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

PG&E Data Request No.:	OEIS_004-Q004
PG&E File Name:	EUP-PhI_DR_OEIS_004-Q004
Request Date:	October 23, 2026
Requester DR No.:	Energy Safety-DR-EUP-26-09
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 004

High-Risk Threshold

a. PG&E's EUP sets the High-Risk Threshold using an acceptance loss exceedance curve set by "an individual risk acceptance of 0.5 x 10-6 fatalities per year defined as an acceptable risk for an average individual in the vicinity of a nuclear power plant."

   i. Explain why an acceptable risk for an average individual in the vicinity of a nuclear power plant is an appropriate metric to use for determining if a Circuit Segment should be eligible for expedited undergrounding.

   ii. Why does PG&E sort by wildfire risk per mile to set a threshold that uses Overall Utility Risk?

   iii. If PG&E sorts Circuit Segments by Overall Utility Risk, how many circuit segments are above the risk acceptance criterion and what is the lowest Overall Utility Risk per mile of these Circuit Segments?

   iv. Provide the loss exceedance plot used to determine the High-Risk Threshold.

   v. Provide the underlying data used to make the plot, including any consequence or other risk values.

b. PG&E's EUP uses HFTD+HFRA primary overhead distribution mileage to calculate overall utility risk density when determining if a Circuit Segment meets the High Risk Threshold. The EUP then allocates the full Cicuit Segment's risk to the portions of the Circuit Segment in an HFTD or HFRA, citing that "The vast majority of risk on a Circuit Segment that crosses HFTD/HFRA areas and non HFTD/HFRA areas is concentrated in HFRA/HFTD areas."

   i. Please describe why this is an appropriate assumption to make. Has PG&E done any analysis to determine that this assumption can be broadly applied to all Circuit Segments that cross HFTD/HFRA and non-HFTD/HFRA areas?

ii. The outage program risk values include risk from all customers on the full Circuit Segment as well as downstream Circuit Segments. Does undergrounding portions of a Circuit Segment in an HFTD/HFRA fully mitigate this risk? Would remaining overhead portions of a Circuit Segment outside of HFTD/HFRA still be subject to EPSS settings or PSPS calls if those portions were inside of a PSPS polygon?

ANSWER 004

a.

i. The primary objective of undergrounding under PG&E's Electric Undergrounding Plan (EUP) is to protect public safety by reducing the risk of catastrophic utility-caused wildfires.

California has not adopted a wildfire-specific risk tolerance criterion. PG&E therefore based its criterion on an established federal benchmark for catastrophic safety risk: the U.S. Nuclear Regulatory Commission (NRC) Safety Goal Policy Statement (51 Fed. Reg. 28044, August 4, 1986). Under that goal, the risk to an average individual in the vicinity of a nuclear power plant of prompt fatalities that might result from reactor accidents should not exceed 0.1 percent of the sum of fatality risks resulting from other accidents to which the members of the U.S. population are generally exposed. This corresponds to about 0.5×10^{-6} fatalities per person per year, and PG&E uses that value as its individual risk acceptance criterion.

PG&E does not suggest that wildfire hazards are physically comparable to nuclear accidents. The NRC criterion is relevant to consider for wildfire risk for the following reasons.

- It addresses the public safety risk imposed on members of the public who live near infrastructure operated by a regulated utility. The NRC developed its safety goals to answer how safe such facilities must be for the surrounding public. That is the same question the High Risk Threshold must answer for utility-caused wildfire.
- It uses the same measure of consequences. The NRC goal addresses fatalities from accidents, which are similar to wildfire fatalities.
- The NRC goal is defined for the average individual in the vicinity of the facility. In the EUP, PG&E applied this criterion to the average individual exposed to wildfire in the High Fire Threat District and High Fire Risk Area (HFTD/HFRA).
- It is well-established, well-researched, and stable. The NRC safety goal was adopted through a regulatory process and has been successfully used in U.S. regulatory decision-making for nearly four decades. In the absence of other wildfire-specific risk thresholds, PG&E believes that this is the best benchmark that is available now that can be used in the EUP.

ii. PG&E uses wildfire risk per mile and OUR per mile for different purposes in establishing the High-Risk Threshold.

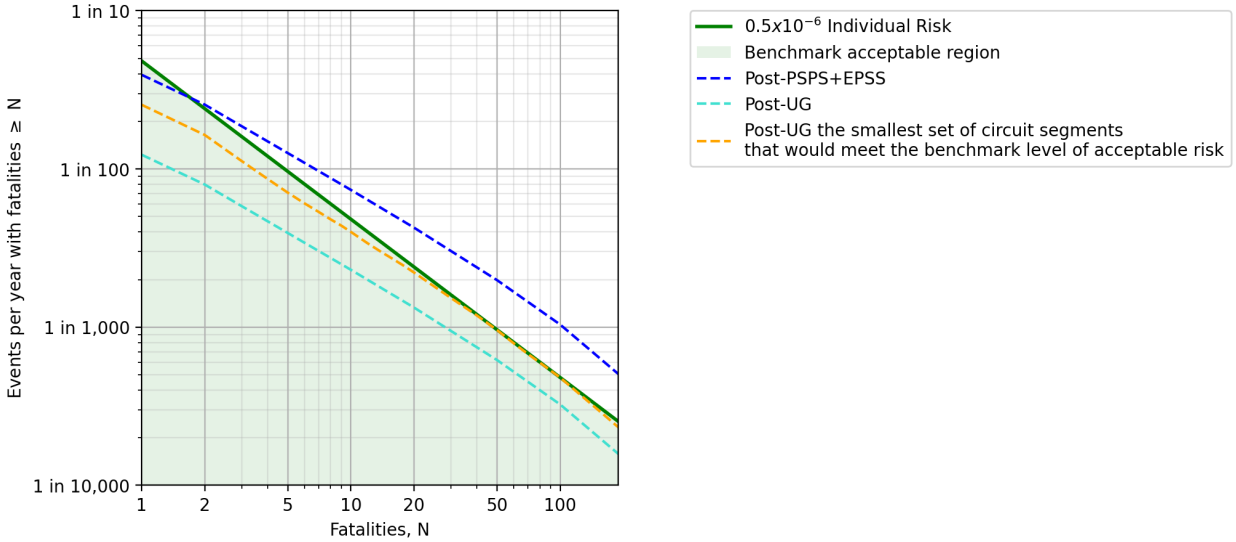
PG&E ranks circuit segments by wildfire risk per primary overhead mile to determine the amount of undergrounding necessary for the modeled post-mitigation wildfire safety loss exceedance curve to fall below the benchmark acceptance curve. Wildfire risk per mile is used for this step because the primary objective of undergrounding under PG&E's EUP is to protect public safety by reducing the risk of catastrophic utility-caused wildfires. Unlike EPSS and PSPS risk, wildfire risk directly reflects public safety impacts, therefore ranking circuit segments by wildfire risk per mile targets the largest wildfire risk reduction per mile undergrounded.

By setting High Risk Threshold as the lowest OUR per mile among the circuit segments with highest wildfire risk per mile needed to meet the safety benchmark, we ensure that:

- The necessary circuit segments required to meet the safety benchmark are eligible for further examination under the EUP framework,
- Any other circuit segments with OUR per mile at or above that threshold, i.e., including segments with substantial PSPS/EPSS outage consequences, are also eligible for further examination under the EUP framework.

iii. If Circuit Segments are sorted by Overall Utility Risk, 2,061 circuit segments are above the benchmark risk acceptance criterion and the lowest Overall Utility Risk per mile of these Circuit Segments is $0.067M per mile. The analysis is provided in *"EUP-PhI_DR_OEIS_004-Q004Atch01.xlsx*". In comparison, 791 circuit segments are above the benchmark risk acceptance criterion with the lowest OUR per mile of $0.029M, when sorting circuit segments by wildfire risk per mile.

iv. The loss exceedance plot used to determine the High-Risk Threshold is provided below:



v. The underlying data used to make the plot above is provided in *"EUP-PhI_DR_OEIS_004-Q004Atch02.xlsx*", tab "1. Benchmark_check", columns B, D, E, and F. All input data used for the analysis is provided in *"EUP-PhI_DR_OEIS_004-Q004Atch02.xlsx", tab "Sources".*

b.

i. PG&E considers this treatment appropriate because Overall Utility Risk (OUR) is calculated at the Circuit Segment level, which is the most granular level at which the current risk models produce OUR. The models do not separately calculate OUR for the portions of a Circuit Segment within and outside HFTD/HFRA. Accordingly, for Circuit Segments that cross HFTD/HFRA boundaries, PG&E uses the full Circuit Segment OUR when calculating risk density.

ii. PG&E has estimated that wildfire risk per HFTD/HFRA mile is 20 times higher than wildfire risk per non-HFTD/HFRA mile based on analysis of WDRM v4 circuit segments that are purely in HFTD/HFTRA and non-HFTD/HFRA. If we apply this ratio to circuit segments that cross HFTD/HFRA boundaries based on their respective HFTD/HFRA and non-HFTD/HFRA circuit miles, non-HFTD/HFRA risk corresponds to 5% of total risk for those circuit segments that cross HFTD/HFRA boundaries.

Additionally, EPSS is primarily deployed on overhead powerlines in HFRA, and PG&E has estimated that 60 – 70 percent of EPSS risk is within HFRA. While similar analysis has not been performed on PSPS risk, historic PSPS events are highly concentrated in HFRA.

iii. No, undergrounding only the HFTD/HFRA portion of a Circuit Segment does not fully mitigate the outage program risk associated with the entire Circuit Segment. For example, for hybrid projects, where only a portion of the Circuit Segment is undergrounded, outage program risk reduction is allocated based on the portion of the Circuit Segment addressed by each mitigation. Therefore, risk associated within the remaining overhead portions remains on the Circuit Segment.

Yes. Remaining overhead portions of a Circuit Segment outside HFTD/HFRA may continue to be subject to PSPS events and EPSS settings, if the circuit segment is in an EPSS-enabled protection zone or if those facilities are within a future PSPS event polygon. However, undergrounding an upstream segment will result in a reduced impact from outage programs for those downstream customers, including those outside HFTD/HFRA. As such, the Outage Program Risk Model is designed to apportion those risks to upstream circuit segments. This treatment is appropriate given that EPSS and PSPS impacts to downstream customers do not differentiate between whether the customers are in HFTD/HFRA or non-HFTD/HFRA.