

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298



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Wildfire Safety Division Evaluation of Pacific Gas and Electric Company's Remedial Compliance Plan

The Wildfire Safety Division (WSD) finds that Pacific Gas and Electric's (PG&E) Remedial Compliance Plan (RCP) is Insufficient. WSD reviewed PG&E's RCP in accordance with guidance set out in Resolution WSD-002, Resolution WSD-003, and the WSD letter titled "Guidance on the Remedial Compliance Plan & Quarterly Report Process Set Forth in Resolution WSD-002," provided to electrical corporations on July 17, 2020.¹

1. Introduction

These findings act on the Remedial Compliance Plan (RCP) submitted by PG&E on July 27, 2020. RCP submittals were required as a stipulation of the Wildfire Safety Division's (WSD) "Conditional Approval" of PG&E's 2020 Wildfire Mitigation Plan (WMP). RCPs were required to address all Class A deficiencies identified by the WSD in its review of PG&E's 2020 WMP. In this document, the WSD issues its determination of whether PG&E's RCP is "Sufficient" or "Insufficient." In accordance with the letter titled "Guidance on the Remedial Compliance Plan & Quarterly Report Process Set Forth in Resolution WSD-002" (RCP & QR Guidance Letter) issued by the WSD on July 17, 2020, if an RCP is deemed "Sufficient" no further action related to the RCP is required; however, in the event that an RCP is found "Insufficient," the WSD may provide further direction on necessary actions PG&E must take to deliver a sufficient RCP and recommend potential enforcement action.

The WSD finds that PG&E's RCP is Insufficient. PG&E was required to satisfy the Class A deficiencies shown in Table 1 and set forth in Resolution WSD-002 and Resolution WSD-003.

¹ https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/About_Us/Organization/Divisions/WSD/WSD%20Guidance%20Statement%20on%20RCP%20QP%2020200717.pdf

Table 1: Class A Deficiencies from PG&E's 2020 WMP

Deficiency/Condition No.	Class	Deficiency Title	Sufficiency Finding
Guidance-3	A	Lack of risk modeling to inform decision-making.	Insufficient
PGE-1	A	PG&E groups initiatives into programs and does not provide granular initiative detail.	Insufficient
PGE-3	A	High incidence of conductor failure.	Insufficient
PGE-8	A	Annual risk ranking is quickly out of date.	Insufficient
PGE-15	A	It is unclear how PG&E classifies findings at the appropriate level.	Insufficient
PGE-25	A	Lack of details in PG&E's WMP on how to address personnel shortages.	Insufficient
PGE-26	A	Effectiveness of increased vegetation clearances.	Insufficient
PGE-27	A	Public safety partner coordination.	Insufficient

Due to the WSD's determination that PG&E's RCP is Insufficient, in its 2021 WMP update, PG&E is required to address all Actions identified in Section 5.1 of this document. Nothing in this document should be construed as a decision by WSD or the CPUC not to pursue other compliance or enforcement mechanisms if appropriate.

2. Background

On February 7, 2020, electrical corporations submitted their 2020 WMPs in accordance with the 2020 WMP Guidelines issued through an Administrative Law Judge (ALJ) Ruling on December 16, 2019. Pursuant to its statutory mandate, the WSD reviewed and issued its disposition of electrical corporations' 2020 WMPs via the 2020 WMP Resolutions.² Upon review of electrical corporations' 2020 WMPs, the WSD identified several elements that were missing or inadequate in the filings. Each of these issues was identified as a "Deficiency." A corresponding "Condition," intended to remedy the identified deficiency, was imposed on the electrical corporation as part of the WSD's "Conditional Approval" of 2020 WMPs. Each deficiency and associated condition were categorized into one of the following classifications, with Class A being the most serious:

- **Class A** - Aspects of the WMP are lacking or flawed;
- **Class B** - Insufficient detail or justification provided in WMP; and
- **Class C** - Gaps in baseline or historical data, as required in 2020 WMP Guide

² These included Resolutions WSD-002, WSD-003, WSD-004, WSD-005, WSD-007, WSD-008, WSD-009, and WSD-010.

WSD Evaluation of PG&E's RCP

Consequently, upon review of PG&E's 2020 WMP, the WSD issued a "Conditional Approval." The Conditional Approval requires PG&E to satisfy the set of conditions set forth in Resolution WSD-002 and Resolution WSD-003. Table 2 below presents a summary of the number of conditions, grouped by classification.

Class A conditions are intended to address aspects of electrical corporations' 2020 WMPs which the WSD found lacking or flawed and were of highest concern. Class A conditions require each electrical corporation to file an RCP, which is broadly defined in Resolution WSD-002 as follows:

An RCP must present all missing information and/or articulate the electrical corporation's plan, including proposed timeline, to bring the electrical corporation's WMP into compliance.

Pursuant to Ordering Paragraph (OP) 7 of Resolution WSD-002, PG&E was required to submit an RCP within 45 days of California Public Utilities Commission's (CPUC or Commission) ratification of PG&E's 2020 WMP Resolution, WSD-003. The Commission ratified the 2020 WMP Resolutions³ on Thursday, June 11, 2020; therefore, PG&E was required to file an RCP by Monday July 27, 2020. PG&E timely submitted its RCP on Monday, July 27, 2020. Public comments on electrical corporations' RCPs were submitted on August 10, 2020 by the Commission's Public Advocates Office, Mussey Grade Road Alliance, and Protect Our Communities Foundation. PG&E submitted reply comments August 17, 2020.

Table 2: 2020 WMP Resolutions - Conditions Summary for PG&E

Condition Class	WSD-002	WSD-003	Total
Class A	1	7	8
Class B ⁴	10 (1)	20(3)	30(4)
Class C	1	2	3
Total	12	29	41

3. Summary of WSD's Assessment of RCPs

An RCP's fundamental intent is for electrical corporations to present a plan to resolve WMP deficiencies with the level of specificity, detail, and scope outlined in the respective condition. Accordingly, the WSD has determined whether an electrical corporation's RCP filing sufficiently resolves the deficiency and meets the intent of the condition. To make this determination, the WSD looked to Resolution WSD-002 and the factors used to evaluate 2020 WMPs. While all

³ These included Resolutions WSD-002, WSD-003, WSD-004, WSD-005, WSD-007, WSD-008, WSD-009, and WSD-010.

⁴ Values in parenthesis indicate the number of Class B deficiency and condition pairs that require ongoing reporting. All other Class B deficiency and condition pairs will be addressed in the electrical corporations' first quarterly report submission.

WSD Evaluation of PG&E's RCP

four factors used in evaluating WMP approval were not applicable⁵, the WSD evaluated the sufficiency for each Class A deficiency and RCP filing in accordance with the following factors:

- Completeness – The RCP is complete and comprehensively responds to the condition;
- Effectiveness - The plans and remedies outlined in the RCP will reasonably resolve the deficiency;
- Feasibility - The plans and remedies outlined in the RCP are reasonably feasible considering the electrical corporation's resources and the scope and timeline identified.

Outlined in Table 3, below, are the approval criteria the WSD used to evaluate whether an RCP filing is sufficient. In this document, the WSD issues one of the following determinations:

- Sufficient - The RCP is sufficient, and no further action is required;
- Insufficient - The RCP is insufficient.

If the WSD finds that an RCP is Insufficient, the WSD will require the electrical corporation to address the insufficiencies in its 2021 WMP update, in accordance to the specific actions outlined in Section 5.1 of this document. The WSD will assess the responses in its evaluation of the 2021 WMP update and will factor noncompliance into its review and may also recommend enforcement action be taken by the CPUC.

Table 3: RCP Evaluation Criteria

Category	Criteria
Completeness	Does the RCP provide all the information identified in the condition?
	If not, does the utility provide an explanation of why the RCP is incomplete and a timeline for when the completed information will be provided?
	Does the RCP include a timeline for implementation and completion of remedial actions?
Effectiveness	Does the RCP identify reasonably effective plans and remedies to resolve the identified deficiencies?
	Is the timeline identified in the RCP sufficient, given the importance of the deficiency and its potential impact on wildfire risk?
Feasibility	Does the utility reasonably have the resources required to execute the plans and remedies in its RCP in accordance with the identified scope and timeline?

⁵ Forward-looking growth is not applicable to assessing sufficiency of RCPs because the RCP, by its nature, is intended to address a current plan of action to address lacking or flawed aspects of 2020 WMPs and does not require an assessment of maturity growth.

4. Public and Stakeholder Comments

On August 10, 2020, Mussey Grade Road Alliance submitted comments on PG&E's RCP. Provided below is a non-exhaustive summary of the major issues raised in stakeholder comments.

Mussey Grade Road Alliance

- In Table 1, PG&E states that for system hardening (SH), its capabilities for risk estimation for distribution circuits look at relative risk of circuit segments while estimation for transmission circuits look at probability of failure as a function of wind speed. It is not clear from this whether PG&E looks at wind speed with regard to its distribution circuit risks.
- PG&E should be asked to present its Distribution Vegetation model algorithm for review in a future filing or its 2021 WMP.
- SDG&E, PG&E, and SCE should, separately from the extended vegetation clearance data, collect and coordinate "fall-in"/"blow-in" data that relates to trees outside of the typical clearance distances, as these are also fire ignition causes.
- PG&E's Outage Producing Winds (OPW) Model is flawed and WSD needs to conduct an urgent technical review of PG&E's Outage Producing Winds model.
- For Tables 21-30, WSD should request quantitative estimates of "effectiveness of initiative at reducing ignition risk" or require that PG&E provide a reason why such an estimate cannot be provided.
- PG&E should break its covered conductor and hardening programs into separate initiatives.
- WSD should require PG&E to give priority to high wind areas in the HFTD to target its conductor replacement program.
- PG&E's conductor wire down rates underestimate weather effects. PG&E should present "unfiltered" wire down data that includes the Major Event Days. It should break major event days into their own category in addition to the weather condition bins it has already chosen.

5. Discussion of the WSD's RCP Assessment

In accordance with guidance set out in Resolution WSD-002 and the RCP & QR Guidance Letter, in Table 4 below the WSD presents its findings of sufficiency for PG&E's RCP in totality.

WSD Evaluation of PG&E’s RCP

Table 4: Review of PG&E’s RCP by Evaluation Criterion

Category	Criteria	Yes	No
Completeness	Does the RCP provide all the information identified in the condition?		X
	If not, does the utility provide an explanation of why the remedy is incomplete and a timeline for when the completed information will be provided?		X
	Does the RCP include a timeline for implementation and completion of remedial actions?		X
Effectiveness	Does the RCP identify reasonably effective plans and remedies to resolve the identified deficiencies?		X
	Is the timeline identified in the RCP sufficient, given the importance of the deficiency and its potential impact on wildfire risk?		X
Feasibility	Does the utility reasonably have the resources required to execute the plans and remedies in its RCP in accordance with the identified scope and timeline?	X	

Accordingly, the WSD finds PG&E’s RCP to be Insufficient.

WSD requests clarification or additional information to remediate its finding of Insufficient RCP elements. In its 2021 WMP update, PG&E is required to address all Actions identified in Section 5.1.

5.1. Discussion of the WSD’s Condition Assessment

Pursuant to WSD-002, these findings and the subsequent discussion comprise the WSD’s review of PG&E’s RCP, which includes input from the public and other stakeholders. The following is an assessment of PG&E’s response to each Class A condition, as presented in its RCP. Provided in the discussion are the detailed elements pertaining to the requirements for each PG&E Class A condition, with a corresponding required “action” to sufficiently address the scope, purpose, and intent of the specific element in each applicable condition. Each action identified in the subsequent sections are individually numbered and must be completely addressed in PG&E’s 2021 WMP update to meet the WSD’s expectation of a sufficient RCP.

5.1.1. Condition (Guidance-3, Class A):

Lack of Risk Modeling to Inform Decision-Making

WSD finding for PG&E’s Condition Guidance-3 response: Insufficient

Below is an analysis of the itemized requirements within Condition Guidance-3, corresponding discussions of specific insufficiencies in PG&E’s response to Guidance-3, and the necessary actions required to make PG&E’s RCP Sufficient:

Each electrical corporation shall submit in its remedial correction plan (RCP) the following:

i. How it intends to apply risk modeling and risk assessment techniques to each initiative in its WMP, with an emphasis on much more targeted use of asset management, vegetation management, grid hardening and PSPS based on wildfire risk modeling outputs;

PG&E provides information on risk modeling at a high level but does not provide details on specific initiatives outlined in its WMP. In particular, PG&E needs to provide additional details on how vegetation inputs are factored into its probability model in order to determine the effectiveness of the model. Additionally, PG&E needs to provide proof that financial consequences are factored into risk through the Multi-Attribute Value Function (MAVF). Program level risk modeling overlooks specific initiative and mitigation options and does not provide sufficient insight for targeted risk reduction. PG&E's modeling process appears to be output-driven, as geographic areas are assigned specific singular optimal solutions based on risk reduction calculations, instead of providing an array of solutions that work together to reduce risk. While Risk Spend Efficiency (RSE) appears to be factored into the modeling, it is concerning that the model could potentially be manipulated to be driven towards particular solutions based on changing the inputs.

Action PGE-1: In its 2021 WMP update, PG&E shall elaborate on its risk modeling plans to explain how it plans to use risk modeling to evaluate benefits for each individual initiative in its WMP. PG&E shall also detail current capabilities, future capabilities, and how it intends to use future capabilities, and the frequency of model updates.

Action PGE-2: In its 2021 WMP update, regarding its vegetation probability model, PG&E shall: 1) include fall-ins and other vegetation-related instances within its probabilistic outputs, 2) describe how non-vegetation related outputs are excluded, and 3) describe the frequency and manner in which updates are performed.

Action PGE-3: In its 2021 WMP update, PG&E shall describe how financial consequence and spend is weighted within the MAVF.

ii. Identify all wildfire risk analyses it currently performs (including probability and consequence modeling) to determine which mitigation is targeted to circuits and assets where initiatives will provide the greatest benefit to wildfire risk reduction;

PG&E's risk models seem designed to only determine which areas to target for mitigation, opposed to evaluating optimal mitigation strategies and the effectiveness of initiatives in comparison to one another. Additionally, PG&E needed to supplement its explanation on its OPW model to show proper verification is taking place to ensure that the model is accurate and useful. While not provided within the RCP filing, PG&E provided such additional information on its wind analysis to WSD as part of PG&E's RAMP Report.⁶

⁶ A.20-06-012, Response to MGRA_001 on Dec. 4, 2020

Action PGE-4: In its 2021 WMP update, PG&E shall submit a table describing its risk assessment techniques used for each initiative in the format used by Southern California Edison (SCE).⁷

Action PGE-5: In its 2021 WMP update, PG&E shall 1) refile the updated OPW and wind analysis data, 2) provide detail on how it has verified the accuracy of its OPW model and 3) how it accounts for less granularity in historic weather data due to fewer deployed weather stations.

iii. A timeline to leverage its risk modeling outputs to prioritize and target initiatives and set PSPS thresholds, including at least asset management, grid operations, vegetation management, and system hardening initiatives;

PG&E provides a timeline to implement risk modeling techniques into various programs; however, because the risk model explanation is not broken down at the initiative level, it is difficult to determine the efficacy of its program level timelines.

Action PGE-6: In its 2021 WMP update, PG&E shall provide a timeline that shows when it expects each individual initiative in its WMP to be incorporated into its risk modeling.

iv. How it intends to incorporate future improvements in risk modeling into initiative prioritization and targeting processes; and

PG&E sufficiently describes its goals for risk model integration and improvement.

v. How it intends to adapt its approach based on learnings going forward.

PG&E states that it will use “benchmarking and peer validation”⁸ to improve its risk modeling but does not provide specific benchmarks nor an identification of its “peers.” It is also difficult to determine the effectiveness of an external peer review scheduled during the Utility Analytics Institute Conference, as PG&E plans,⁹ since the number of experts participating and qualifications of such experts is not provided. Without such specificity, it is difficult for the WSD to determine whether PG&E is committed to incorporating learnings going forward.

Action PGE-7: In its 2021 WMP update, PG&E shall specify intended benchmarks for risk modeling and provide clearer detail on who has peer validated the models and how the review has been incorporated, including, but not limited to, a) qualifications and job titles of the “peers” who provided feedback in the Utility Analytics Institute Conference, b) the input and validation provided by such peers, and c) a description of how PG&E plans to or has incorporated such external peer review into its modeling efforts.

⁷ See SCE RCP at 9.

⁸ See PG&E RCP at 12.

⁹ See PG&E RCP at 4.

**5.1.2. Condition (PGE-1, Class A):
PG&E Groups Initiatives into Programs and Does Not Provide Granular Initiative
Detail**

WSD finding for PG&E's Condition PGE-1 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-1, corresponding discussions of specific insufficiencies for PG&E's response to PGE-1, and the necessary actions required to make PG&E's RCP Sufficient:

In addition to the requirements of the relevant Condition in the Guidance Resolution, PG&E shall develop and furnish an RCP that includes:

i. a detailed break-down of its programs outlined in section 5.3 into individual initiatives, reporting planned spend on each individual initiative, describing the effectiveness of each initiative at reducing ignition risk, outlining outcomes (including providing results of detailed, patrol, and other inspections individually in Table 1, as required in the WMP Guidelines), and providing the information required for each initiative as required in Section 5.3 of the Guidelines....

PG&E reproduced Tables 21-30 in accordance with Section 5.3 of the WMP Guidelines and submitted them as Attachment 1 to its RCP. The programs have been broken down into individual initiatives, but the tables were incomplete. PG&E admits the shortcoming and describes the columns that are still in the process of being generated and proposed a timeline to complete the tables by the Quarterly Report (QR) submitted on September 9, 2020. PG&E submitted a completed table as part of the QR submission, which still lacked quantitative values for risk reduction. The WSD will review the QR submission separately.

Action PGE-8: In its 2021 WMP update, PG&E shall: 1) update Tables 21-30 to reflect a quantitative value to accurately reflect risk reduction effectiveness instead of the current qualitative descriptions, 2) provide a column describing the program under which each initiative falls, and 3) provide the difference between the actual and forecasted amounts in comparison to the 2020 WMP Section 5.3 tables.

ii. if PG&E does not have the relevant data in its possession at the initiative level, it shall
1) explain the difference between what it reports and what the WMP Guidelines require,
2) explain why it cannot meet the WMP Guidelines, and 3) develop a plan including a detailed timeline to obtain and share the required information at the initiative level rather than the program level.

PG&E was unable to complete the tables for the RCP filing, but supplied further response as part of the QR filed on September 9, 2020.

Within the QR, PG&E reiterates that its past data cannot accurately be broken down into type of patrol or inspection since that type of information was not retained when creating a Corrective

Notification.¹⁰ Moving forward, PG&E is utilizing an Inspection App that will allow tracking of the type of inspection or patrol in which a Corrective Notification was generated. PG&E also includes year in which each type of program will implement the app, although it is not clear when exactly such will occur, or why there is a delay for some programs until 2022. The WSD will analyze the QR in a separate document.

Action PGE-9: In its 2021 WMP update, PG&E shall 1) provide the month for implementation of the Inspect App broken down between all patrol and inspection programs, as well as between distribution and transmission programs if such differ, 2) provide an explanation for any delays in implementing the Inspect App for certain programs, and 3) explain what qualifies the process to be “stabilized”¹¹ for utilization on inspection type identification.

5.1.3. Condition (PGE-3, Class A): High Incidence of Conductor Failure

WSD finding for PG&E's Condition PGE-3 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-3, corresponding discussions of specific insufficiencies for PG&E's response to PGE-3, and the necessary actions required to make PG&E's RCP Sufficient:

In its RCP, PG&E shall present a plan for the following:

i. presenting the results of a study or analysis showing the root causes of conductor failures on its grid;

PG&E's investigation into conductor failure seems to be a thorough and effective assessment of address conductor failure. However, PG&E fails to provide its full analysis on the internal investigation described within its response. While PG&E offers to provide the data collected to reach the conclusions that aluminum-conductor steel-reinforced (ACSR) conductors within corrosion zones and small copper conductors have elevated failure rates, no quantitative numbers are provided to substantiate that claim or put into perspective the extent to which these overhead conductors are more likely to fail.

Action PGE-10: In its 2021 WMP update, PG&E shall 1) provide its analysis and any internal report(s) completed in regards to PG&E's internal investigation(s)¹² on primary wire down events from conductor or splice failure, 2) provide a summary of any

¹⁰ PG&E's QR at p. 95

¹¹ PG&E's QR at p. 96

¹² As stated in Footnote 1 of PGE RCP on p. 21, PG&E can provide the substantial amount of data collected to run analysis, but WSD is more interested in the numerical conclusions drawn from the analysis (such as calculated failure rates for all conductor materials analyzed, failure rate by material per overhead circuit mile, failure rate of ACSR inside corrosion zones vs. outside, etc.) and any internal reports completed based on the analysis. The full data set is not necessary at this time.

conclusions or findings drawn relating to splice failure, and 3) report on its evaluation of historical meteorology data versus distribution wires-down outage data.

ii. listing the specific locations and assets that are most likely to experience conductor failure based on: (1) the root cause analysis, (2) attributes of PG&E's conductors (i.e., age, type, condition, etc.) and (3) other relevant factors (e.g. peak wind speeds); and

PG&E's analysis details specific types of infrastructure that is likely to fail earlier than anticipated. However, the information provided is insufficient to determine the extent and thoroughness of its review. The provided technical report focuses more on the quality of data being collected throughout the country than the reasoning behind PG&E's higher conductor failure rates. The information in the response provided by PG&E is incomplete and needs to include more details on Major Event Days (MEDs), full data on weather metrics, and further analysis being conducted on wind speed.

Action PGE-11: In its 2021 WMP update, PG&E shall elaborate on its MEDs by: 1) describing what PG&E uses as its Major Event Day identification threshold value (T_{MED})¹³, 2) providing the percentage of data not included in analysis due to MED data exclusion, both in terms of number of days and number of wire-down instances, and 3) explaining how PG&E intends to improve and expand MED reporting and why current circumstances allow for expanded MED reporting when the past did not.

Action PGE-12: In its 2021 WMP update, PG&E shall provide a graph similar to Figure 10¹⁴ which includes all weather metrics and sub-categories described in Section (3)¹⁵ (e.g. Gray Sky, Storm Day, Northeast Wind).

Action PGE-13: In its 2021 WMP update, PG&E shall: 1) describe when it intends to perform an analysis on the correlation between wind speed and wire down events, 2) explain why it has not performed such an analysis yet, and 3) upon completion of this analysis, provide the percentage of outages and wire down events caused by conductor failure due to wind.

iii. reporting the specific work plan that PG&E plans to undergo (including circuits being addressed, timeline, cost, etc.) to reduce incidents of conductor failure, including the expected impact of this work plan on PSPS and wildfire risk reduction.

PG&E concluded that conductors in the corrosion zone fail more often; however, PG&E is prioritizing work against its own conclusions and states that it will prioritize aluminum reconductoring work in High Fire-Threat Districts (HFTD) instead of including prioritization of corrosion zones, which was determined to be an area of greater concern. PG&E does not provide

¹³ As defined by IEEE Standard 1366, <http://site.ieee.org/boston-pes/files/2019/03/IEEE-1366-Reliability-Indices-2-2019.pdf>

¹⁴ PG&E RCP at 25.

¹⁵ PG&E RCP at 24.

adequate detail into the reconductoring program outside of HFTDs. Additionally, the Microsoft Excel sheets¹⁶ attached to its RCP fails to provide sufficient information on PG&E's work plan.

Action PGE-14: In its 2021 WMP update, PG&E shall 1) provide an explanation as to how it is prioritizing replacing aluminum conductors in areas that overlap both corrosion zones and the HFTD, 2) if PG&E is not prioritizing aluminum conductors located in overlapping corrosion zones and HFTDs, explain why, and 3) explain whether any higher priority is given to aluminum conductor within corrosion zones outside of HFTDs.

Action PGE-15: In its 2021 WMP update, PG&E shall resubmit its RCP Attachments 3 and 4 in Excel format with the following additional columns 1) region number 1-4 (as outlined in the National Electric Energy Testing, Research and Applications Center (NEETRAC) report), 2) corrosion area ranking (e.g., moderate, severe), 3) conductor material, and 4) number of splices along replaced portion. PG&E shall also provide similar tables for 2021 and 2022.

Action PGE-16: In its 2021 WMP update, PG&E shall: 1) provide the timeline for which it expects "hardened" circuits to be "reflected" in future Public Safety Power Shutoff (PSPS) events¹⁷, 2) define what "hardened" circuits consists of, 3) explain how "hardened" circuits will be "reflected" in future PSPS events (i.e., scope, location, thresholds for initiating), 4) explain how long it takes to perform the analysis to determine the impact of "hardened" circuits on PSPS, and 5) explain the factors that PG&E is monitoring and analyzing to determine the impact of "hardened" circuits on PSPS.

5.1.4. Condition (PGE-8, Class A): Annual Risk Ranking is Quickly Out of Date

WSD finding for PG&E's Condition PGE-8 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-8, corresponding discussions of specific insufficiencies for PG&E's response to PGE-8, and the necessary actions required to make PG&E's RCP Sufficient:

PG&E shall file an RCP that:

i. lists and describes all plans related to timely incorporation of maintenance status across its grid;

PG&E ties its work on distribution tag prioritization to its development of risk modeling and PG&E relies on its response to Guidance-3 to support its response to PGE-8. However, the response to Guidance-3 is insufficient thus making PG&E's response to PGE-8 insufficient as

¹⁶ PG&E RCP PGE-3 Attachments 3 and 4

¹⁷ Based off PG&E RCP at 26, "But we expect that in subsequent years, circuits that have been hardened with new conductor and poles will be reflected in future PSPS events."

well. PG&E's response to PGE-8 is generally vague and fails to provide details on its actual plans, instead stating possible future capabilities for more regular updates.

PG&E states that during a PSPS event, transmission maintenance status and inspection data can be refreshed daily; however, it is unclear whether PG&E employs this capability outside of PSPS, during which time it appears to be refreshed weekly. Similarly, PG&E states its distribution tag risk model "*can* be updated regularly,"¹⁸ (emphasis added) but it is unclear whether PG&E plans to update these models more frequently than annually.

PG&E also notes discrepancies between its transmission and distribution asset risk models but does not provide any explanation of the discrepancies.

Action PGE-17: In its 2021 WMP update, PG&E shall discuss whether it intends to update its asset risk model daily outside of a PSPS event, giving reasons. . PG&E shall also discuss when it intends to implement more frequent than annual updates for distribution asset risk models and the frequency of such updates.

Action PGE-18: In its 2021 WMP update, PG&E shall: 1) discuss why it does not plan on using a similar methodology for its distribution asset risk model as compared to its transmission risk model, and 2) explain why it does not plan on updating the distribution model weekly, similar to the frequency used for updating its transmission model.

ii. includes a timeline and sequence of activities that will be required to increase the frequency of these updates

PG&E again relies on its response to Guidance-3 to support its response. PG&E notes that the developing risk models have different update cycles and refers back to its response to Guidance-3; however, update cycles are not mentioned in the discussion of risk models in the response to Guidance-3. PG&E writes that in 2022, it will "determine risk model update frequency that will add value for the identified use cases," but it is unclear what the initial update frequency will be. The current response leaves Condition PGE-8 unresolved and defers action to a future date with no specific timeframe commitment. In the interim, PG&E should implement increased frequency (i.e., sooner than annually) of distribution asset condition updates into its risk modeling.

Action PGE-19: In its 2021 WMP update, PG&E shall provide an interim solution for more frequent than annual updates of distribution asset conditions in its risk model.

iii. explains why it will take until 2023 to increase the frequency of its updates from condition assessments to a quarterly basis.

PG&E expects to have more frequent risk model updates by the end of 2022 or beginning of 2023. PG&E will need to provide a more detailed timeline for increasing the update cycle for each model and better define the frequency of risk model updates for the timeframe before the

¹⁸ PG&E RCP at 30.

expected 2022/2023 update standardization date. Ultimately, the discussion in this section is vague and provides no concrete reasoning for the delay.

Action PGE-20: In its 2021 WMP update, PG&E shall 1) provide sufficient reasoning for the current lack of distribution asset health updates within its risk modeling, 2) explain why more frequent distribution asset health updates are not possible at this time, 3) provide a concrete timeline outlining each step in PG&E's process to updating each risk model, and 4) define the frequency of risk model updates in the interim before the 2022/2023 standardization with an explanation as to if and why PG&E finds that frequency sufficient.

5.1.5. Condition (PGE-15, Class A):

It is Unclear How PG&E Classifies Findings at the Appropriate Level

WSD finding for PG&E's Condition PGE-15 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-15, corresponding discussions of specific insufficiencies for PG&E's response to PGE-15, and the necessary actions required to make PG&E's RCP Sufficient:

PG&E shall develop and furnish an RCP that includes:

i. a description of the value and effectiveness of these enhanced inspections in identifying GO 95 violations and safety hazards that present greater than "low" risk of potential impact, including quantitative metrics, and a detailed explanation of how it classifies findings by Level and how it plans to ensure that front-line inspection staff are properly classifying findings;

PG&E explains that low level findings spiked in 2019 due to a change in operating procedure, switching from a 1-year to a 5-year anticipated failure horizon. PG&E also uses an internal "A, B, E, F" prioritization system different than General Order 95's "1, 2, 3" prioritization system¹⁹, even though it is currently transitioning to the standardized 1/2/3 system. Switching to the standardized system should reduce confusion and allow the WSD and PG&E to more easily compare inspection program findings to those of other utilities, however, the underlying problem is that PG&E is primarily finding lower risk hazards with higher cost inspections, not that there is a misunderstanding in the risk prioritization levels.

In Table 5 of PG&E's RCP filing, Forecast Inspection Reductions Attributed to Enhanced Inspection Corrective Findings, it is unclear how the Risk Reduction and RSE values are calculated, making it difficult to determine the actual effectiveness.

¹⁹ PG&E's prioritizations explained in Table 5-3 on p. 5-41 of PG&E's 2020 WMP. GO 95 Rule 18 Section (2) outlines the prioritizations as Levels 1, 2, and 3, where Level 1 requires immediate action, Level 2 requires action within six months in Tier 3 HFTD, 12 months in Tier 2 HFTD, 12 months for worker safety hazards, and 59 months otherwise; and Level 3 requires action taken as appropriate.

Action PGE-21: In its 2021 WMP update, PG&E shall provide the percentage of priority “E” and “F” findings that were reprioritized to “A” or “B” from the 2019 to the 2020 inspection cycles within HFTDs.

Action PGE-22: In its 2021 WMP update, PG&E shall explain why it uses 2013-2018 ignition frequency for transmission and 2014-2019 for distribution when determining prioritization.

Action PGE-23: In its 2021 WMP update, PG&E shall: 1) explain how it determined the Risk Reduction and RSE values provided in Table 5 and provide an explanation of all inputs, relative weight of inputs, and list all algorithms used, 2) reproduce Table 5 with each column normalized per overhead circuit mile, and 3) submit an additional table for numbers in HFTD only and per circuit mile within HFTD.

Action PGE-24: In its 2021 WMP update, PG&E shall provide all preselected priority options available within its inspections mobile application or any references available to properly classify field conditions.

ii. and a description of whether it is more effective in terms of findings per dollar spent to incorporate the enhanced inspection processes and tools into its routine inspection and maintenance program given the program's results.

PG&E states that it has been motivated to a universal application of the Enhanced Inspection approach due to the high cost of not finding potential failures. PG&E has invested in completing more thorough inspections and a greater number of inspections than it has in the past. However, this raises the concern that PG&E seems to be completing “enhanced” inspections for its entire service area, which may be costly and unnecessary.

Action PGE-25: In its 2021 WMP update, PG&E shall break down the additional costs of enhanced inspections compared to routine inspections.

Action PGE-26: In its 2021 WMP update, PG&E shall explain whether and where enhanced inspections have replaced or been merged with routine inspections. PG&E shall also describe the areas outside of the HFTD that have had routine inspections replaced by enhanced inspections.

Action PGE-27: In its 2021 WMP update, PG&E shall update Tables 6 and 7 to include Tag Find Rate per circuit mile inspected instead of per pole/structure inspected.

5.1.6. Condition (PGE-25, Class A):

Lack of Details in PG&E's WMP on How to Address Personnel Shortages

WSD finding for PG&E's Condition PGE-25 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-25, corresponding discussions of specific insufficiencies for PG&E's response to PGE-25, and the necessary actions required to make PG&E's RCP Sufficient:

PG&E shall develop and furnish an RCP that includes:

i. a description of its recruitment and training for vegetation management talent and how it plans to address this constraining factor in scaling its vegetation management programs;

PG&E explains its rapidly increasing number of contractors and employees related to Vegetation Management (VM) and inspection work. PG&E also describes training programs and partnerships with local universities and professional organizations. However, the certification process for pre-inspectors is unclear, as is PG&E's process for contractor selection and ensuring proper contractor and sub-contractor training and certification takes place. PG&E does not provide any discussion on how it is working with other utilities to limit VM resource constraints as the Resolution required. It appears PG&E obtained 24% of the VM workforce from other utilities. PG&E also failed to discuss any changes in scope due to resource limitations, and how prioritization occurred to determine scope changes.

Action PGE-28: In its 2021 WMP update, PG&E shall describe its process for identifying the most effective contract employees.

Action PGE-29: In its 2021 WMP update, PG&E shall provide further explanation on how it is working with other utilities to ensure that it is not limiting other utilities' resources.

Action PGE-30: In its 2021 WMP update, PG&E shall describe the increase in external VM workforce from 2018 to 2020.

Action PGE-31: In its 2021 WMP update, PG&E shall: 1) describe how long it takes to complete tree crew training, 2) describe the type of certification earned upon the completion of pre-inspector training, 3) elaborate on how PG&E supports obtaining an International Society of Arboriculture (ISA) certification, 4) provide the number and percentage of contracted versus internal pre-inspectors and describe whether contracted pre-inspectors undergo the same training as internal pre-inspectors, 5) describe how PG&E ensures proper certification of contracted pre-inspectors, and 6) explain how it ensures proper training is completed by subcontractors.

Action PGE-32: In its 2021 WMP update, PG&E shall describe how it prioritizes work based on labor constraints. Specifically, PG&E shall discuss whether it has reduced the scope of VM work due to labor constraints and, if so, explain the analysis to support that decision-making, including risk assessment and prioritization.

ii. a description of its strategy for direct recruiting and indirect recruiting via contractors and subcontractors; and

PG&E sufficiently outlines its recruiting methods for contractors and quality controls for the hiring of subcontractors. PG&E indicates that it is transitioning to a "Defined Scope" model in which a single VM contractor will be responsible for patrols and work on a single or clustering

of circuits. The "Defined Scope" model should allow PG&E to more easily manage its contractors and allow for more localized, circuit level knowledge to be developed.

iii. metrics to track the effectiveness of its recruiting programs, including metrics to track the percentage of recruits that are newly trained, percentage from out of state, and the percentage that were working for another California utility immediately prior to being engaged by PG&E. PG&E may file confidential information under seal so long as PG&E justifies its claim that the material requires such protection.

PG&E sufficiently provides the metrics required in Condition PGE-25 subsection iii.

**5.1.7. Condition (PGE-26, Class A):
Effectiveness of Increased Vegetation Clearances**

WSD finding for PG&E's Condition PGE-26 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-26, corresponding discussions of specific insufficiencies for PG&E's response to PGE-26, and the necessary actions required to make PG&E's RCP Sufficient:

PG&E shall submit an RCP with a plan for the following:

i. Comparing areas with and without enhanced post-trim clearances to measure the extent to which post-trim clearance distances affect probability of vegetation caused ignitions and outages

PG&E conducted a statistical analysis using a 2015-2019 dataset comparing Enhanced Vegetation Management (EVM) to non-EVM and concluded that EVM is effective. There is no discussion about continued or regular analysis of EVM as more data is collected, and without continued data collection and analysis, the study may fail to effectively evaluate long-term effectiveness of EVM and account for changes both in EVM scope and external environmental effects.

PG&E also fails to discuss extended clearance distances as it pertains directly to reducing outages and focuses only on EVM as a whole.

Action PGE-33: In its 2021 WMP update, PG&E shall 1) provide a detailed plan for how it intends to analyze and use extended vegetation clearance data specifically, including specific statistical methods it intends to use and how it will control for environmental variables (e.g., wind, soil, elevation, species), and 2) provide a plan on how PG&E will continue analyzing and collecting data relating to measuring EVM effectiveness.

Action PGE-34: In its 2021 WMP update, PG&E shall explain how it calculated the effectiveness for each sub-driver shown in Table 8 and include all inputs and algorithm(s) used.

ii. Collaborating with SCE and SDG&E in accordance with SCE-12 and SDG&E-13 to develop a consensus methodology for how to measure post-trim vegetation clearance distance impacts on the probability of vegetation caused ignitions and outages

PG&E has already conducted initial analysis of a 2015-2019 data set which indicated that EVM is effective at reducing vegetation-caused outage and ignition by just over 20 percent. However, as part of the collaboration, PG&E claims that the utilities agreed upon additional analysis only using a before-and-after approach – comparing ignition and outage data at the circuit span level from 2014-2018 (before EVM) to 2019-2021 (after EVM). There is no commitment to continued or regular analysis as additional data is collected beyond 2021. Southern California Edison (SCE) and San Diego Gas & Electric (SDG&E) do not limit the methodology to a simple before-and-after approach, suggesting that the comparison between EVM and non-EVM trees will continue throughout ongoing data collection, regardless of year or when EVM measures were first implemented. In addition to varied methodology, PG&E, SCE, and SDG&E present differing definitions, timelines, data standards, and assumptions.

Action PGE-35: In its 2021 WMP update, PG&E along with SCE and SDG&E shall submit a joint, unified plan that reflects collaborative efforts and contains uniform definitions, methodology, timeline, data standards, and assumptions.

**5.1.8. Condition (PGE-27, Class A):
Public Safety Partner Coordination**

WSD finding for PG&E's Condition PGE-27 response: Insufficient

Below is an analysis of the itemized requirements within Condition items for PGE-27, corresponding discussions of specific insufficiencies for PG&E's response to PGE-27, and the necessary actions required to make PG&E's RCP Sufficient:

PG&E shall submit an RCP which does the following:

i. provide an updated “coordination with public safety partners” plan that details precisely how PG&E works with cities, counties, tribal governments, incident management teams, and other first responders;

PG&E presents a sufficient plan at a high level and provides attachments that indicate the programs are effective, wide-spread, and quality controlled. While sufficient in material, PG&E should still supply details on how it determines proper selection of committee representatives, as well as how PG&E intends to ensure effective relations with counties who were unable to meet.

Action PGE-36: In its 2021 WMP update, PG&E shall describe how it vets and chooses PSPS Advisory Committee representatives.

Action PGE-37: In its 2021 WMP update, PG&E shall explain how it intends to remedy the lack of communication with the three counties²⁰ that declined to meet for the Wildfire Safety Working Sessions.

ii. include the experience level of its employees that conduct the interaction in emergency management or other public safety functions;

PG&E has recruited industry professionals who each have sufficient experience in emergency management.

iii. provide a list of every PG&E contact and their counterparts and the cities, counties, tribe governments, and first responder entities and description of their interaction;

PG&E provides a list of their own community representatives, but not a list of those community leaders or organizations it reaches out to before, during, and after PSPS. Without identification of specific personnel with whom PG&E coordinates, the plan is ineffective.

Action PGE-38: In its 2021 WMP update, PG&E shall provide a list of every PG&E contact and their counterparts and the cities, counties, tribal governments, and first responder entities and description of their interaction.

iv. Provide any existing logs or other documents PG&E keeps of its interactions with cities, counties, tribal governments and first responder entities dating back to the beginning of 2020 and on a continuing basis, without redactions. To the extent PG&E does not track this information, PG&E shall provide the following dating back to the beginning of 2020 and on a continuing basis: date of contact, name of department or organization in which individual(s) work, purpose of contact and content of contact. PG&E may file confidential information under seal so long as PG&E justifies its claim that the material requires such protection;

PG&E provides the names and contacts of many leaders, governments, and individuals which it has communicated with and provides many supporting attachments. However, it is notable that many of the planned meetings were not completed.

Action PGE-39: In its 2021 WMP update, PG&E shall explain how it intends to remedy any planned meetings that were not completed and ensure adequate communication is maintained when meetings are not held.

v. detail its process for logging all complaints by PG&E employees or their public sector counterparts about poor or problematic interactions between PG&E and their counterparts;

PG&E discusses several avenues for employees and the public sector to submit comments.

²⁰ PGE RCP at p. 56

vi. provide a description of all complaints logged to date that meet the criteria in (iv); and

PG&E has logged the complaints filed by PG&E employees and public sector agencies.

vii. provide a description of how PG&E surveys public safety partners to ensure its interactions are constructive and useful.

While the listening session survey PG&E presents is not a true survey, it is thorough and seems effective at gathering summary feedback. PG&E should continue this survey as more listening sessions are hosted and incorporate quantifiable metrics into the survey.

6. Conclusion

Catastrophic wildfires remain a serious threat to the health and safety of Californians. Electric utilities must continue to make progress toward reducing utility-related wildfire risk. With the finding of “Insufficient” for PG&E’s RCP, the WSD intends to send a clear message to PG&E that its WMP, RCP, and QRs must be of the highest quality and include sufficient detail and plans to facilitate transparency, allow for efficient review, and effectively implement potentially lifesaving wildfire risk mitigation initiatives. The WSD will continue to ensure PG&E is held accountable for successfully executing the wildfire risk reduction initiatives presented in its 2020 WMP, RCP, and other required updates through the Division’s continued audit and compliance work. As indicated in Section 5.1 above, PG&E shall address the insufficient elements of its RCP submission by taking the actions identified by the WSD and presenting the required information and detail in its 2021 WMP update.

Finally, along with the issuance of this action statement, the WSD concurrently issues a Notice of Noncompliance document summarizing the findings and noncompliance issues detailed herein. Nothing in this action statement or the concurrent Notice of Noncompliance precludes the Commission from exercising its enforcement authority related to any findings or matters addressed in this document.

Sincerely,



Caroline Thomas Jacobs
Director, Wildfire Safety Division
California Public Utilities Commission