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BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Joint Application of Pacific Gas and Electric Company (U 39-E), Southern California Edison (U 338-E) and San Diego Gas & Electric Company (U 902-E) Requesting Commission Approval of Proposals for a BCR Calculation Methodology, Audit Methodology, and Cost Recovery Conditions as Specified in Resolution SPD-37.	A.26-02-005 (Filed February 9, 2026)

RESPONSES OF PACIFIC GAS AND ELECTRIC COMPANY (U 39-E), SOUTHERN CALIFORNIA EDISON COMPANY (U 338-E), AND SAN DIEGO & ELECTRIC COMPANY (U 902-E) TO THE HON. REGINA M. DEANGELIS RULING ON JUNE 18, 2026

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Dated: June 30, 2026

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On June 18, 2026, the Honorable Regina M. DeAngelis issued an order directing Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company (collectively the Joint IOUs) to separately or jointly respond to five data requests in this proceeding. Attached hereto as Attachment 1 are the Joint IOU responses to the five data requests. Attached hereto as Attachment 2 is supporting documentation for Pacific Gas and Electric Company's response to Question No. 2. These data responses are also being served on the Commission Service List in this proceeding.

Respectfully submitted on behalf of the Joint IOUs,

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Dated: June 30, 2026

ATTACHMENT 1

PACIFIC GAS AND ELECTRIC COMPANY
SOUTHERN CALIFORNIA EDISON COMPANY
SAN DIEGO GAS & ELECTRIC COMPANY
SB-884 Resolution SPD-37 Joint IOU – Phase I
Application 26-02-005
Data Response

PG&E Data Request No.:	CPUC_001-Q001-005
PG&E File Name:	SPD-37-JointIOU-PhI_DR_CPUC_001-Q001-005
Request Date:	June 18, 2026
Requester DR No.:	Email Ruling with Questions for Joint IOUs
Requesting Party:	California Public Utilities Commission
Requester:	ALJ Regina M. DeAngelis
Date Sent:	June 30, 2026
PG&E Witness(es):	Justin Sadler, Yumi Oum
SCE Witness(es):	Bryan Landry
SDG&E Witness(es):	Joaquin Sebastian Peral

QUESTION 001

Topic: Rough Order of Magnitude/AACE /Energy Safety Screens/Phase 2 Application

a. In project-level and subproject-level filings to be submitted as part of the Phase 2 Application, do the utilities intend to use cost and risk values as used in benefit-cost ratio (BCR) calculations which are based on "rough order of magnitude" estimates?

b. Identify the estimate classes (e.g., AACE) used for project-level and subproject-level cost estimates to be submitted in the Phase 2 Application, including the associated accuracy range for each class. Clarify whether subproject-level estimates will use a different class or exhibit lower maturity than project-level estimates at the time of filing the Phase 2 Application. If so, describe the basis for that difference.

c. Explain how the estimate classes are mapped to milestones in the Phase 2 Application. Provide a table mapping each of the following milestones to the specific estimate class applied, together with the associated accuracy range:

	Phase 2 Application				Post-construction
Energy Safety Screen that projects passed (Office of Energy Infrastructure Safety, *10-Year Electrical Undergrounding Plan Guidelines*, Feb 2025.)	Screen 1	Screen 2	Screen 3	Screen 4	
Estimate range					
Cost accuracy range					

d. Explain whether the same estimate class, and accuracy range applied to cost estimates are also applied to risk reduction estimates used in BCR calculations to be submitted in the Phase 2 Application. If risk reduction estimates do not follow the same standards or an equivalent structured methodology, provide the quantitative estimate range and accuracy range applied to risk reduction modeling at each milestone stage identified in Q1(b).

e. Given that the primary components of the BCR (capital costs and risk reduction) may be associated with different estimate classes or accuracy range at the time of filing the Phase 2 Application, identify the resulting expected accuracy range for BCR values at each milestone stage identified in Q1(b), above.

PG&E ANSWER 1

a. As stated in PG&E's response to data request Follow-Up: SPD-PGE-SB884-021 DR:

Yes, per Utility Standard: "PM-1015S", PG&E aligns its cost-estimating approach with the Association for the Advancement of Cost Engineering (AACE) Cost Estimate Classification System. Each estimate is assigned an AACE Class (5 through 1) based on scope definition maturity, and each class carries an approximate accuracy range (confidence band). This classification serves as PG&E's standardized way of expressing estimate uncertainty. The table below summarizes the AACE Class framework and the PG&E Basis of Estimate.

Table 1: AACE Class framework and the PG&E Basis of Estimate

AACE Class	Approximate Accuracy / Confidence Band	Typical Scope Maturity	Typical Estimating Technique
Class 5	–50% to +100%	0% - 2% Very limited information, early concept and planning activities, often before a project team has been assigned.	Parametric, analogous, qualitative
Class 4	–30% to +50%	1-15 % overall engineering design completed	Parametric, analogous, qualitative
Class 3	–20% to +30%	10 - 40% overall engineering design completed, critical path schedule	Mix of parametric and bottom up
Class 2	–10% to +20%	30 - 75 % engineering design, detailed resource plans, and vendor quotes for substantial portions of equipment, material, and construction services	Bottom up, detailed unit costs, limited take-offs
Class 1	–5% to +10%	65 - 100% engineering complete, construction/execution has started	Bottom up, detailed unit costs

When PG&E refers to Rough Order of Magnitude (ROM) or early planning cost estimates—such as those used in system hardening and undergrounding portfolio development—those estimates are explicitly Class 5 (and sometimes early Class 4) under AACE. This means:

- The estimate is intentionally high-level
- The uncertainty band is wide by design
- The estimate is used for screening, prioritization, and planning, not for construction authorization

The risk values used in BCR calculations are not analogous to cost estimates and are not refined over time. Rather, they remain model-based representations of expected outcomes, subject to inherent and irreducible uncertainty. Uncertainty is fundamental to risk modeling for several reasons:

1. It is not possible to fully observe or represent all determinants of future wildfire, reliability, and safety outcomes, resulting in structural model uncertainty.
2. Model inputs rely on limited and imperfect historical data—particularly for low-probability, high-consequence events—leading to statistical uncertainty in parameter estimation.
3. The systems being modeled are inherently dynamic and non-stationary (e.g., changing climate conditions, fuel profiles, and system configurations), meaning that historical observations represent only one realization of a continuously evolving process.
4. Risk models necessarily rely on simplifying assumptions and the integration of multiple sub-models, causing uncertainty to propagate through the modeling framework.
5. Risk estimates may be periodically updated as models are refined, but these updates reflect methodological improvements—not convergence to a "true" deterministic value.

Accordingly, in the Phase 2 filing, cost inputs used in BCR calculations may initially reflect ROM-level estimates appropriate for early project development, but will be updated as projects mature. Risk values, however, will continue to be derived from enterprise risk models using the best available data and methodologies at the time of analysis and are not expected to improve in the same manner as costs. For this reason, BCR outputs should not be interpreted as precise point estimates, but rather as decision-support metrics that incorporate both modeled risk reduction and cost estimates, each with known and transparent uncertainty.

This distinction highlights why PG&E considers BCR results in the context of uncertainty, avoiding assumptions of accuracy when the supporting data is not precise.

b. Although there is not a one-to-one relationship between AACE Class and project status, parties can use Table 2 below and the "Status" field in Table 1 of the SB 884 Project List Data Requirements and the "status_current" field in EUP Table C.1.14: Subproject Table to approximate the AACE Class of a given project or subproject. Table 2 is illustrative, and intended to display the overlap of AACE Class maturity in relation to project phases.

Table 2: Illustrative Matrix of Overlap of AACE Class Maturity Related to Project Phases

AACE Class	SPD 37 "Status" Field in Table 1: Data Set in SB 884 Project List Data Requirements Guidelines	EUP "Status_Current" Field in Table C.1.14: Subproject Table in Office of Energy Safety 10-Year Electrical Undergrounding Plan Guidelines
Class 5	[EUP Screen 1 and Screen 2]	[EUP Screen 1 and Screen 2]*
Class 4	Scoping [EUP Screen 3]	Scoping [EUP Screen 3]*
	Designing	Designing
Class 3	Permitting	Permitting
Class 2/1	Construction/Implementation	Ready for Construction
		Construction In Progress
		Construction Completed
		Overhead De-energized
Class 1	Post-Construction	

* EUP Screen 1, Screen 2, and Screen 3 are not statuses in the EUP Guidelines for table C.1.14

As illustrated in Table 2, subprojects should be assumed to have the same AACE class maturity as their respective projects, depending on their project/subproject phase. Note that at the time of the Phase 2 filing, only projects that have been evaluated through the Screen 3 process will have subprojects identified.

c. Based on the information provided in Table 1 and Table 2 in responses a and b above, respectively, the requested table has been populated with PG&E's information correlating Energy Safety's Screens, project status, and AACE Classes.

Table 3: AACE Class and Energy Safety Screens

	Phase 2 Application				Post-construction
Energy Safety Screen that projects passed (Office of Energy Infrastructure Safety, *10-Year Electrical Undergrounding Plan Guidelines*, Feb 2025.)	Screen 1	Screen 2	Screen 3	Screen 4	
Estimate range	–50% to +100%	–50% to +100%	–50% to +100%	–30% to +50%	–5% to +10%
Cost accuracy range	Class 5	Class 5	Class 5	Class 4	Class 1

d. The same AACE estimate class and accuracy range applied to cost estimates are *not* applied to risk reduction estimates used in BCR calculations. As described in response to Q1(a), cost estimates follow an engineering-based maturation process and may be described using AACE estimate classes because those classes are a

standard approach for communicating cost-estimate uncertainty. PG&E's BCR uncertainty range, however, is not strictly based on AACE estimate classes. AACE classes are used only as a benchmark for expressing relative uncertainty; they are not a risk-model classification system and are not applied as quantitative accuracy ranges for modeled risk reduction.

The primary purpose of PG&E's relative BCR uncertainty range is to support prudent mitigation decisions given irreducible uncertainty, rather than assume that BCRs have the precision of deterministic point estimates. Those uncertainties arise from both cost and risk inputs, but the most important uncertainty for mitigation selection is risk-related—particularly the expected effectiveness of a mitigation in reducing wildfire, safety, reliability, and related risks under real-world conditions. Undergrounding removes overhead asset risk exposure and therefore leaves comparatively little uncertainty regarding mitigation effectiveness for overhead-contact and overhead-ignition pathways. By contrast, overhead mitigations such as covered conductor and operational mitigations can materially reduce risk but still leave residual exposure to chance, including tree strike, equipment contact, severe weather, operational performance, climate change, and other site-specific conditions that may affect whether the mitigation fully prevents an adverse outcome.

Accordingly, PG&E does not assign a separate quantitative estimate class or milestone-specific AACE-style accuracy range to modeled risk reduction at each milestone stage identified in Q1(b). Risk reduction estimates are derived using the best available data and methodology at the time of analysis, and they are expected to remain methodologically consistent across project milestones except where model inputs or methodologies are updated through established model governance and refresh processes. For this reason, BCR results should be understood as decision-support metrics evaluated within a larger decision-framework, not as precise estimates whose risk components mature according to the same AACE classification schedule.

PG&E has adopted a maximum relative BCR uncertainty range of 30 percent informed by guidance reflected in Energy Safety's WMP approval.[1] This uncertainty range is applied to account for the uncertainty of overhead mitigation effectiveness, rather than as an "accuracy range" analogous to AACE estimate classes. Consistent with the discussion above, this uncertainty factor does not assume that BCR values become more precise as projects progress; rather, it provides a stable basis for comparing mitigation alternatives given inherent uncertainty, particularly the uncertainty associated with mitigation effectiveness.

e. PG&E does not assign a single, accuracy range to BCR values at each milestone stage. Cost estimates may be described using AACE estimate classes that narrow as projects mature; however, risk reduction estimates are not refined as the projects progress and therefore do not carry corresponding AACE-style accuracy ranges. As stated in response to Q1(d), risk reduction values remain model-based representations of expected outcomes derived from PG&E's enterprise risk models using the best available data and methodology at the time of analysis.

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1 Office Of Energy Infrastructure Safety, Decision, PG&E 2026-2028 Base Wildfire Mitigation Plan; February 5, 2026, p. 19-20.

Accordingly, any apparent change in the uncertainty of BCR values across project milestones is driven primarily by the refinement of cost estimates rather than changes in risk reduction estimates. However, this does not imply that BCR results achieve increasing precision because uncertainty in risk reduction, particularly mitigation effectiveness under real-world conditions, remains inherent and is not refined with project development.

For this reason, PG&E does not present milestone-specific quantitative accuracy ranges for BCR values. Instead, BCRs are evaluated within a decision-framework, to support robust and prudent mitigation decision-making. This approach recognizes that while cost uncertainty may decrease over time, risk-related uncertainty, particularly for overhead mitigations, remains a key driver of decision-making.

SCE ANSWER 001

N/A - SCE currently has no plans to submit an EUP and therefore does not have specific thoughts on Phase 2 Application considerations.

SDG&E ANSWER 001

a. SDG&E intends to use the most up-to-date and accurate cost and risk information available at the time of the Phase 2 Application filing. While BCR calculations may initially rely on rough order of magnitude estimates for screening and planning purposes, these values will be refined as project scope, engineering details, and data quality improve. The filing will reflect the best available information to support informed and transparent decision-making.

b. At this stage, it is premature to identify specific estimate classifications (e.g., AACE classes) and associated accuracy ranges for either project-level or subproject-level cost estimates. Specific projects (e.g., feeder segments) for this application have not yet been fully defined, scoped, or advanced through engineering development. As a result, cost estimates are based on preliminary design, engineering, and constructability assumptions that will be verified and refined as the project progresses

c. It is premature to map estimate classes to specific Phase 2 Application milestones or to provide associated accuracy ranges at this stage. Cost estimates and accuracy ranges will be defined as projects advance in scope, engineering, and cost development, with final accuracy ranges only confirmed post-construction. Accordingly, the Phase 2 Application will reflect the best available estimate maturity at the time of filing, with further refinement expected as projects progress.

d. Risk reduction estimates used in BCR calculations[2] are developed using a different methodology than cost estimates and therefore are not assigned the same estimate class or accuracy range. Cost estimates are based on project development and

[2] See Section I.D.2, Mitigation Effectiveness and Risk Reduction in Exhibit SDGE-07-Risk.

engineering maturity, while risk reduction estimates are derived from modeled risk inputs, assumptions, and available data at the time of analysis. As a result, SDG&E cannot provide a quantitative estimate range or accuracy range for risk reduction modeling at this stage, but will use the best available information at the time of the Phase 2 Application filing.

e. At this stage, SDG&E cannot assign a defined accuracy range to BCR values, as the primary components (not only capital costs and risk reduction, but also discount rate, net O&M, risk aversion, climate change....) are developed using different methodologies and exhibit varying levels of maturity. The resulting BCR accuracy will therefore reflect the combined uncertainty of these inputs, which is expected to narrow as project scope, engineering, and risk modeling are refined over time. The Phase 2 Application will rely on the best available information at the time of filing, with further improvements in BCR precision as projects advance.

QUESTION 002

Topic: O&M Costs and O&M Savings in BCR calculations

a. Do the utilities intend to model forecast O&M Costs and O&M Savings to be submitted in the Phase 2 Application using historical data taken primarily from the prior GRC?

b. Do the utilities intend to track recorded O&M Costs and O&M Savings as incorporated into the BCR calculation to be submitted in the Phase 2 Application at the project or subproject level post-construction?

c. Identify all historical datasets, filters and variables used to estimate: (1) forecast O&M Costs, and (2) forecast O&M Savings to be submitted in the Phase 2 Application. Describe how the utility ensures that non-recurring historical costs are not projected into the future.

d. Identify all no-build baseline O&M activities that are considered to be avoided or reduced (e.g., routine vegetation management, inspections, emergency repairs, etc.) when calculating O&M Savings to be submitted in the Phase 2 Application. For each identified no-build baseline O&M activity, explain whether the costs of the O&M activity are eliminated entirely or, instead, reduced for undergrounding and covered conductor mitigations. If reduced, specify the reduction using a quantitative measure, such as a dollar amount, a percentage reduction, or both, and explain the utility's rationale for that value. In addition, clarify whether and how the utility removes costs from legacy O&M activities/programs, such as Enhanced Vegetation Management (EVM), if and when it decides to terminate such activities/programs.

e. Describe the time horizon over which O&M Costs and O&M Savings to be submitted in the Phase 2 Application are modeled. Explain if and how the utility assumes these values as incorporated into the BCR calculations change over time.

f. Explain how the utility ensures that O&M Savings as incorporated into the BCR calculation to be submitted in the Phase 2 Application are representative of specific circuit segments, given that maintenance needs vary by location. Specifically:

1. If a utility uses a system-wide average or pro-rata allocation, provide the mathematical justification for applying that average to segments that historically require little or no vegetation management or patrol. Explain how the utility avoids including O&M Savings as incorporated into the BCR calculation to be submitted in the Phase 2 Application for activities that would not have occurred on that specific segment.
2. Explain how the utility ensures that historical averages are not skewed by data from segments that have already been undergrounded, converted to covered conductor, or otherwise hardened.
3. Explain how the utility determines that historical data from prior GRC periods is representative of the specific segments in this application, given their unique vegetation conditions, maintenance needs, and operating environments.
4. If the utility is unable to track recorded O&M Savings as incorporated into the BCR calculation to be submitted in the Phase 2 Application at the project or subproject level post-construction, explain how the Commission can verify that the BCR is calculated accurately with reasonable O&M Savings post-construction.

PG&E ANSWER 002

a. Yes. PG&E's forecast O&M cost and savings components used in BCR calculations are primarily derived from 2023 General Rate Case (GRC) adopted and imputed cost forecasts. These values reflect normalized estimates of ongoing, operational activities and are used to inform forward-looking O&M assumptions for Phase 2 Application analyses, rather than relying on raw historical data without adjustment.

b. No; PG&E does not intend to incorporate recorded O&M Costs and O&M Savings into the BCR calculations. The values used in the calculation are estimates based on modeling and information available at the time of the EUP Phase 1 Application.

   PG&E cannot report actual, realized avoided O&M cost savings because such savings are inherently counterfactual, they represent costs that were never incurred, rather than expenditures that can be observed, measured, or audited. Compounding this, avoided O&M is not separately tracked in utility accounting systems, which record actual costs incurred rather than costs avoided, and the benefits accrue over multi-decade asset lifetimes (~50+ years) rather than in a single reporting period further preventing attribution of discrete, realized savings in any given year. As a result, avoided O&M is best characterized and reported as a modeled, forward-looking estimate grounded in transparent assumptions, not as a contemporaneously realized, auditable figure.

   Furthermore, it is logistically impractical to use actuals to track O&M, given that the audit of these activities will occur well before any meaningful O&M costs are recorded. Therefore, a modeled estimate of O&M costs and savings is required.

c. See attachment SPD-37-JointIOU-PhI_DR_CPUC_001-Q001-005Atch02. This table summarizes the historical datasets, program assumptions, and cost drivers used in the O&M analysis. For each cost category, it shows the specific historical data

sources used, such as GRC forecasts or actuals by year and how the data is filtered. For example, the table describes which MAT or MWC codes are included or excluded and how key variables like unit costs, miles and/or event assumptions are applied. O&M costs are calculated at the circuit segment level for the baseline and each mitigation type. For simplicity, the attached table reflects systemwide average changes in O&M costs; however, the underlying analysis is performed at the circuit segment level. Key considerations include:

- Cost assumptions primarily rely on normalized GRC adopted forecasts (4-year average) and, where applicable, multi-year historical averages to smooth costs and avoid carrying forward one-time or anomalous costs.
- A limited number of categories use recent actual data, only where it better reflects current operations' run rates; these values are adjusted to represent ongoing, repeatable activities.
- Across all categories, WBCA applies inclusion and exclusion criteria at the MAT/MWC level to remove non-recurring, irrelevant, or non-scalable costs and focus only on repeatable operational activities.
- Costs are converted to standard unit metrics (e.g., cost per mile or cost per Customer Minute Interrupted (CMI)) to ensure consistency and prevent project specific or one-time costs from influencing future projections.
- Outlier controls and periodic updates to cost assumptions ensure that inputs remain representative of current operations and are not driven by anomalous or outdated historical data.

PG&E also ensures that non-recurring historical costs are not projected into the future through a combination of normalized forecasting, targeted use of historical data and data filter controls:

- Only maintenance activities that are expected to continue in the long term when developing O&M cost and savings assumptions are considered.
- Non-recurring or discontinued activities, such as Enhanced Vegetation Management (EVM), are excluded from forward-looking O&M projections, ensuring that O&M savings reflect only ongoing, repeatable baseline activities

d. Please see the table below for the Avoided vs Cost Reduction and associated reduction percentage table.

Cost Category	Relative Change from Baseline	Basis for Relative Change from Baseline
Patrols & Inspections	**UG:** -90% **CC:** 40%	**UG:** Underground lines require substantially less routine patrolling compared to overhead infrastructure. While inspection activities are still necessary, overall patrol and inspection effort is reduced by approximately 90% relative to the baseline scenario due to the protected nature of underground assets. **CC:** Covered conductor mitigation results in roughly a 40% increase in Patrol and Inspection costs compared to the baseline scenario, driven by the increase in the added poles required.
Maintenance & Repairs	**UG:** -20% **CC:** 0%	**UG:** Underground lines are less exposed to external factors compared to non-hardened lines. While individual repair events can be more complex and resource-intensive, they occur less frequently. As a result, overall maintenance and repair needs are reduced by approximately 20% relative to the baseline scenario. **CC:** No change
Supervision & Engineering	**UG:** 0% **CC:** 0%	**UG:** No change **CC:** No change
PSPS	**UG:** -100% **CC:** 0%	**UG:** Undergrounding eliminates exposure to the overhead conditions that necessitate PSPS events. As a result, PSPS enablement is no longer required, and all associated operational costs, i.e., PSPS patrols and restoration activities, are effectively avoided, representing a complete reduction relative to the baseline scenario. **CC:** No change
Major Outage & Emergency	**UG:** -90% **CC:** 0%	**UG:** Undergrounding significantly reduces major outage frequency and associated emergency response needs by eliminating exposure to overhead-specific risk drivers such as wind, vegetation contact, and external contact. Major emergency events are predominantly driven by extreme weather (e.g., high wind and storm conditions), which disproportionately impact overhead assets. As a result, undergrounding materially reduces the occurrence of these events. While restoration can be more complex when underground faults occur, the overall volume of major emergency work is substantially lower, resulting in an approximate 90% reduction relative to the baseline scenario. **CC:** No change
Routine Outage & Emergency	**UG:** -10% **CC:** 0%	**UG:** Undergrounding also reduces routine outage frequency and associated emergency response needs by removing exposure to common overhead risk drivers. However, routine emergency events are more frequently driven by factors such as heat-related equipment failure and asset condition issues, which can affect both overhead and underground infrastructure. As a result, undergrounding provides a more limited reduction in these events. While it does not eliminate the need for routine emergency response, it reduces the frequency of such activities, resulting in an approximate 10% reduction relative to the baseline scenario. **CC:** No change
EPSS	**UG:** N/A **CC:** 100%	**UG:** N/A as EPSS is modeled as a separate mitigation alternative combined with covered conductor, and therefore the no-build baseline excludes EPSS. Therefore, the remediation benefits from UG do not apply. **CC:** Covered conductor introduces EPSS capability to applicable circuit segments. This results in incremental operational effort and associated costs to enable, monitor, and manage EPSS, representing a full increase relative to the baseline where EPSS was not previously in place.
Vegetation Management	**UG:** -100% **CC:** 0%	**UG:** Undergrounding fully eliminates the need for vegetation management activities, as conductors are no longer exposed to surrounding vegetation. All inspection, trimming, and clearance work associated with overhead lines is avoided, resulting in a 100% reduction relative to the baseline scenario. **CC:** No Change

e. O&M costs and savings are modeled over the full expected useful life of the relevant assets to ensure consistency with the time horizon over which benefits are realized. For purposes of the Phase 2 Application, PG&E assumes an average useful life of approximately 48 years for overhead assets and 55 years for underground assets.

All O&M costs and savings are projected annually over this period and converted to present value using PG&E's authorized Weighted Average Cost of Capital (WACC).

f. PG&E develops O&M savings assumptions using normalized, activity-based cost assumptions derived from the most granular data available, ranging from circuit-segment-level inputs where available to circuit, division, or systemwide datasets, combined with governance controls to ensure that the estimates are representative of the asset types and mitigation scenarios being evaluated.

    1. PG&E does not rely on simple system-wide averages for most O&M cost categories. Instead, O&M savings are developed using data and allocation methods tailored to the underlying drivers of each activity. For example, Vegetation Management costs are estimated at the circuit-segment level using recorded circuit-level maintenance data, supplemented by regression analyses that incorporate segment-specific factors such as the density of strike trees derived from satellite imagery from 2024. System-wide outage program costs are allocated to circuit segments based on each segment's proportional contribution to customer minutes interrupted (CMI), ensuring that higher-impact segments are assigned a commensurate share of costs. Other cost categories, such as emergency response, are derived using division-specific historical data that reflect localized operating conditions for overhead and underground assets.

        Through this combination of segment-specific data, driver-based allocation methodologies, and activity-level modeling, PG&E ensures that O&M savings assumptions reflect the operational characteristics and risk profile of each circuit segment, rather than applying averages that could overstate or understate O&M costs for specific locations.

    2. Given that circuit segments already hardened are not eligible for inclusion in the EUP portfolio, and that system hardening is typically implemented at the circuit-segment level, the O&M savings estimates used in the BCR are not influenced by previously mitigated assets. This ensures the analysis is limited to segments with baseline overhead configurations and avoids distortion from legacy mitigations. In addition, PG&E aligns its GIS baseline to a January 2023 system snapshot with the 2023 GRC data primarily used to develop baseline O&M assumptions, ensuring that both asset conditions (used for risk modeling) and cost inputs reflect consistent, pre-mitigation conditions and produce representative segment-level estimates.

    3. As described in PG&E's response to Question 2 subpart (f)(1), PG&E relies on 2023 GRC estimates derived from normalized historical data from prior GRC periods but does not apply them as uniform system-wide averages. Instead, costs are translated to the circuit-segment level using driver-based methodologies and segment-specific data, including vegetation density, outage impact (CMI), and local operating conditions. These assumptions are aligned with the system configuration and GIS baseline as of January 2023

underlying the wildfire risk model (WDRM v4), supporting their applicability to the specific segments evaluated in this application.

4. As explained in question 02 subpart (b), PG&E cannot track realized O&M costs and savings at the project or subproject level for purposes of directly validating BCR inputs post-construction. Instead, the Commission can verify the reasonableness of O&M assumptions through (i) PG&E's GRC processes, which regularly true up and review systemwide O&M spending and forecasts, (ii) transparency into the underlying cost models and assumptions supporting BCR calculations, and (iii) comparison of forecasted and actual O&M expenditures at programmatic and system levels over time. This approach ensures that O&M assumptions remain grounded in observable operational data and subject to regulatory review, even if they are not possible to track at an actualized project-level.

SCE ANSWER 002

N/A - SCE currently has no plans to submit an EUP and therefore does not have specific thoughts on Phase 2 Application considerations.

SDG&E ANSWER 002

a. SDG&E intends to rely on the most accurate and currently available data to model forecast O&M costs and savings. This includes using historical data for benchmarking and validation, while incorporating updated assumptions, project-specific details, and forward-looking considerations. The Phase 2 Application will reflect the most current and relevant information available at the time of filing.

b. SDG&E intends to track recorded O&M costs at the project or subproject level post-construction, depending on the final configuration of each project. However, O&M savings are not directly observable or tracked as discrete recorded values, as they represent avoided costs relative to a baseline rather than realized expenditures. As such, O&M savings will be evaluated through modeled estimates rather than tracked as actuals.

c. It is premature to identify all historical datasets, filters, and variables used to estimate forecast O&M costs and savings at this stage. SDG&E will provide this level of detail in the Phase 2 Application; in the interim, reference can be made to SDG&E's 2028 GRC for examples of data sources and methodologies[3].

d. SDG&E's methodology for identifying no-build baseline O&M activities and estimating corresponding savings is documented in its most recent GRC[4], including the treatment of activities such as vegetation management, inspections, and repairs.

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3 See Section I.E.4, Net Operational O&M Costs and Savings in Exhibit SDGE-07-Risk.

4 See Section I.E.4.a.v, Baseline and Post-Hardening Net O&M Costs Calculation in Exhibit SDGE-07-Risk.

e. SDG&E models O&M costs and savings specific for each feeder-segment over the expected remaining service life of the existing overhead assets, assumed to be 55 years. This includes ongoing inspections, repairs, and replacements required to maintain overhead assets over that period. These assumptions form the basis for estimating lifecycle O&M costs and savings within the BCR framework.[5]

f. SDG&E's approach to estimating O&M savings and evaluating their applicability to specific circuit segments is described in its GRC methodology[6], which provides the underlying framework, assumptions, and supporting rationale.

QUESTION 003

Topic: Ingress/Egress Risk

a. How does the utility define "ingress/egress risk" for purposes of mitigation selection (e.g., evacuation route availability, road capacity, fire behavior constraints, population mobility, warning time, or other) in the Phase 2 Application?

b. What is the unit of analysis for ingress/egress risk (segment, circuit, community, polygon, or other), and what specific indicators are used in the Phase 2 Application?

c. The Joint IOUs Application states ingress/egress is "not captured directly" in wildfire risk models. (Joint IOUs Application at 37.) Are any elements of ingress/egress captured indirectly and used to calculate risk reduction in the BCR calculation to be submitted in the Phase 2 Application?

d. The Joint IOUs Application also states that utilities conduct a detailed ingress/egress risk assessment outside of the risk model specific to individual circuit segments. (Joint IOUs Application at 37.) Why is detailed ingress/egress risk not incorporated explicitly into the risk model and BCR calculations to be submitted in the Phase 2 Application? Explain how utility avoids double counting ingress/egress-related impacts by (1) capturing them indirectly in the risk model used for BCR calculations to be submitted in the Phase 2 Application, while also (2) using ingress/egress as a separate consideration in mitigations selection that may be inconsistent with the BCR results.

e. What does an "ingress/egress risk assessment outside of the risk model" produce (score, category, narrative finding, or other)? (Joint IOUs Application at 37.) Are these ingress/egress risk assessments translated into a quantitative adjustment or are they used only qualitatively to prioritize undergrounding in the Phase 2 Application?

f. Under what conditions can ingress/egress considerations justify selecting a project with a lower BCR than alternatives?

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5 See Section I.E.4, Net Operational O&M Costs and Savings in Exhibit SDGE-07-Risk.

6 See Section I.E.4, Net Operational O&M Costs and Savings in Exhibit SDGE-07-Risk.

PG&E ANSWER 003

a. For the purpose of mitigation selection in the EUP Screen 3 process, ingress/egress risk is defined as risk where overhead facilities traverse constrained roadways or evacuation routes, and the potential exists for those facilities to foul the roadway and block access during an emergency.

b. PG&E conducts a detailed analysis of local conditions at the street level to assess ingress and egress risk that could be caused by specific poles and conductors. This granular approach allows us to identify specific ingress and egress challenges that may not be apparent in city or county level data. For instance, we can assess the condition of specific roads, the presence of potential obstacles, and the overall accessibility of the area.

c. The Wildfire Consequence Model v4 uses Access and Functional Needs (AFN) as a proxy for Egress because AFN identifies communities where evacuation may be more difficult during a wildfire. AFN includes customers with Medical Baseline status, mobility limitations, hearing or visual impairments, life-support dependency, self-identified vulnerability, or age over 65. The model converts AFN concentrations into percentile bins, where higher AFN levels correspond to greater egress difficulty and therefore increase the modeled consequence in areas where affected occupants may face greater challenges evacuating safely. The model uses Terrain Difficulty Index (TDI) sourced from Technosylva as a proxy for Ingress because TDI reflects how difficult it is for firefighting resources to access, penetrate, and suppress a fire in a given landscape. TDI captures terrain and fuel conditions that affect both initial and extended attack, with higher values indicating more complex terrain and greater suppression difficulty.

   In the Wildfire Consequence Model, AFN and TDI function as adjustments to the base consequence value: areas with higher AFN receive higher egress-related consequence adjustments, while areas with higher TDI receive higher ingress/suppression-related adjustments. These adjustments are combined with other factors such as fuels and weather to estimate overall wildfire consequence, which is then used combined with ignition probability to calculate wildfire risk in the Wildfire Distribution Risk Model (WDRM).

   The wildfire risk values from the WDRM are used as an input to the BCR calculations in the WBCA model.

d. The Wildfire Consequence Model used in WDRM v4 is designed to estimate wildfire consequence consistently across PG&E's entire service territory. For that reason, the model relies on inputs that are available, scalable, and statistically meaningful across the full system rather than incorporating highly localized ingress and egress conditions directly at each individual circuit segment level. During the design of Wildfire Consequence Model version 4, PG&E evaluated whether more direct local factors (e.g., road networks, number of exits, and related access constraints) could be incorporated into the model. However, no sufficiently direct or reliable relationship between these factors and modeled wildfire consequence could be established across the full service territory. As a result, the model selected variables that demonstrated the highest significance and could be applied consistently: Access

and Functional Needs (AFN) as a proxy for egress-related risk, and Terrain Difficulty Index (TDI) as a proxy for suppression-related ingress risk.

The downstream BCR process (from Screen 3 of the EUP Project Acceptance Framework) uses local review and engineering input to evaluate site-specific ingress and egress considerations that are not fully represented by a systemwide statistical model. Instead of double counting, this approach complements the results from the model to provide a more granular and up to date view of localized risks.

e. As outlined in PG&E's 2026-2028 WMP Response to Revision Notice R1, during the decision tree review (Figures 8.2.1-1 to 8.2.1-3), our Grid Design engineers conduct a detailed analysis of local conditions to the street level that impact ingress and egress. This granular approach allows them to identify specific ingress and egress challenges that may not be apparent in city or county-level data. For instance, they can assess the condition of specific roads, the presence of potential obstacles, and the overall accessibility of the area. This detailed qualitative review is crucial for developing effective mitigation strategies and ensuring that PG&E accounts for all potential risks. Incorporating location-specific ingress and egress assessments into our risk management processes allows us to make more informed decisions about which mitigation is most appropriate to address the risks in that specific location. It is important to conduct a location-specific Ingress/Egress Risk evaluation and incorporate the findings into our mitigation decision-making process to address the limitations of our risk model. This review establishes the bounds for a hybrid alternative, combining overhead hardening with targeted undergrounding to mitigate ingress/egress risks, whose benefit-cost is then weighed against the 100% Underground and 100% Overhead alternatives.

f. A lower-BCR project may be justified when ingress/egress risk presents a significant safety concern that is not fully captured in the BCR, and project-specific observations demonstrate that undergrounding addresses this risk more effectively than higher-BCR alternatives. In these cases, a hybrid design, incorporating the ingress/egress assessment, will be selected only if its BCR (i) falls within a 30% uncertainty factor of the 100% Overhead alternative and (ii) exceeds the BCR of the 100% Underground alternative. To support this selection, PG&E will apply a Decision Tree in its forthcoming EUP application, modeled on the 2026–2028 WMP Decision Tree shown in WMP Figures 8.2.1-1 through 8.2.1-3.
For clarity, a hybrid BCR that falls "within a 30% uncertainty factor" of the Overhead BCR is equivalent to a hybrid BCR that is at least 70% of the Overhead BCR.

SCE ANSWER 003

N/A - SCE currently has no plans to submit an EUP and therefore does not have specific thoughts on Phase 2 Application considerations.

SDG&E ANSWER 003

a) SDG&E defines “ingress/egress” risk as the incremental wildfire consequence within the safety attribute arising from constrained evacuation access, driven by roadway limitations, population density, and fire arrival timing.
b) Fire spread is modeled at the asset (ignition) location, while the incremental “ingress/egress” risk is evaluated at the feeder-segment level.
c) Due to computational complexity, duration and cost, SDG&E does not explicitly model “ingress/egress” risk within the 5 million individual simulations used in the WiNGS-Planning model. Instead, this component is incorporated within the consequence model as a multiplier, applied at the feeder-segment level to identify communities or areas of the service territory with potentially constrained evacuation capacity.
d) SDG&E incorporates “ingress/egress” risk within its wildfire risk framework, and therefore within BCR calculations, through the consequence model. However, because the model converts safety outcomes (e.g., serious injuries and fatalities) into monetary terms using assumptions such as the Value of Statistical Life (VSL), alongside financial risk components (e.g., acres burned and structures destroyed), the relative contribution of the ingress/egress multiplier to total risk is comparatively small.

   As a result, while ingress/egress considerations are directionally reflected in elevated life-safety consequences, SDG&E notes that the overall wildfire risk, and thus BCR outcomes, remains primarily driven by property and other economic impacts, with safety contributing a more limited share under current modeling assumptions.

e) SDG&E’s “ingress/egress” model produces a safety scaling factor that increases the Safety component of wildfire risk to reflect heightened life-safety impacts under constrained evacuation conditions. This information is incorporated both quantitatively within the risk framework and qualitatively as a decision-support input when prioritizing feeder segments for potential mitigations.

f) Ingress/egress considerations may justify selecting a feeder segment with a lower BCR where the segment serves areas with constrained evacuation conditions—such as limited roadway access, single-access communities, high population exposure, challenging terrain, or locations where fire arrival timing could materially reduce available evacuation time.

This prioritization is appropriate where the associated evacuation benefits are significant, highly location-specific, and not fully captured in the quantitative BCR, warranting additional weight in the decision-making process.

QUESTION 004

Topic: Tree-Strike Risk

a. How does the utility define tree-strike risk for purposes of mitigation selection (e.g., likelihood of contact, likelihood of conductor failure given contact, ignition probability, or modeled consequence severity, or other) in the Phase 2 Application?

b. What is the unit of analysis for tree-strike risk (e.g., span, segment, circuit, polygon, or other), and what specific indicators/data elements are used? Identify any thresholds used to classify high tree-strike risk in the Phase 2 Application.

c. The Joint IOUs Application states tree-strike risk in the utilities' risk models used to calculate risk reduction in the BCR calculations to be submitted in the Phase 2 Application is "high-level, aggregated" and a "snapshot in time." The utilities state they supplement the risk model with the most recent LiDAR and satellite imagery to obtain a more granular, up-to-date view of tree-strike risk. (Joint IOUs Application at 38.) Why is this data not incorporated into the risk model and the BCR calculation in the Phase 2 Application rather than being applied as a separate consideration performed outside-the-model? Explain how the utility avoids double counting tree-strike impacts by (1) capturing them at a high level in the modeled risk/BCR in the Phase 2 Application and (2) using updated tree-strike information as a consideration that can result in outcomes that are inconsistent with the BCR results.

d. Under what conditions can tree-strike considerations justify selecting a project with a lower BCR than alternatives?

PG&E ANSWER 004

a. PG&E characterizes tree strike risk as the potential for nearby trees to contact overhead conductors, including the possibility that trees can strike and break covered conductor lines. This is a physical exposure risk driven by:
    - Tree height relative to line height;
    - Proximity of vegetation to conductors; and
    - Potential for trees to fall into lines under stress conditions.

b. PG&E applies a screening threshold to the assessment which uses the threshold of six or more trees per span to indicate meaningful tree strike exposure that warrants further consideration. Similar to ingress/egress, this review establishes the bounds for a hybrid alternative, combining overhead hardening with targeted undergrounding to mitigate tree strike risks, whose benefit-cost is then weighed against the 100% Underground and 100% Overhead alternatives.

c. PG&E's Wildfire Distribution Risk Model (WDRM) is trained on a point-in-time dataset and is not continuously updated between model versions. As a result, tree-strike risk reflected in WDRM v4 is based on information available at the time the model was developed and does not capture subsequent changes in tree health or environmental conditions. The vegetation risk components within WDRM v4 are designed to provide a consistent, systemwide view of vegetation-related wildfire risk at the circuit-segment level.

While PG&E does have LiDAR (based on data collected in 2019) and satellite imagery available, PG&E does not incorporate this data into WDRM. This is for two reasons: (i) The LiDAR coverage is limited to HFTD, and therefore not suitable as a primary input to the system-wide risk model and (ii) the time required to collect, process, and integrate up-to-date LiDAR data back into the risk model is not commensurate with the pace at which vegetation grows and field conditions change. Routinely committing resources to refresh LiDAR inputs and retrain the system-wide model would be impractical, as the data would be outdated by the time the integration is complete.

For these reasons, PG&E made a deliberate decision to decouple the WDRM v4 model from LiDAR inputs. Furthermore, even if it were practical to do so, having up-to-date LiDAR data would not eliminate the need for a utility to first validate field conditions on the ground before implementing a mitigation project.

The downstream BCR process (initiated at Screen 3 of the EUP Project Acceptance Framework) draws on real-time field assessment and engineering judgment to evaluate project-specific tree-strike risk that a systemwide statistical model cannot fully capture at the segment level. Rather than duplicating, or double-counting the model's output, this step builds on it—layering in a more granular, current view of on-the-ground conditions to refine the overall risk picture.

d. A lower-BCR project may be justified when tree-strike risk presents a significant wildfire ignition concern that is not fully captured in the BCR, and project-specific factors demonstrate that undergrounding addresses this risk more effectively than higher-BCR alternatives. In these cases, a hybrid design, incorporating the tree-strike risk assessment, will be selected only if its BCR (i) falls within a 30% uncertainty factor of the 100% Overhead alternative and (ii) exceeds the BCR of the 100% Underground alternative. To support this selection, PG&E will apply a Decision Tree in its forthcoming EUP application, modeled on the 2026–2028 WMP Decision Tree shown in WMP Figures 8.2.1-1 through 8.2.1-3.

   For clarity, a hybrid BCR that falls "within a 30% uncertainty factor" of the 100% Overhead BCR is equivalent to a hybrid BCR that is at least 70% of the 100% Overhead BCR.

SCE ANSWER 004

N/A - SCE currently has no plans to submit an EUP and therefore does not have specific thoughts on Phase 2 Application considerations.

SDG&E ANSWER 004

a) SDG&E defines Tree-Strike Risk based on its vegetation contact modeling, which estimates the likelihood of vegetation contacting energized conductors as a function of wind conditions, asset characteristics, and vegetation attributes. This model leverages observed vegetation-related outage data to establish

correlations between environmental conditions and contact likelihood, which in turn it is included in the BCR.[7]

b) The vegetation Probability of Failure (PoF) model is developed at the span level. These span-level estimates are then aggregated to the feeder-segment level for integration into SDG&E's broader wildfire risk and BCR framework.
c) SDG&E does not incorporate LiDAR data directly into its vegetation risk model because the model is intentionally designed to reflect historical vegetation conditions and weather drivers observed at the time of outages, ensuring statistical consistency and stability across large-scale simulations.

   LiDAR and high-resolution imagery can be used within Vegetation Management programs to identify localized conditions, such as areas with difficult access, hazard trees, clearance violations, or encroachment risks, at a much finer spatial resolution than is feasible within the WiNGS-Planning risk model.

   By leveraging both sources of information, SDG&E is able to inform and refine mitigation selection at the feeder-segment level, while ensuring that vegetation-related risk is not double counted within the BCR framework.
d) Tree-strike considerations may justify selecting a project with a lower BCR where recent or location-specific vegetation conditions (e.g., hazard trees, clearance violations, or access constraints) indicate elevated risk that is not fully captured in the aggregated model inputs. In such cases, SDG&E will document the justification supporting the deviation from BCR-based prioritization.

QUESTION 005

Topic: Additional Consideration PSPS

The utilities state that circuit-segment-level analysis can "obscure localized risks" (Joint IOUs Application at 38) and that they perform sub-circuit segment assessments using the most current PSPS lookback data (including weather polygons) to identify where undergrounding would reduce PSPS risk. Given that utilities indicate they have actionable, more granular risk information, provide clarification on the following:

a. Why do the utilities not incorporate sub-circuit/sub-project-level PSPS risk inputs into the risk model as incorporated into the BCR calculation to be submitted in the Phase 2 Application used for project selection?
b. If BCRs are to be presented in the Phase 2 Application at an aggregated project level rather than at the sub-project level, explain why utilities make prioritization decisions within a circuit segment at the sub-project-level while BCRs used to justify those decisions are reported at a higher level of aggregation?

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[7] See Section I.D.1.b.i.1.b, Vegetation PoF Submodel in Exhibit SDGE-07-Risk.

PG&E ANSWER 005

a. PG&E *does* incorporate granular PSPS lookback data into its risk analysis and BCR calculation. However, because PSPS weather events do not align with circuit segment boundaries, opportunities to achieve substantial PSPS risk reduction without mitigating a full segment can be obscured without performing a more granular sub-CPZ review of weather polygon data.

   For example, when a PSPS polygon, defined as the area where climate conditions warrant de-energization, covers only part of a circuit segment, targeted undergrounding of only the affected portion can deliver a precise reduction in PSPS risk exposure without undergrounding the entire segment.

   This dynamic is not fully visible in the segment-level BCR calculation. To manage this, these optimization opportunities are identified during the scoping process, where the PSPS lookback is reviewed event-by-event to identify whether a hybrid alternative can achieve meaningful PSPS risk reduction relative to a 100% Undergrounding solution.

b. As explained in PG&E's response to subpart (a), PSPS events are driven by geographically defined weather conditions that do not align with circuit boundaries. When a PSPS polygon covers only part of a circuit segment, targeted undergrounding of only the affected portion can deliver a precise reduction in PSPS risk exposure without undergrounding the entire segment.

   These opportunities are captured during the scoping process, and supplement the mitigation decision-making process, by serving as a starting point for additional BCR comparisons against the 100% Undergrounding and 100% Overhead Hardening alternatives required in the EUP Project Acceptance Framework. In some cases, a targeted hybrid mitigation within a circuit segment will be more cost-effective (on a BCR basis) than a 100% Undergrounding alternative.

   Generally, as described in the responses on ingress/egress and tree-strike risk above, a circuit-segment-level BCR is an important mitigation consideration, but is not sufficient on its own. A diligent review of factors not fully captured in a single BCR figure is essential to selecting the right mitigation. The Commission previously concluded in the Risk Decision-Making Framework, that BCR need not be the sole consideration when selecting mitigations.[8] PG&E believes it would be imprudent to make these decisions without leveraging all available data and field-validated conditions to ensure the most effective mitigation choice and the most efficient use of ratepayer funds.

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[8] D.22-12-027, Appendix A Row 26, ("Mitigation selection can be influenced by other factors including, but not limited to, funding, labor resources, technology, planning and construction lead time, compliance requirements, Risk Tolerance thresholds, operational and execution considerations, and modeling limitations and/or uncertainties affecting the analysis.")

SCE ANSWER 005

N/A - SCE currently has no plans to submit an EUP and therefore does not have specific thoughts on Phase 2 Application considerations.

SDG&E ANSWER 005

a) SDG&E calculates PSPS risk at the feeder-segment level[9].
b) See response provided in 5a.

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9 See Section I.D.1.c, PSPS Risk in Exhibit SDGE-07-Risk.

ATTACHMENT 2

SPD-37-Joint IOU-Phl_DR_CPUC_001-Q001-005Atch2

Cost Category	Basis for Analysis	Inclusion/Exclusion Filters	Costs vs Savings	Analytical Resolution Level
Patrols & Inspections	**Overhead** • 4-year average utilizing the 2023 GRC adopted forecast, with escalation, for years 2023 through 2026. • The average unit cost for MATs BFA, BFB, BFC, BFG, and GAA uses the BPD proposed unit cost from the 2024 Q1 Electric Cost Book. • The average unit cost for MATs BFH, BFJ, BFL, BFM, and BFO is based on the 2023 GRC adopted forecast with escalation, using the average costs for 2023 through 2026 divided by the 2023 Primary Overhead Distribution line miles. MAT BF# unit cost uses 2023 actuals from Business Finance. **Underground** • Analysis uses the 2023 GRC adopted forecast, with escalation, for years 2023 through 2026.	**Overhead** • **Includes:** 07A, BFA, BFB, BFC, BFG, BFH, BFJ, BFL, BFM, BFO, GAA, GAC, GAI, and BF#, representing non-PTT pole inspections, number of miles, number of poles tested and treated, and number of poles. • **Excludes:** 07A and GAI are excluded because these MAT codes are not directly aligned to the unit-based patrol and inspection cost drivers (e.g., miles, poles inspected, poles treated) used in the WBCA analysis. As a result, they were removed to ensure only comparable and scalable inspection activities are included. **Underground** • **Includes:** BF4, BFD, and BFE, which are specific to O&M costs for patrols and inspections. • **Excludes:** NA	**Savings** – Approximately 90% Reduction when Undergrounded	**System**
Maintenance & Repair	**Program** • 4-year average utilizing the 2023 GRC adopted forecast, with escalation, for years 2023 through 2026**.**	**Program** • **Includes:** MWCs 07, 08, 2A, 56, KA, KB, and GA, which are specific to O&M costs for maintenance and repair activities. • **Excludes:** NA	**Saving** – Approximately 20% Reduction when Undergrounded	**System**
Supervision & Engineering	**Program** • 4-year average utilizing the 2023 GRC adopted forecast, with escalation, for years 2023 through 2026. • The average unit cost for the engineering MAT codes selected was calculated using the average of the 2023 GRC adopted forecast for years 2023 through 2026.	**Program** • **Includes:** MAT codes FZA, FZB, FZC, FZD, and FZE, which are used for engineering and are applied on a unit cost per mile basis. • **Excludes**: NA	NA	System
PSPS	**Program** • 4-year average utilizing the 2023 GRC adopted forecast, with escalation, for years 2023 through 2026. • The analysis uses the 2023 GRC adopted forecast because, during the 2023 GRC filing, the PSPS program was relatively new and reflected two full PSPS seasons in 2019 and 2020. • The PSPS event forecast assumes three PSPS events, plus one additional potential or borderline	**Program** • **Includes:** MAT AB6, limited to the work category "Public Safety Power Shutoff - PSPS Event (Distribution)," representing event-driven PSPS execution costs. • **Excludes:** All other activities within AB6 that would not be directly impacted by undergrounding, including fixed PSPS program costs and activities not directly	**Savings** - 100% Reduction when Undergrounded	**Circuit Segment**

	event per year, based on a 10-year historical weather analysis. • Cost per event is based on the average cost per event over 2019 and 2020.	related to severe weather that can lead to PSPS execution.		
Major Outage & Emergency	**Program** • 5-year average utilizing 2020 through 2024 historical costs. • The analysis uses recorded data for 2020 through 2024 because the major emergency forecast is driven by a 5-year average of actual costs.	**Program** • **Includes**: MATs 95A, 95B, 95F, IFB, IFA, IFC, and IFF, which are specific to O&M costs for major outage and emergency activities. • **Excludes:** Major fire rebuild expenses (MAT 95F) are not included in the cost-per-mile calculations.	**Savings -** Approximately 90% Reduction when Undergrounded	**Division**
Routine Outage & Emergency	**Program** • 2024 historical costs. • A 2 percent growth factor is applied to the 2024 recorded data and then divided by overhead miles to develop a cost per mile by division. • This approach was used because it provides a better estimate of future routine spend and reflects year-over-year growth in both units and dollars that was not captured in the 2023 GRC forecast at the time it was submitted.	**Program** • **Includes:** MATs 17B, 17C, 17D, 17P, BHD, BHG, BHH, BHB, and BHC, representing Routine Emergency response spend used in the WBCA analysis. • **Excludes:** BHE is excluded because it is already captured in overhead-related activities and including it would result in double counting. • **Additional Context:** • MAT BHE is part of the overall Routine Emergency program spend but was removed from the WBCA cost-per-mile calculations to avoid duplication.	**Savings -** Approximately 10% Reduction when Undergrounded	**Division**

EPSS	**Program**
	• 2024 historical costs.
	• The analysis uses 2024 historical actuals to ground the cost estimates in observed data rather than forecasts, support a more accurate and conservative basis for evaluating undergrounding benefits, align with outage risk modeling outputs, and support cost-per-CMI calculations using actual spending tied to MAT codes directly impacted by undergrounding.
		Program
		• **Includes:** 09B, 3US, 49H, 49T, 49X, BHE, IG# utilized for EPSS CMI analysis.
		• **Excludes:** All other EPSS-related MAT codes that are not directly impacted by undergrounding are excluded from avoided cost consideration.
		• **Additional Details:**
		  • The EPSS Cost per Customer Minute Interrupted (CMI) analysis utilizes MAT codes 09B, 3US, 49H, 49T, 49X, BHE, IG#.
		  • All other EPSS-related MAT codes include activities not directly impacted by undergrounding and are therefore excluded.
		  • 09B – Dist. Sub IPAC Replacement: Supports EPSS and DCD functionality by replacing outdated relays.
			Savings – N/A as EPSS is modeled as a separate mitigation alternative combined with covered conductor, and therefore the no-build baseline excludes EPSS. Therefore, avoided costs from UG do not apply.	**Circuit Segment**

		• 3US – DCD Radio Comms: Enables Downed Conductor Detection (DCD); added since GRC 2023. • 49H / 49T / 49X – ED Reliability: Targets poor-performing circuits; 49X includes fault indicators and sectionalization. • BHE – Outage Response: Covers patrols and response efforts during EPSS events. • IG# – Helicopter Standby: Supports aerial patrols for EPSS reliability. • **Additional Context:** • Per Decision (D.) 23-11-069, the Commission adopted PG&E's 2023 expense forecast for EPSS at $151.129 million (p.317). The EPSS costs reflected in our workbooks represent an approximate 40% portion of the total EPSS budget that was approved in the 2023 GRC. This demonstrates that the EPSS related costs included here are relatively small subset of the overall authorized EPSS funding.		
Vegetation Management	**Program** • Vegetation Management O&M data used in the analysis consists of the 2027 GRC forecasted cost, in consideration of PG&E's focus on reducing vegetation costs for ratepayers. • To address outliers and gaps in the recorded Vegetation Management O&M data, a linear regression analysis was applied using a tree tag to tree strike ratio. The regression model is applied only to circuit segments that are above or below one standard deviation from the mean tree tag to tree strike ratio. This analysis yielded a circuit-segment per-mile Vegetation Management O&M unit cost, rather than applying a uniform distribution of Vegetation Management O&M cost across all circuit-segments. • In response to Data Request CalAdvocates-PGE-NonCase-MMH-01162026-ICE_and_VM, PG&E provided the linear regression analysis workbook with the underlying assumptions and basis for the analysis. Please refer to the previously provided attachment DRU16828_System Hardening_DR_CPUC_D001Atch04.xlsx for additional information.	**Program** • **Includes:** HN and IG, which are Vegetation Management MAT/MWC codes. • **Excludes:** NA	**Savings -** 100% Reduction when Undergrounded	**Circuit Segment**