PACIFIC GAS AND ELECTRIC COMPANY
10 Year Electrical Undergrounding Plan (EUP)
Data Response

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Requesting Party:	Office of Energy Infrastructure Safety
Requester:	Adam Berlinerman
Date Sent:	October 29, 2026
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SUBJECT: CPUC DATA TEMPLATE, PRESENT VALUE CALCULATION, SCREEN 2 BCR INPUTS, RISK MODELING

QUESTION 007

PMO basis and explanation

a. PG&E states that the targeted undergrounding of 4,000 miles of the highest-risk Circuit Segments provides the basis for the PMO. What is PG&E's definition of "highest-risk Circuit Segments"?[1]

   i. Does PG&E have a numerical threshold for identifying the "highest-risk Circuit Segments?" If so, list this threshold and explain the basis for the threshold and why PG&E is using a threshold other than the EUP Guidelines specified High-Risk Threshold.

b. PG&E establishes the PMO using approximately 4,000 overhead miles to be removed and deenergized. However, the Project Acceptance Framework results in 20,618.4 Eligible Circuit Segment Miles in HFTD. Explain PG&E's process of reducing 20,618.4 miles to 4,000 miles.

c. What was the basis for choosing to set the PMO based on undergrounding 4,000 overhead miles.

d. Explain why PG&E considers an annual average reduction of $145,000 in Overall Utility Risk per primary overhead mile removed to be substantial risk reduction.

e. PG&E states that the EUP Portfolio may reduce up to approximately $15.1 billion in present-value OUR over the 55-year life of the underground assets, $4.5 billion in Ignition Risk reduction and $10.6 billion in Outage Program Risk reduction.[2] Does PG&E consider all or some of these values as part of the Public Utilities Code Section 8388.5(d)(2) "substantially increase electrical reliability…" and "substantially reduce the risk of wildfire" requirements?

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1 Pacific Gas and Electric Company Electrical Undergrounding Plan, at pg. 52.

2 Pacific Gas and Electric Company Electrical Undergrounding Plan, at pg. 46-47.

f. The Plan Tracking Objectives do not align with the Target/Timeline Table when compared at Year 10 instantaneous values.

   i. Can PG&E explain the discrepancy?

   ii. Does the Target/Timeline Table represent the EUP's projected outcome?

   iii. Does PG&E apply a reduction factor other than the Risk Model Impact Factor for the Plan Tracking Objectives and Plan Mitigation Objective from the projected outcome?

g. Table 1-1 states that there are 8,805 Overhead Circuit Miles Eligible for Undergrounding. This is different than the number of eligible miles under the Project-Level Thresholds. Please describe what criteria are used to determine this number of eligible miles.

ANSWER 007

a. As used in Chapter 2 of the EUP, "highest-risk Circuit Segments" refers to the forecast set of Circuit Segments that result from applying the Project Acceptance Framework, specifically Circuit Segments that:

   1. Are In-Area Circuit Segments (Tier 2 or Tier 3 HFTD or Fire Rebuild Area) and meet at least one Project-Level Threshold (High-Risk Threshold, Ignition Tail Risk Threshold, or High Frequency Outage Program Threshold) in Screen 1;

   2. Are ranked from highest to lowest Wildfire Risk Density (wildfire risk per mile) in Screen 2 and selected for Alternative Mitigation analysis sequentially, starting with the highest-risk Circuit Segments;

   3. Have an undergrounding Benefit-Cost Ratio indicating they are potential candidates for inclusion in the EUP; and

   4. Are expected to be completed during the ten-year EUP period, considering risk reduction, customer affordability, the pace at which projects can advance with communities, workforce availability, and constructability.

      The PMO includes only Circuit Segments that meet at least one Project-Level Threshold. Circuit Segments entirely outside the HFTD/HFRA, and Circuit Segments less than one mile long in the HFTD, are excluded from the PMO calculation.

   i. No. PG&E does not apply a separate numerical threshold, beyond the Project-Level Thresholds, to define "highest-risk Circuit Segments." The numerical eligibility thresholds are the Project-Level Thresholds established under EUP Guidelines Section 2.7.9.1:

      High-Risk Threshold: $0.029 million Overall Utility Risk per primary overhead mile ($28,979 per mile);

      Ignition Tail Risk Threshold: $52.437 million per ignition; and

      High Frequency Outage Program Threshold: 5,559 outage minutes per year.

      "Highest-risk" describes the outcome of ranking Eligible Circuit Segments by Wildfire Risk Density in Screen 2 and selecting sequentially from the highest-ranked segments to form the approximately 4,000-mile forecast portfolio. PG&E

is therefore not using a threshold other than the EUP Guidelines-specified High-Risk Threshold.

b. Table 3-8 identifies 20,618.4 primary overhead HFTD miles associated with the 2,917 Circuit Segments that meet the High-Risk Threshold in Screen 1. One additional Circuit Segment qualifies solely through the Ignition Tail Risk Threshold, resulting in a total Screen 1 eligible population of 2,918 Circuit Segments and approximately 20,619.8 primary overhead HFTD miles.

   The 20,619.8 miles represent the Screen 1 eligible population, not the forecast workplan. PG&E developed the approximately 4,000-mile forecast portfolio from this broader eligible population through the Project Acceptance Framework. The approximately 4,000-mile forecast portfolio represents primary overhead mileage within the HFTD/HFRA. Please see the selection methodology below for additional detail regarding how PG&E developed the approximately 4,000-mile forecast portfolio from the broader eligible population.

   1. **Screen 1 eligibility.** 2,918 In-Area Circuit Segments meet at least one Project-Level Threshold. These Circuit Segments represent approximately 20,619.8 primary overhead HFTD miles or approximately **21,091** HFTD/HFRA primary overhead miles.
   2. **Population exclusions.** Circuit Segments with less than one mile of primary overhead mileage within the HFTD/HFRA are excluded from the PMO population. Mileage associated with previously completed system hardening is also excluded. Following these exclusions, the remaining population represents approximately **19,248** primary overhead HFTD/HFRA miles.
   3. **BCR Analysis.** The Screen 2 BCRs for 100 percent Undergrounding and 100 percent Overhead Hardening are compared for each Eligible Circuit Segment. Circuit Segments are filtered based on whether the Undergrounding BCR is 1.0 or greater (or is negative due to lifetime cost savings) and is at least 70 percent of the Overhead Hardening BCR. This yields approximately **8,805** primary overhead HFTD/HFRA miles.
   4. **Forecast portfolio sizing.** From the eligible population, PG&E developed a forecast portfolio of approximately 4,000 overhead miles to be removed, corresponding to approximately 5,000 underground miles to be installed. The forecast portfolio includes the 28 projects identified in Portfolio 0 and represents the forecast set of highest-risk Circuit Segments expected to be completed during the ten-year EUP period. In developing the portfolio, PG&E considered risk reduction potential, customer affordability, construction feasibility, permitting timelines, workforce and contractor availability, terrain and geography. See EUP Chapter 1, Sections B.1 and B.2, and Chapter 2, Section D.1.a.

      Please note that, outside of the 28 Portfolio 0 projects, projects included in the forecast portfolio will continue to be evaluated and refined through Screen 3 as project-specific scoping and alternative mitigation analysis are completed. Projects may therefore be modified or removed from the forecast portfolio as additional information becomes available.

c. Selecting approximately 4,000 overhead miles from the broader eligible population described in the response to Question 7.a reflects a balanced consideration of risk reduction, customer affordability, the pace at which projects can advance in

coordination with communities, workforce availability, and constructability constraints.

d. PG&E considers the PMO substantial for the following reasons:

- **It reflects near-complete mitigation of high-risk segments.** The PMO is calculated only on Circuit Segments that meet at least one Project-Level Threshold. Undergrounding primary lines reduces modeled Overall Utility Risk by approximately 98%, Ignition Risk by approximately 93%, and EPSS and PSPS Outage Program Risk by 100% on the undergrounded portion.
- **It represents substantial incremental risk reduction from an already mitigated baseline**. The $145,000 per primary overhead mile removed is measured after accounting for the risk reduction provided by existing operational mitigations, including EPSS and PSPS. Accordingly, the PMO represents additional reduction in the remaining modeled Overall Utility Risk through undergrounding.
- **It is large over the asset life.** $145,000 per mile per year equals approximately $3 million in present-value Overall Utility Risk reduction per primary overhead mile removed over the 55-year asset life. Across the forecast portfolio, this totals approximately $15.1 billion in present-value Overall Utility Risk reduction ($4.5 billion Ignition Risk; $10.6 billion Outage Program Risk) under the Energy Safety-required unscaled, mitigated methodology.
- **It addresses both statutory elements.** It combines Ignition Risk and Outage Program Risk reduction. It also underpins the Portfolio-Level Standards ($0.045 million/mile Ignition Risk Decrease; $0.100 million/mile Reliability Increase), which Portfolio 0 currently exceeds at the Portfolio Level ($0.057 million/mile and $0.236 million/mile).

e. Yes, all three. These values are calculated under the Energy Safety-required unscaled, mitigated methodology. PG&E presents them in Chapter 2, Section C.1 as demonstrating substantial reductions in both components of Overall Utility Risk, consistent with Public Utilities Code Section 8388.5(d)(2): the $4.5 billion Ignition Risk reduction supports the wildfire element, and the $10.6 billion Outage Program Risk reduction supports the reliability element.

PG&E measures and tracks compliance through the Plan Mitigation Objective and Plan Tracking Objectives, which are derived using the same unscaled, mitigated methodology. The $15.1 billion figure excludes the Risk Model Impact Factor. The supplemental scaled, unmitigated values (e.g., $117.4 billion) are provided for context only and are not the compliance basis.

f.

i. The Target/Timeline Table (“TTT”) and the Plan Tracking Objectives (“PTOs”) measure risk using different calculations, consistent with PG&E’s interpretation of the applicable requirements in the EUP Guidelines.

The TTT reports four risk metrics: (1) Change in Instantaneous Wildfire Risk at Year 10; (2) Change in Instantaneous Outage Program Risk at Year 10; (3) Change in Cumulative Wildfire Risk over 55 years; and (4) Change in Cumulative Outage Program Risk over 55 years. These metrics are reflected in the exemplar Target/Timeline Table provided as Table 1 on page 7 of the EUP Guidelines.

For the Year 10 instantaneous metrics, the "change" represents the difference between two scenarios: (1) the risk associated with the applicable projects remaining unmitigated over the 10-year EUP period; and (2) the risk associated with the same projects under their forecast mitigation timelines. Under the second scenario, each project remains unmitigated until its forecast year of execution and is treated as mitigated thereafter through the remainder of the 10-year period.

The same general methodology applies to the 55-year cumulative metrics, but over the 55-year analysis period. The unmitigated scenario reflects risk over the 55-year period without the mitigation, while the mitigation scenario reflects unmitigated risk through each project's forecast year of execution and mitigated risk thereafter for the remainder of the 55-year period. The resulting difference represents the change in cumulative risk over the 55-year period. The TTT risk values reflect the applicable inflation and climate-escalation assumptions.

The four TTT risk metrics are calculated differently from the risk-reduction values presented in the PTOs. The PTO risk-reduction values represent the reduction in annual risk associated with the projects forecast to be completed in the applicable year, expressed in nominal dollars for that year. For example, the risk-reduction value associated with a project forecast to be mitigated in 2030 is expressed using the applicable 2030 risk value. Unlike the TTT metrics, the PTO metrics do not measure a "change" between an unmitigated scenario and a mitigation-timeline scenario over a 10-year or 55-year period. Rather, they measure the annual risk reduction associated with the applicable mitigation.

This distinction is also reflected in the terminology of the EUP Guidelines. Table 1 on page 7 of the EUP Guidelines provides the exemplar Target/Timeline Table and identifies the instantaneous and cumulative risk metrics described above. By contrast, Section 2.3.2 describes the applicable Plan Tracking Objectives in terms of "total Overall Utility Risk Reduction," "Ignition Risk Reduction," and "Outage Program Risk." Accordingly, the TTT and PTO values should not be expected to align when compared directly because they represent different risk calculations and measures.

i. Yes. The Target/Timeline Table represents one perspective of the EUP's projected plan and outcomes. The Target/Timeline Table presents the forecast timing of the plan, including overhead miles deenergized, underground miles installed, unit cost targets, and the projected changes in instantaneous and cumulative Wildfire Risk and Outage Program Risk described in response to subpart.

   The Plan Tracking Objectives provide additional measures of the EUP's projected outcomes. These include overhead miles deenergized, absolute reductions in Overall Utility Risk, Ignition Risk, and Outage Program Risk, as well as risk reduced per mile installed and risk reduced per overhead mile deenergized. The risk-reduction-per-mile measures more directly relate to the Plan Mitigation Objective, which establishes the required risk-reduction outcome on a per-mile basis.

   Accordingly, the Target/Timeline Table and Plan Tracking Objectives provide different, but complementary, perspectives on the EUP's projected plan and outcomes. The Target/Timeline Table reflects the projected timing, mileage, unit

costs, and changes in instantaneous and cumulative risk associated with the plan, while the Plan Tracking Objectives provide measures for tracking the annual risk reduction and risk reduction per mile expected to be achieved as the plan is implemented.

ii. No. The EUP narrative identifies the Risk Model Impact Factor as the only reduction factor applied to the PMO and PTOs.

g. Please refer to PG&E's response to Q07.b, which describes the process for narrowing the Screen 1 eligible population to the 8,805 primary overhead miles eligible for undergrounding.