

PACIFIC GAS AND ELECTRIC COMPANY
Wildfire Mitigations Plans Discovery 2026-2028
Data Response

PG&E Data Request No.:	SPD_001-Q024
PG&E File Name:	WMP-Discovery2026-2028_DR_SPD_001-Q024
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Requester DR No.:	SPD-PGE-WMP2026-001
Requesting Party:	Safety Policy Division
Requester:	Edwin Schmitt
Date Sent:	April 25, 2025

SUBJECT: OUTAGES, PRIORITY A, MITIGATION EFFECTIVENESS AND WBCA (SPD-PGE-WMP2026-001)

QUESTION 024

In response to WMP-Discovery2026-2028_DR_TURN_002-Q006, PG&E references the Wildfire Benefit Cost Analysis (WBCA) Tool. Provide a description of the WBCA Tool as referenced in PG&E's 5th Revision to its 2023-2025 WMP on pg. 425 and on page 187 of the 2026-2028 WMP that includes the following:

- a. An explanation of how Cost-Benefit Ratios are utilized within the Tool.
- b. An explanation of how the Tool complies with the requirements of D.22-12-027.
- c. An explanation of how the Tool complies with the requirements of D.24-05-064.
- d. A definition for each of the following terms presented in TABLE RN-PG&E-23-05-3 of PG&E's 5th Revision to its 2023-2025 WMP on pg. 427:
 - i. PVRR Cap. Invest.
 - ii. Lifetime O&M Costs
 - iii. Wildfire
 - iv. Public Safety
 - v. Normal Reliability
 - vi. PSPS
 - vii. EPSS
 - viii. Total Risk
 - ix. Risk Avoidance over Lifetime Benefit
 - x. Residual Risk over Lifetime
 - xi. Lifetime – Benefit-Cost
- e. Provide a step-by-step explanation of how each of the terms in Question 24d. are calculated.

Answer 024

- a. PG&E uses its Wildfire Benefit Cost Analysis (WBCA) tool to estimate project costs, wildfire risk reduction, and reliability improvements that are applicable to system hardening mitigations (undergrounding, overhead hardening + Enhanced Powerline Safety Setting + Downed Conductor Detection, and hybrid mitigations). The WBCA considers: the approximate capital costs to construct a system hardening project; the expected capital and expense operation and maintenance (O&M) costs for the life of the asset; financing costs; ignition risk reduction and outage program reliability; the benefits period/asset life; rebuild costs for overhead assets; and the effectiveness of different mitigations. The WBCA output for each circuit segment is an estimated cost to build and maintain system hardening alternatives, a Cost Benefit Ratio (CBR), and net benefit analysis. PG&E uses the CBR and net benefit results to inform mitigation selection at the circuit-segment level.
- b. D.22-12-027 replaced the Multi-Attribute Value Framework (MAVF) with a Cost-Benefit Approach that includes standardized dollar valuations of Safety, Electric Reliability and Gas Reliability Consequences from risk events. Investor-Owned Utilities (IOUs) are required to use the Cost-Benefit Approach to assess and rank risks and mitigations. PG&E's WBCA complies with the requirements in D.22-12-027 by using standardized dollar valuations for safety and electric reliability consequence to calculate a CBR. CBRs are calculated within the WBCA for various mitigation alternatives on each circuit segment. PG&E evaluates the CBR results as part of our mitigation selection process. We will use the outputs from the WBCA as one factor for informing our mitigation alternative selection. D.22-12-027 allows a utility to consider other factors when selecting a mitigation alternative if we explain how other factors influenced our mitigation selection.¹
- c. D.24-05-064 modified the Risk-Based Decision-Making Framework (RDF) included in Appendix A to D.22-12-027 and includes four salient requirements: (1) require the IOUs to present cost-benefit ratios (CBR) for each general rate case post-test year rather than an aggregate CBR for the entire post-test year period;² (2) should require the IOUs to determine reporting tranches in the RDF by using combinations of quantities of LoRE and CoRE where portions of a risk with the highest 20 percent of LoRE would be grouped within a tranche and the highest 20 percent of CoRE would be grouped in another tranche or, where data is available, require IOUs to also submit more granular data regarding tranches;³ (3) when a utility chooses to address Risk-Adjusted Levels by relying on a convex scaling function, require IOUs to also present Risk-Adjusted Attribute Levels by relying on a linear scaling function;⁴ and (4) require IOUs to provide three discount rate scenarios for the Cost-Benefit Ratio including the Societal Discount Rate Scenario, the Weighted Average Cost of Capital, and the Hybrid Discount Scenario.⁵

¹ D.22-12-027, Appendix A, Row No. 26.

² D.24-05-064, Conclusions of Law 2.

³ D.24-05-064, Conclusions of Law 15 and 16.

⁴ D.24-05-064, Conclusions of Law 30.

⁵ D.24-05-064, Conclusions of Law 31.

- (1) PG&E's WBCA generates CBRs at the circuit segment level. Circuit-segment level CBRs can be aggregated outside of the WBCA to generate an annual post-test year CBR.
 - (2) PG&E's WBCA complies with D.24-05-064 in that we can use it to calculate CBRs by circuit segment, a much more granular level of detail, than calculating CBRs at the tranche level.
 - (3) PG&E relies on a convex scaling function in its analysis, as detailed in its 2024 RAMP application⁶. PG&E will also be able to provide supplemental Risk-Adjusted Attribute Levels based on using a linear scaling function with the WBCA; however, linearly scaled values are not used to calculate CBRs in the tool.
 - (4) PG&E will use its WBCA to calculate and present Cost-Benefit Ratios using the three discount rate scenarios set forth in D.24-05-064; however, PG&E intends to use only one discount rate scenario (Weighted Average Cost of Capital) to inform mitigation selection.
- d. A definition for each of the following terms presented in TABLE RN-PG&E-23-05-3 of PG&E's 5th Revision to its 2023-2025 WMP on pg. 427:
- i. PVRR Cap. Invest. – Estimated initial cost of installing the mitigation multiplied by the present value of revenue requirement to accurately account for the cost of capital
 - ii. Lifetime O&M Costs – Present value of lifetime expenses incurred for operating and maintaining the asset.
 - iii. Wildfire – Present value of the wildfire risk exposure over the lifetime of the asset.
 - iv. Public Safety – Present value of the public safety risk posed by bare overhead assets based on incidents such as contact with energized conductors over the lifetime of the asset.
 - v. Normal Reliability - Present value of risk from non-wildfire related outages over the lifetime of the asset.
 - vi. PSPS – Present value of risk from PSPS outages over the lifetime of the asset.
 - vii. EPSS – Present value of risk from EPSS outages over the lifetime of the asset.
 - viii. Total Risk – Sum of Wildfire, Public Safety, Normal Reliability, PSPS and EPSS Risks.
 - ix. Risk Avoidance over Lifetime Benefit – Present value of all risks reduced by the mitigation.
 - x. Residual Risk over Lifetime – Present value of remaining risk after mitigation.
 - xi. Lifetime – Benefit-Cost – Present value of all risks reduced less costs of the mitigation.

⁶ A.24-05-008, pp. 2-59 – 2-63.

- e. The following is a high-level, step-by-step explanation of how each of the terms in Question 24d. are calculated.
- i. $PVRR \text{ Cap. Invest.} = \text{Initial Capital Investment} * PVRR$ (set value of ~1.39)
 - ii. $\text{Lifetime O\&M Costs} = \text{Sum of all O\&M Costs over lifetime of the asset.}$
 - iii. Wildfire = Wildfire Risk as represented in PG&E's WLDFR Risk Bowtie is allocated across all WDRM risk points. The Wildfire risk for an individual circuit segment is based on the total risk points therein.
 - iv. Public Safety – Public Safety Risk is based on PG&E's PCEEE Bowtie for distribution overhead assets. This total risk is allocated across primary overhead line miles and distributed to each circuit segment based on the primary overhead line miles therein.
 - v. Normal Reliability – Calculated based on historic non-wildfire customer minutes interrupted (CMI) for each circuit segment monetized in accordance with the Interruption Cost Estimate (ICE) Calculator.
 - vi. PSPS – Calculated based on PSPS Lookback CMI for each circuit segment monetized in accordance with the ICE Calculator
 - vii. EPSS = Calculated based on EPSS Lookback CMI for each circuit segment monetized in accordance with the ICE Calculator
 - viii. $\text{Total Risk} = \text{Wildfire} + \text{Public Safety} + \text{Normal Reliability} + \text{PSPS} + \text{EPSS}$
 - ix. $\text{Risk Avoidance over Lifetime Benefit} = \text{Wildfire} * \text{Mitigation Effectiveness} + \text{Public Safety} * \text{Mitigation Effectiveness} + \text{Normal Reliability} * \text{Mitigation Effectiveness} + \text{PSPS} * \text{Mitigation Effectiveness} + \text{EPSS} * \text{Mitigation Effectiveness}$
 - x. $\text{Residual Risk over Lifetime} = \text{Total Risk} - \text{Risk Avoidance over Lifetime Benefit}$
 - xi. $\text{Lifetime – Benefit-Cost} = \text{Risk Avoidance over Lifetime Benefit} - (\text{PVRR Cap. Investment} + \text{Lifetime O\&M Costs})$