been in operation for twenty years.”**

Commission recently included in its October 2022 approval of the ISFSI at the San Onofre Nuclear Generating Station (“SONGS”).¹⁰ Special Condition 8 requires PG&E to fund an independent, third-party review of **(1) the Holtec system aging management program (i.e. the same inspection and maintenance elements in its aging management programs as the SONGS programs) and (2) the NRC-required Orano system monitoring and inspection program.** This requirement is meant to provide assurance about the transportability of the storage units at Diablo Canyon and helps ensure consistency in the Commission’s approach and methodology for evaluating transportability of the canisters from a coastal hazards standpoint.

New Development and Hazards, page 24, last paragraph:

“As discussed above, it remains unclear when a permanent or interim offsite storage facility will become available for spent nuclear fuel, but long-term onsite storage will be affected by increasing risks associated with coastal hazards. The Commission is modifying **Special Condition 2** of the original CDP to limit the term of this CDP amendment to no later than ~~2030~~ **2035**. While substantial increases in sea level are not expected this quickly, this limited term allows for the necessary monitoring of ~~ongoing maintenance requirements~~ **conditions** along these roadways, allows for near-term changes in sea level rise projections to be incorporated into this transportability evaluation, and provides time for PG&E and the County to conduct initial long-term planning approaches for these roadways. **This 2035 date is consistent with the permit terms the Commission approved for a similar ISFSI at the San Onofre Nuclear Generating Station (“SONGS”). The SONGS ISFSI has two CPDs, both of which expire in late 2035 and both of which require the owner, Southern California Edison, to apply for new or amended CDPs to remove or relocate the ISFSI or to move spent fuel offsite, if facilities are available. Moreover, this CDP limits the ISFSI’s spent fuel storage to fuel that the Permittee loads into the reactors before the end of the current licensing periods (i.e., by August 25, 2025). If NRC reviews a relicense request and approves power plant operations beyond August 25, 2025, storage of new fuel loaded into the reactors after that relicense period is outside the scope of this CDP. As discussed in the staff report, the ISFSI does not have capacity to store fuel that Permittee loads into the reactors after the August 2025 license expiration. Thus, if Permittee seeks modifications to the ISFSI to increase capacity, this would require a CDP amendment.**

The modified **Special Condition 2** also provides that if PG&E applies for a future CDP amendment to extend the term of authorization for the ISFSI beyond ~~2030~~ **2035**, the amendment shall be accompanied by an evaluation of available offsite facilities, an analysis of the then-current transportability of the storage units, and an evaluation of current and projected coastal hazards based on information available at that future date. This allows for updated projections of coastal hazards if PG&E applies for an extended authorization **of the ISFSI** beyond ~~2030~~ **2035**. Moreover, it currently remains unclear whether Diablo Canyon power plant will be **decommissioned as previously planned starting after the current 2025 license**

period or whether the NRC will be reviewing a PG&E request for relicensed for power generation operations or decommissioned beyond 2025~~2030~~. These decisions, and the schedule resulting from them, are expected to be much clearer by 2035 and would help inform the Commission's decision at that time. There may also be more certainty about the timing and availability of offsite storage options by then. PG&E has requested that the Commission either not impose a permit term or that any term match the 40-year term of next year's expected NRC approval to extend its ISFSI license to 2065; however, PG&E has informed staff that it would accept a CDP permit term to 2035."

RESPONSE TO COMMENTS

Staff received one comment letter provided to the Commission earlier this week in a Correspondence packet. The letter, sent from Surfider's San Luis Obispo Chapter and the Sierra Club's Santa Lucia Chapter, states that they are very supportive of PG&E's decision to use the Orano system for its remaining spent fuel storage needs, and the letter states their support for the proposed limited permit term, though the letter references the initially proposed 2030 date instead of the 2035 date now proposed in this Addendum. The letter also requests that the Commission require additional public access mitigation to reflect changes that have occurred since the Commission's original 2005 CDP approval.

Commission staff is not recommending that PG&E be required to provide additional public coastal access, other than that in recommended **Special Condition 11**, which would address the relatively short-term disruptions to coastal access that could result from trucking the large storage modules to Diablo Canyon. The Commission's original 2005 approval included a detailed and long-term assessment of the lost coastal access opportunities expected to result from the presence of the ISFSI and its surrounding security zone. That approval's required coastal access mitigation resulted in PG&E creating, managing, and protecting in perpetuity the Point Buchon Trail that now provides several miles of hiking and beach access along some of the PG&E lands to the north of Diablo Canyon. This currently proposed amendment would not change the size of the ISFSI or its security area that served as some key considerations for determining that earlier access requirement, so staff is not recommending any additional access be required at this point.

The letter also recommends several specific coastal access enhancements that PG&E could provide to address any short-term coastal access limitations that result from trucking the storage modules to Diablo Canyon. **Special Condition 11** would require PG&E to develop a Traffic Management Plan that fully identifies any of these expected short-term limitations on coastal access and then to develop mitigation measures adequate to address those limitation, subject to Executive Director review and approval. While at this time, Commission staff does not support requiring the letter's recommended enhancements, those recommendations may inform PG&E's and the Executive Director's decisions once the Traffic Management Plan is complete and coastal access limitations are identified.

