



September 18, 2024

Via Electronic Filing

Caroline Thomas Jacobs, Director
Office of Energy Infrastructure Safety
California Natural Resources Agency
Sacramento, CA 95184
efiling@energysafety.ca.gov

**Subject: Public Advocates Office's Opening Comments on the
Draft Decision Approving Pacific Gas and Electric Company's
2025 Wildfire Mitigation Plan Update**

Docket: 2023-2025-WMPs

Dear Director Thomas Jacobs,

The Public Advocates Office at the California Public Utilities Commission (Cal Advocates) respectfully submits the following comments on the Draft Decision of the Office of Energy Infrastructure Safety (Energy Safety) approving Pacific Gas and Electric Company's (PG&E) 2025 Wildfire Mitigation Plan Update. Please contact Nathaniel Skinner (Nathaniel.Skinner@cpuc.ca.gov), Program Manager, or Henry Burton (Henry.Burton@cpuc.ca.gov), Program and Project Supervisor, with any questions relating to these comments.

We respectfully urge the Office of Energy Infrastructure Safety to adopt the recommendations discussed herein.

Respectfully submitted,

/s/ Marybelle C. Ang
MARYBELLE C. ANG
Attorney for Public Advocates Office

California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102
Telephone: (415) 696-7329
E-mail: Marybelle.Ang@cpuc.ca.gov

540910285

The Public Advocates Office
California Public Utilities Commission
505 Van Ness Avenue, San Francisco, CA 94102-3298
www.publicadvocates.cpuc.ca.gov

TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION	1
II. DISCUSSION.....	2
A. ENERGY SAFETY SHOULD CONCLUDE THAT PG&E DID NOT COMPLY WITH ACI PG&E-23-05.	2
B. ENERGY SAFETY SHOULD REQUIRE PG&E TO RE-EVALUATE THE REASONABLENESS OF ITS LONG-TERM UNDERGROUNDING PLANS IN LIGHT OF ITS UPDATED RISK MODEL.....	5
C. ENERGY SAFETY SHOULD REQUIRE PG&E TO EVALUATE THE COMBINATION OF COVERED CONDUCTOR WITH ENHANCED POWERLINE SAFETY SETTINGS.....	7
D. ENERGY SAFETY SHOULD REQUIRE PG&E TO PROVIDE DATA FOR EPSS OUTAGES UNDER VARIOUS FIRE POTENTIAL INDEX (FPI) CONDITIONS.....	9
E. ENERGY SAFETY SHOULD CORRECT NUMBERING INCONSISTENCIES FOR THE AREAS FOR CONTINUED IMPROVEMENT.....	10
III. CONCLUSION	10

I. INTRODUCTION

On April 2, 2024, Pacific Gas and Electric Company (PG&E) filed its *2025 Wildfire Mitigation Plan Update* (2025 WMP Update).¹ On May 7, 2024, the Public Advocates Office at the California Public Utilities Commission (Cal Advocates) and other stakeholders filed formal comments on the 2025 WMP Updates of PG&E and other large utilities.²

On June 20, 2024, Energy Safety issued a notice on errata and supplemental reportable updates for PG&E's 2025 WMP Update.³ On July 5, 2024, PG&E filed a revision to its 2025 WMP Update and its 2023-2025 WMP.⁴

On August 29, 2024, Energy Safety issued its Draft Decision on PG&E's 2025 WMP Update.⁵ The cover letter of the Draft Decision invites interested persons to file opening comments by September 18, 2024 and reply comments by September 30, 2024.

Pursuant to the *Final 2023-2025 Wildfire Mitigation Plan Process and Evaluation Guidelines* (2023 WMP Process Guidelines) and the cover letter of the Draft Decision,⁶ Cal Advocates submits these comments on the Draft Decision. In these comments, Cal Advocates makes the following principal recommendations:

- Energy Safety should conclude that PG&E did not comply with Area for Continued Improvement (ACI) PG&E-23-05.
- Energy Safety should require PG&E to re-evaluate the reasonableness of its long-term undergrounding plans in light

¹ PG&E, *2025 Wildfire Mitigation Plan Update*, April 2, 2024 (PG&E's 2025 WMP Update R0).

² Cal Advocates, *Comments of the Public Advocates Office on G&E's 2025 Wildfire Mitigation Plan Update*, May 7, 2024 in docket 2023-2025-WMPs (Cal Advocates Comments on PG&E's 2025 WMP Update).

³ Energy Safety, *Notice on Errata and Supplemental Reportable Updates for Pacific Gas and Electric Company 2025 Wildfire Mitigation Plan Update*, June 20, 2024.

⁴ PG&E, *2025 Wildfire Mitigation Plan Update R1*, July 5, 2024 (PG&E's 2025 WMP Update R1); PG&E, *2023-2025 Wildfire Mitigation Plan R6*, July 5, 2024 (PG&E's 2023-2025 WMP R6).

⁵ Energy Safety, *Draft Decision Pacific Gas and Electric Company 2025 Wildfire Mitigation Plan Update*, August 29, 2024 (Draft Decision on PG&E's 2025 WMP Update).

⁶ Energy Safety, *Final 2023-2025 Wildfire Mitigation Plan Process and Evaluation Guidelines*, December 6, 2022, (2023-2025 WMP Process Guidelines).

of its updated risk model.

- Energy Safety should require PG&E to evaluate the combination of covered conductor with Enhanced Powerline Safety Settings.
- Energy Safety should correct numbering inconsistencies for the ACIs.

II. DISCUSSION

A. Energy Safety should conclude that PG&E did not comply with ACI PG&E-23-05.

In its Final Decision on PG&E's 2023-2025 WMP, Energy Safety directed PG&E to improve its effectiveness evaluations and its location-specific decision-making for its system hardening efforts.⁷ Energy Safety required PG&E to provide more accurate effectiveness estimates (considering observed in-field effectiveness and the time value of risk), to provide details on which projects are driven by reliability risk as opposed to wildfire risk, and to complete other specific actions outlined in Area for Continued Improvement (ACI) PG&E-23-05.⁸

In our opening comments on PG&E's 2025 WMP Update, Cal Advocates outlined the ways in which PG&E had not reasonably responded to ACI PG&E-23-05.⁹ Our comments indicate that:

- PG&E's analysis did not include ongoing vegetation and asset management,¹⁰ as required by Energy Safety's Final Decision on PG&E's 2023-2025 WMP;¹¹
- PG&E did not provide or justify a list of projects where PG&E opted to underground even though its analysis (effectiveness and cost, and localized factors) recommended a

⁷ Energy Safety, *Decision on 2023-2025 Wildfire Mitigation Plan Pacific Gas and Electric Company*, December 29, 2023 (Final Decision on PG&E's 2023-2025 WMP) at 43-45 and 102.

⁸ Final Decision on PG&E's 2023-2025 WMP at 102.

⁹ *Comments of the Public Advocates Office on PG&E's 2025 Wildfire Mitigation Plan Update*, May 7, 2024 (Cal Advocates comments on PG&E's 2025 WMP) at 35-43.

¹⁰ Cal Advocates comments on PG&E's 2025 WMP at 38.

¹¹ Final Decision on PG&E's 2023-2025 WMP at 102.

mitigation other than undergrounding.¹² Such a justification was required in Energy Safety’s Final Decision on PG&E’s 2023-2025 WMP;¹³

- PG&E did not provide cost-effectiveness scores for projects that are driven by reliability risk as opposed to wildfire risk,¹⁴ as required in Energy Safety’s Final Decision on PG&E’s 2023-2025 WMP;¹⁵
- PG&E did not reasonably estimate “the cumulative risk exposure of its mitigation initiative portfolio, taking into account the time value of risk,”¹⁶ as required in Energy Safety’s Final Decision on PG&E’s 2023-2025 WMP.¹⁷
- PG&E’s effectiveness estimates for undergrounding and covered conductor did not conform to observed, empirical effectiveness;¹⁸
- PG&E did not evaluate the effectiveness of rapid earth-fault current limiter technology (REFCL) at the same geographical scale as other mitigations, which limits the usefulness of mitigation comparisons;^{19, 20}
- PG&E’s analysis included unrealistic scenarios such as covered conductor operating without fast-trip or PSPS;²¹
- PG&E’s location-specific analysis will only occur at the circuit-segment level, which is not informative because

¹² Cal Advocates comments on PG&E’s 2025 WMP at 40.

¹³ Final Decision on PG&E’s 2023-2025 WMP at 102.

¹⁴ Cal Advocates comments on PG&E’s 2025 WMP at 40-41.

¹⁵ Final Decision on PG&E’s 2023-2025 WMP at 102.

¹⁶ Cal Advocates comments on PG&E’s 2025 WMP at 41-42.

¹⁷ Final Decision on PG&E’s 2023-2025 WMP at 102.

¹⁸ Cal Advocates comments on PG&E’s 2025 WMP at 36.

¹⁹ Cal Advocates comments on PG&E’s 2025 WMP at 37.

²⁰ As an example, Cal Advocates noted that PG&E’s estimated effectiveness of REFCL, assessed in combination with covered conductor, Enhanced Powerline Safety Settings (EPSS), and downed conductor detection, was more than 13 percent *lower* than the estimated effectiveness of a similar system *without* REFCL. *See*, Cal Advocates comments on PG&E’s 2025 WMP at 37.

²¹ Cal Advocates comments on PG&E’s 2025 WMP at 37-38.

circuit-segments are typically three to four times the length of individual undergrounding projects;²²

Energy Safety's Draft Decision summarizes PG&E's response to ACI PG&E-23-05, but does not discuss or evaluate PG&E's response, nor does it address the detailed critiques provided by Cal Advocates and other intervenors.²³ For example, with regard to PG&E's analysis of cumulative risk exposure Energy Safety states:

This chart *shows* that although undergrounding leaves more unaddressed risk initially, undergrounding will *reportedly* address the equivalent amount of risk as overhead hardening by around 2032, with an overall greater permanent risk reduction due to an additional 21% of cumulative risk reduction by 2036.²⁴ (Emphasis added.)

This statement is a summary of PG&E's assertions, rather than an analysis of the available evidence. Energy Safety's decision fails to reckon with the contrary evidence presented by intervenors.²⁵

While it is true that PG&E presents an analysis that *shows* undergrounding will result in an overall greater permanent risk reduction by 2032, PG&E's evaluation has crucial flaws. First, it ignores the artificially low effectiveness estimates PG&E used for covered conductor.²⁶ Second, it ignores the enormous difference in cost efficiency

²² Among the riskiest 8,000 miles of PG&E's system, the median length of a circuit segment is approximately 7 miles. The median length of an undergrounding project in PG&E's 2023-2026 system hardening workplan is 1.8 miles. *See*, Cal Advocates comments on PG&E's 2025 WMP at 38.

²³ *See*, e.g., Cal Advocates comments on PG&E's 2025 WMP at 41-42; *Mussey Grade Road Alliance Comments on the 2025 Update of the Wildfire Mitigation Plans of PG&E, SCE, and SDG&E*, May 7, 2024 at 44-45.

²⁴ Draft Decision on PG&E's 2025 WMP Update at 22.

²⁵ *See*, e.g., *Mussey Grade Road Alliance Comments on the 2025 Update of the Wildfire Mitigation Plans of PG&E, SCE, and SDG&E*, May 7, 2024 at 42-45.

²⁶ PG&E's own estimates, in Table ACI-PG&E-23-05-3 in PG&E's 2025 WMP Update R1 at 56, show that covered conductor in combination with EPSS is 78.2 effective compared to only 66.4 percent for covered conductor alone. It is unreasonable for PG&E to use the lower effectiveness between these two when, in practice, PG&E will utilize EPSS to further mitigate risk on overhead covered lines. *See*, Cal Advocates comments on PG&E's 2025 WMP at 37, 41.

between covered conductor and undergrounding.²⁷ A more accurate analysis (which should compare deployments at equivalent cost) would show that covered conductor mitigates more risk in both the near and long term.²⁸

Energy Safety should revise its discussion of PG&E's response to ACI PG&E-23-05 to include a discussion of the critiques raised by Cal Advocates and other intervenors. Energy Safety should find that PG&E did not reasonably comply with the requirements of ACI PG&E-23-05 and should direct PG&E to repair these deficiencies before it approves PG&E's 2025 WMP Update.

B. Energy Safety should require PG&E to re-evaluate the reasonableness of its long-term undergrounding plans in light of its updated risk model.

Energy Safety correctly recognizes that PG&E's revised Wildfire Distribution Risk Model version 4 (WDRM v4) shows a more even distribution of risk across its system, compared to WDRM v3.²⁹

If WDRM v4 is correct, it reduces the fraction of risk that can be eliminated by undergrounding a given length of distribution circuits. In our opening comments on PG&E's 2025 WMP Update, Cal Advocates explained that PG&E's long-term plan to remove 8,000 overhead miles through undergrounding³⁰ would be substantially less

²⁷ Cal Advocates comments on PG&E's 2025 WMP at 13. Footnote 44 outlines Cal Advocates' method to estimate that undergrounding costs approximately \$2.95 million per mile (or $\$2.95 \times 1.25 = \3.7 million per overhead mile removed) while covered conductor costs approximately \$0.86 million per overhead mile.

Per Table ACI-PG&E-23-05-3 in PG&E's 2025 WMP Update R1 at 56, PG&E estimates that covered conductor in conjunction with operational mitigations is 78.2 percent effective, while undergrounding is 97.7 percent effective. Therefore, covered conductor in conjunction with operational mitigations is approximately 80 percent as effective as undergrounding.

These two data points suggest that covered conductor with operation mitigations has a cost-benefit ratio of approximately 3.4 times that of undergrounding: $(0.782/0.977) / (\$0.86/\$3.7) = 3.4$.

²⁸ See, Cal Advocates comments on PG&E's 2025 WMP at 13-14, 42.

²⁹ Draft Decision on PG&E's 2025 WMP Update at 11.

³⁰ "On average, it takes 1.25 UG [underground] install miles to replace 1 OH [overhead] mile." PG&E's 2023-2025 WMP R6 at 1137. PG&E's long-term plan to install underground 10,000 underground miles would therefore remove approximately 8,000 overhead miles. See also, Cal Advocates comments on PG&E's 2025 WMP at 11-13.

efficient under the risk distribution shown in WDRM v4 than under WDRM v3.³¹ For example, under WDRM v3, if PG&E were to underground the riskiest 8,000 miles of its system, it would address approximately 69 percent of the wildfire risk from its system.³² Under WDRM v4, the same number of miles of undergrounding would address only 49 percent of the total wildfire risk in PG&E's system.³³

To achieve comparable risk reduction under PG&E's updated understanding of risk (shown in WDRM v4), PG&E's plan for 10,000 miles of undergrounding is far less effective than previous estimates based on WDRM v3. The change in risk modeling results indicates the need for a dramatic shift in strategy.³⁴

As an alternative, Cal Advocates showed that, for the same cost as eliminating 49 percent of its wildfire risk through undergrounding, PG&E could eliminate approximately 67 percent of its wildfire risk through covered conductor and operational mitigations. That is 18 percentage points more risk reduction compared to undergrounding alone, at the same cost.³⁵ Or, examined another way, it would cost PG&E approximately \$29.5 billion to eliminate 49 percent of its wildfire risk through its planned 10,000 miles of undergrounding, or *only \$11.3 billion to eliminate the same amount of risk through covered conductor and operational mitigations.*³⁶

Energy Safety should revise the Draft Decision to include a new ACI that requires PG&E to evaluate the cost-effectiveness of its long-term undergrounding plans in light of its updated risk model. Energy Safety should require PG&E to either change its hardening strategy or explain its continued long-term focus on undergrounding despite

³¹ Cal Advocates comments on PG&E's 2025 WMP at 11-12.

³² Cal Advocates comments on PG&E's 2025 WMP at 11-12.

³³ Cal Advocates comments on PG&E's 2025 WMP at 12.

³⁴ Cal Advocates comments on PG&E's 2025 WMP at 11-14.

³⁵ Cal Advocates comments on PG&E's 2025 WMP at 13-14.

³⁶ Cal Advocates comments on PG&E's 2025 WMP at 13-14.

the substantially improved speed,³⁷ substantially reduced cost,³⁸ and high effectiveness of covered conductor projects compared to undergrounding.³⁹

C. Energy Safety should require PG&E to evaluate the combination of covered conductor with Enhanced Powerline Safety Settings.

In its Draft Decision, Energy Safety requires PG&E to continue joint studies on grid hardening strategies.⁴⁰ As part of these studies, PG&E must work with peer utilities to evaluate the effectiveness of mitigations in combination with one another.⁴¹

As discussed in Cal Advocates' prior comments, PG&E's estimates show that covered conductor in conjunction with its Enhanced Powerline Safety Settings program (EPSS) is approximately 80 percent as effective as undergrounding,⁴² can be deployed in one third the time of an equivalent undergrounding project,⁴³ and can cost as little as one quarter as much as an equivalent undergrounding project.⁴⁴

³⁷ "...overhead hardening can be completed at a rate of approximately three times that of undergrounding." PG&E's 2025 WMP Update R1 at 57.

³⁸ Cal Advocates comments on PG&E's 2025 WMP at 13. Footnote 44 outlines Cal Advocates' method to estimate that undergrounding costs approximately \$2.95 million per mile (or $\$2.95 \times 1.25 = \3.7 million per overhead mile removed) while covered conductor costs approximately \$0.86 million per overhead mile.

³⁹ Per Table ACI-PG&E-23-05-3 in PG&E's 2025 WMP Update R1 at 56, PG&E estimates that covered conductor in conjunction with operational mitigations is 78.2 percent effective, while undergrounding is 97.7 percent effective. Therefore, covered conductor in conjunction with operational mitigations is approximately 80 percent as effective as undergrounding, while being both faster and cheaper to deploy.

⁴⁰ Draft Decision on PG&E's 2025 WMP Update at 61-62. This ACI is currently identified as ACI PG&E-25U-03. Note that there are two ACIs labeled PG&E-25U-03 in the Draft Decision.

⁴¹ Draft Decision on PG&E's 2025 WMP Update at 62.

⁴² Per Table ACI-PG&E-23-05-3 in PG&E's 2025 WMP Update R1 at 56, PG&E estimates that covered conductor in conjunction with operational mitigations is 78.2 percent effective, while undergrounding is 97.7 percent effective. Therefore, covered conductor in conjunction with operational mitigations is approximately 80 percent as effective as undergrounding, while being both faster and cheaper to deploy.

⁴³ "...overhead hardening can be completed at a rate of approximately three times that of undergrounding." PG&E's 2025 WMP Update R1 at 57.

⁴⁴ Cal Advocates comments on PG&E's 2025 WMP at 13. Footnote 44 outlines Cal Advocates' method to estimate that undergrounding costs approximately \$2.95 million per mile (or $\$2.95 \times 1.25 = \3.7 million per overhead mile removed) while covered conductor costs approximately \$0.86 million per overhead mile.

A project that utilizes covered conductor in conjunction with EPSS will involve some detriment to reliability, compared to undergrounding. However, Energy Safety has previously recognized that undergrounding projects that are driven primarily by reliability risk warrant increased scrutiny over projects driven by wildfire risk.⁴⁵ Given the high effectiveness of covered conductor in conjunction with EPSS, it is reasonable to assume that undergrounding in some locations will, at best, provide only an incremental or modest improvement to wildfire risk reduction. Undergrounding in these locations would therefore represent a choice by the utility to prioritize reliability by utilizing a mitigation that will cost ratepayers four times as much and take three times as long to implement.

PG&E has made no effort to justify its continued focus on undergrounding despite the advantages of covered conductor with EPSS (in effectiveness, cost, and speed). Energy Safety should revise ACI PG&E-25U-03 to include the following additional requirements:⁴⁶

- Require PG&E to compare the expected wildfire risk reduction benefit between undergrounding and the combination of covered conductor with EPSS. This analysis should be performed both in aggregate, and for each system hardening project that PG&E includes in its 2026-2028 WMP.
- Require PG&E to compare the expected reliability risk between undergrounding and the combination of covered conductor with EPSS. This analysis should be performed both in aggregate, and for each system hardening project that PG&E includes in its 2026-2028 WMP.
- Require PG&E to compare the cost-benefit ratio between undergrounding and the combination of covered conductor with EPSS. This analysis should be performed both in

⁴⁵ ACI PG&E-23-05 required PG&E to provide “Details on any projects driven by reliability risk as opposed to wildfire risk,” including “An explanation as to why the project was included for prioritization within the WMP for hardening.” Energy Safety, Final Decision on PG&E’s 2023-2025 WMP at 102.

⁴⁶ Draft Decision on PG&E’s 2025 WMP Update at 63-64. Note that there are two ACIs labeled PG&E-25U-03 in the Draft Decision.

aggregate, and for each system hardening project that PG&E includes in its 2026-2028 WMP.

- For each undergrounding project included in its 2026-2028 WMP, PG&E should provide justification for its selection of undergrounding over the combination of covered conductor with EPSS.

D. Energy Safety should require PG&E to provide data for EPSS outages under various Fire Potential Index (FPI) conditions.

PG&E has developed a Fire Potential Index (FPI) model that combines weather parameters, fuel moisture data, and topography to predict the probability of a large or catastrophic fire.⁴⁷ The model outputs a rating on a scale from R1 (low fire potential) to R5 (extreme fire potential).⁴⁸

In its Draft Decision, Energy Safety correctly notes that PG&E's plan to continue EPSS enablement in R1 and R2 conditions presents an increased outage risk during conditions with a relatively low risk of ignition.⁴⁹ Energy Safety requires PG&E to continue providing data pertaining to EPSS outages, including the percentage of time that EPSS is enabled for each FPI threshold on each circuit segment.⁵⁰

However, additional data is needed to fully understand the reliability impact of PG&E enabling EPSS under R1 and R2 conditions. Specifically, Energy Safety should require PG&E to provide the following outage statistics for each circuit segment and each FPI condition:

- Cumulative number of customers impacted by outages (during each condition from R1 through R5).
- Cumulative customer minutes interrupted during outages (during each condition from R1 through R5).

⁴⁷ PG&E's 2023-2025 WMP R6 at 775.

⁴⁸ PG&E's 2023-2025 WMP R6 at 207.

⁴⁹ Draft Decision on PG&E's 2025 WMP Update at 63-64. This ACI is currently identified as ACI PG&E-25U-05.

⁵⁰ Draft Decision on PG&E's 2025 WMP Update at 64.

- Cumulative outage time in minutes (during each condition from R1 through R5).

The information above is not burdensome and would add fifteen data entries to the requirements of ACI PG&E-25U-05.⁵¹ This additional data will allow Energy Safety and intervenors to quantify the reliability impact of EPSS during relatively low-ignition-risk conditions such as R1 and R2 on the FPI scale.

E. Energy Safety should correct numbering inconsistencies for the Areas for Continued Improvement.

Section 11 of the Draft Decision lists 15 Areas for Continued Improvement (ACI) related to PG&E’s 2025 WMP Update: seven ACIs carried over from the Final Decision on PG&E’s 2023-2025 WMP, and eight new ACIs.⁵² The numbering for the new ACIs is inconsistent and unclear. Two ACIs are listed as PG&E-25U-01,⁵³ and another two are listed as PG&E-25U-03.⁵⁴ There is no PG&E-25U-02. Energy Safety should revise the Draft Decision to correct these numbering inconsistencies.

III. CONCLUSION

Cal Advocates respectfully requests that Energy Safety adopt the recommendations discussed herein.

Respectfully submitted,

/s/ Marybelle C. Ang
MARYBELLE C. ANG
Attorney for Public Advocates Office

California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102
Telephone: (415) 696-7329
E-mail: Marybelle.Ang@cpuc.ca.gov

September 18, 2024

⁵¹ Draft Decision on PG&E’s 2025 WMP Update at 63-64.

⁵² Draft Decision on PG&E’s 2025 WMP Update at 60-68.

⁵³ Draft Decision on PG&E’s 2025 WMP Update at 60-61.

⁵⁴ Draft Decision on PG&E’s 2025 WMP Update at 61-62.