

## PUBLIC UTILITIES COMMISSION

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January 8, 2021

## Wildfire Safety Division Evaluation of Pacific Gas and Electric Company's First Quarterly Report

The Wildfire Safety Division (WSD) finds that Pacific Gas and Electric's (PG&E) First Quarterly Report (QR) is Insufficient. WSD reviewed PG&E's QR 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.<sup>1</sup>

### 1. Introduction

These findings act on the First Quarterly Report (QR) submitted by PG&E on September 9, 2020. QR submittals were required as a stipulation of the Wildfire Safety Division's (WSD) "Conditional Approval" of PG&E's 2020 Wildfire Mitigation Plan (WMP). QRs were required to address all Class B 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 QR 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 a QR is deemed "Sufficient" no further action related to the QR is required; however, in the event that a QR is found "Insufficient," the WSD may provide further direction on actions PG&E must take to deliver a sufficient QR. The WSD may also recommend potential enforcement action.

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

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

| Deficiency/<br>Condition No. | Class | Deficiency Title  | Sufficiency<br>Finding |
|------------------------------|-------|---|------------------------|
| Guidance-1                   | B     | Lack of risk spend efficiency (RSE) information                   | Insufficient           |
| Guidance-2                   | B     | Lack of alternatives analysis for chosen initiatives              | Insufficient           |
| Guidance-4                   | B     | Lack of discussion on PSPS impacts                                | Insufficient           |
| Guidance-5                   | B     | Aggregation of initiatives into programs                          | Sufficient             |
| Guidance-6                   | B     | Failure to disaggregate WMP initiatives from standard operations  | Sufficient             |
| Guidance-7                   | B     | Lack of detail on effectiveness of "enhanced" inspection programs | Insufficient           |
| Guidance-9                   | B     | Insufficient discussion of pilot programs                         | Insufficient           |

<sup>1</sup> [https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/About\\_Us/Organization/Divisions/WSD/WSD%20Guidance%20Statement%20on%20RCP%20QP%2020200717.pdf](https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/About_Us/Organization/Divisions/WSD/WSD%20Guidance%20Statement%20on%20RCP%20QP%2020200717.pdf)

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| <b>Deficiency/<br/>Condition No.</b> | <b>Class</b> | <b>Deficiency Title</b>  | <b>Sufficiency<br/>Finding</b> |
|--------------------------------------|--------------|--|--------------------------------|
| Guidance-10                          | B            | Data issues - general  | Deferred <sup>2</sup>          |
| Guidance-11                          | B            | Lack of detail on plans to address personnel shortages   | Insufficient                   |
| Guidance-12                          | B            | Lack of detail on long-term planning   | Insufficient                   |
| PGE-2                                | B            | Equipment Failure  | Insufficient                   |
| PGE-5                                | B            | PG&E provides little discussion of how it uses the results of relative risk scoring method.                  | Insufficient                   |
| PGE-6                                | B            | Discrepancy between ignition reduction projections   | Sufficient                     |
| PGE-7                                | B            | It is not clear if PG&E's line risk scoring sufficiently incorporates all risks that cause ignition and PSPS | Insufficient                   |
| PGE-9                                | B            | How PG&E weighs egress as a risk factor  | Insufficient                   |
| PGE-10                               | B            | PG&E lacks sufficient weather station coverage   | Insufficient                   |
| PGE-11                               | B            | Including additional relevant reports  | Sufficient                     |
| PGE-12                               | B            | PG&E's fuse replacement program planned to take 7 years.   | Insufficient                   |
| PGE-13                               | B            | PG&E does not explain how the factors limiting microgrid deployment will impact its microgrid plans          | Insufficient                   |
| PGE-14                               | B            | Level 3 findings   | Insufficient                   |
| PGE-17                               | B            | Effectiveness of inspections using infrared technology   | Insufficient                   |
| PGE-18                               | B            | PG&E does not describe in detail how its hazard tree analysis focuses on at-risk trees                       | Insufficient                   |
| PGE-19                               | B            | Low pass rate on EVM QA  | Insufficient                   |
| PGE-20                               | B            | PG&E is redistributing resources to focus more on transmission clearances                                    | Insufficient                   |
| PGE-21                               | B            | PG&E fails to describe why additional programs for transmission clearances are necessary                     | Insufficient                   |
| PGE-22                               | B            | Some of PG&E's vegetation management inspectors may lack proper certification                                | Insufficient                   |
| PGE-23                               | B            | Vegetation waste and fuel management processes unclear   | Insufficient                   |
| PGE-24                               | B            | Improving prioritization   | Insufficient                   |
| PGE-28                               | B            | Lack of justification and detail for PG&E's self-assessed stakeholder engagement capabilities                | Sufficient                     |
| PGE-29                               | B            | Cooperation and sharing of best practices  | Sufficient                     |

Due to the WSD's determination that PG&E's QR is Insufficient, PG&E is required to address all Actions identified in Section 5.1 of this document in its 2021 WMP Update or, if not possible

<sup>2</sup> The WSD is separately assessing the quality of geographic spatial information (GIS) data submissions required by Guidance-10, which will be addressed in GIS data quality control (QC) reports for each respondent electrical corporation.

to meet this deadline, in a supplemental filing to its 2021 WMP Update submitted no later than February 26, 2021.

## 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 corporation's 2020 WMPs via the 2020 WMP Resolutions.<sup>3</sup> 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 Guidelines.

Consequently, upon review of PG&E's 2020 WMP, the WSD issued a "Conditional Approval." The Conditional Approval is predicated on PG&E satisfying 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 B conditions are intended to address aspects of moderate concern within the electrical corporations' 2020 WMPs, and for which the WSD found that utilities did not provide sufficient detail or justification. Class B conditions require each electrical corporation to file a QR, which is broadly defined in Resolution WSD-002 as follows:

*Class B deficiencies are of moderate concern and require reporting on a quarterly basis by the electrical corporation to provide missing data or update its progress in a quarterly report. Such information shall be submitted either one time in the first quarterly report or on an ongoing basis as specified by each condition.*

Pursuant to Ordering Paragraph (OP) 8 of Resolution WSD-002, PG&E was required to submit a QR within 90 days of the California Public Utilities Commission's (CPUC or Commission) ratification of PG&E's 2020 WMP Resolution, WSD-003. The Commission ratified the 2020 WMP Resolutions<sup>4</sup> on Thursday, June 11, 2020; therefore, PG&E was required to file a QR by September 9, 2020. PG&E timely submitted its QR on Friday, September 9, 2020. Public comment on electrical corporations' QRs were submitted on September 30, 2020 by the Commission's Public Advocates Office, Green Power Institute (GPI), Mussey Grade Road

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

<sup>4</sup> These included Resolutions WSD-002, WSD-003, WSD-004, WSD-005, WSD-007, WSD-008, WSD-009, and WSD-010.

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Alliance (MGRA), and Small Business Utility Advocates (SBUA). PG&E submitted reply comments on October 14, 2020.

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

| <b>Condition Class</b> | <b>WSD-002</b> | <b>WSD-003</b> | <b>Total</b> |
|------------------------|----------------|----------------|--------------|
| Class A                | 1              | 7              | <b>8</b>     |
| Class B <sup>5</sup>   | 10 (1)         | 20(3)          | <b>30(4)</b> |
| Class C                | 1              | 2              | <b>3</b>     |
| <b>Total</b>           | <b>12</b>      | <b>29</b>      | <b>41</b>    |

### 3. Summary of WSD's Assessment of QRs

A QR's intent is for electrical corporations to provide updated information or additional detail 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 QR 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 four factors used in evaluating WMP approval were not applicable,<sup>6</sup> the WSD evaluated the sufficiency for each Class B deficiency and QR filing in accordance with the following factors:

- Completeness – The QR is complete and comprehensively responds to the condition;
- Effectiveness – The plans and remedies outlined in the QR will reasonably resolve the deficiency;

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

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

If the WSD finds that a QR is Insufficient, the WSD will require the electrical corporation to address the insufficiencies in its 2021 WMP Update or a supplemental filing,<sup>7</sup> in accordance with the specific actions outlined in Section 5.1 of this document. The WSD will assess the responses and will factor noncompliance into its review and, in the case of noncompliance, may also recommend that the CPUC take enforcement action.

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<sup>5</sup> Values in parenthesis indicate the number of Class B deficiency and condition pairs that require ongoing reporting.

<sup>6</sup> Feasibility and forward-looking growth are not applicable to assessing sufficiency of QRs because the QR is simply intended to provide additional information on existing efforts detailed in the 2020 WMP.

<sup>7</sup> The supplemental filing is discussed in further detail in Section 6 of this document.

Table 3: QR Evaluation Criteria

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

#### 4. Public and Stakeholder Comments

On September 30, 2020, Cal Advocates, GPI, MGRA, and SBUA submitted comments on PG&E’s QR. Provided below is a non-exhaustive summary of the major issues raised in stakeholder comments.

##### Public Advocates Office (Cal Advocates)

- PG&E should provide additional information regarding 600 miles of circuits with high wildfire risks. Without these additional approximately 600 miles of highest priority segment miles mapped in GIS, PG&E’s response does not fully address WSD’s directive. (PGE-5)
- PG&E should explain its plan to disaggregate its costs to the individual initiative level to sufficiently answer Condition Guidance-5. PG&E should be required to submit this information within 30 days. (Guidance-5)
- PG&E should continue to provide updates on its quality assurance results for its enhanced vegetation management program in future Quarterly Reports to highlight process improvements and accountability. (PGE-19)
- PG&E should provide an update on incorporating new data sets into its risk modeling.
- PG&E should provide ongoing updates on efforts to reduce reliance on de-energization. (PGE-24)

##### Green Power Institute (GPI)

- PG&E does not provide an RSE value for fuel management and reduction of slash. An RSE for fuel and slash management and a description of how this value was determined should be provided. (Guidance-1)
- PG&E shows discrepancy between ignition reduction projections. PG&E’s fundamental forecast of ignition reduction does not match the qualitative judgement of PG&E’s SMEs. PG&E should remedy this with quantitative, data-based estimates in order to evaluate each of its initiatives and plan as a whole. (PGE-6)

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- PG&E does not provide detail on “specific species that pose a high risk...”<sup>8</sup> PG&E should provide their top 10 EVM species and, if different, their species list for standard VM activities. (PGE-18)
- PG&E fails to describe why additional programs for clearances are necessary. PG&E should provide quantitative justification for additional transmission VM programs and provide specifics regarding qualitative justifications leading to their decision. (PGE-21)
- PG&E's vegetation waste and fuel management processes are unclear. PG&E's waste and fuel management plan includes a Transmission Utility Defensible Space (UDS) pilot but neglects to consider a Distribution UDS program. (PGE-23)

### Mussey Grade Road Alliance (MGRA)

- PG&E estimated the reduction in outages from adopting covered conductors versus other mitigations but the basis for PG&E's estimates are not explained. (PGE-2)
- PG&E's long-term planning discussion of PSPS lacks long term goal to evaluate to what extent hardening, vegetation management, and the deployment of covered conductor could be used to raise shutoff threshold. (Guidance-4)
- PG&E should provide quantitative support for the claim that its situational awareness programs will reduce fire response times by 15 minutes. This should consist of a comparison of satellite detection times and incident start times reported by fire agencies. (Guidance-1)
- PG&E should provide a quantitative description of how egress score is calculated and incorporated into its prioritization calculations. (PGE-9)
- PG&E's egress scoring does not appear to consider whether a particular circuit is adjacent to and poses a threat to an emergency evacuation route. PG&E should identify where wooden poles are adjacent to evacuation routes. (PGE-9)

### Small Business Utility Advocates (SBUA)

- PG&E should provide additional information about its backup generation sites in Napa County, including number of times used and challenges faced (if any) with the completion of this project and its operation, in PG&E's next quarterly report (PGE-13).

## **5. Discussion of the WSD's QR 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 QR in totality.

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<sup>8</sup> PG&E's QR at p. 156.

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

| Category      | Criteria  | Yes | No |
|---------------|---|-----|----|
| Completeness  | Does the QR 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 QR include a timeline for implementation and completion of remedial actions?   |     | X  |
| Effectiveness | Does the QR identify reasonably effective plans and remedies to resolve the identified deficiencies?  |     | X  |
|               | Is the timeline identified in the QR sufficient, given the importance of the deficiency and its potential impact on wildfire risk?                  |     | X  |

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

WSD requests clarification or additional information to remediate its finding of Insufficient QR 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 QR, which includes input from the public and other stakeholders. The following is an assessment of PG&E’s response to each Class B condition, as presented in its QR. Provided in the discussion are the detailed elements pertaining to the requirements for each PG&E Class B 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 is individually numbered and must be completely addressed in PG&E’s 2021 WMP Update to meet the WSD’s expectation of a sufficient QR.

#### 5.1.1. Condition (Guidance-1, Class B): Lack of risk spend efficiency (RSE) information

WSD finding for PG&E’s Condition Guidance-1 response: Insufficient

Below is an analysis of the itemized requirements within Condition Guidance-1, corresponding discussions of specific insufficiencies in PG&E’s response to Guidance-1, and the actions required to make PG&E’s QR Sufficient:

*In its first quarterly report, each electrical corporation shall provide the following:*

*i. its calculated reduction in ignition risk for each initiative in its 2020 WMP*

*ii. its calculated reduction in wildfire consequence risk for each initiative in its 2020 WMP*

PG&E does not calculate separate ignition or wildfire consequence risk values, instead using the 2020-2022 total for risk reduction value seen in Column I of Attachment 1 and using it as the risk score for whichever respective risk is chosen for a category, and leaving "N/A Impacts Frequency" or "N/A Impacts Consequence" respectively for the other category. PG&E also uses "N/A - Foundational" when not calculating ignition nor consequence risk. PG&E fails to demonstrate proper risk analysis since ignition and consequence risk are not disaggregated.

**Action PGE-1:** In its 2021 WMP Update, PG&E shall: 1) further describe why either ignition risk and wildfire consequence risk is calculated instead of calculating both, and 2) provide an explanation for each initiative as to why it either reduces ignition risk or wildfire consequence risk, but not both.

*iii. the risk models used to calculate (i) and (ii) above*

PG&E provided Excel sheets for each section of its RSE calculations, which provides mostly complete and thorough supporting material. PG&E also references back to its methodology used in its RAMP filing.

PG&E breaks down the model used by program. For risk assessment, PG&E states that it "calculates the mitigated risk score of hardening in the higher risk tranche versus the mitigated risk scores where work is proportionally spread across HFTD areas," where asset failure is 2.75 times more likely to fail in an identified 7,100 miles for hardening.<sup>9</sup> PG&E does not define what hardening entails here, and also does not provide adequate explanation as to why only hardening is considered in the higher risk tranche score and not other mitigation efforts. Asset health does not necessarily need to be remedied by hardening, as PG&E could instead focus on inspections and more cost-effective replacements. PG&E also fails to procure enough supporting materials to verify the reason that failure is more likely in these areas. The 7,100 miles also consists of a larger amount than the 5,500 discussed in Condition PGE-5.

For situational awareness, PG&E states that "the likelihood of a large 300-acre fire of exponentially spreading and becoming catastrophic or destructive is closer to 70 percent,"<sup>10</sup> yet it is unclear what the 70 percent refers to. Additionally, PG&E needs to define the context of these statistics, including how it defines a catastrophic fire, how Red Flag Warning (RFW) conditions affect ignition likelihood, and the significance of 300-acres at a statistical standpoint.

For asset management and inspections, PG&E currently uses a 70 percent failure rate for correction activity but does not provide much explanation outside of stating the use of SME.

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<sup>9</sup> PG&E's QR at p. 4.

<sup>10</sup> PG&E's QR at p. 5.

PG&E also uses the same expected 70 percent failure rate for vegetation, with even less description as to how that percentage is calculated.<sup>11</sup> PG&E also states the following:

*PG&E believes E and F tags are likely to fail at a rate higher than 1 percent per tag per year; however, because our Enhanced Inspection Program, in 2019 generated so many additional tags, we do not expect to be able to address all Priority E and F tags within 1 year, so the likelihood of an E tag generating a potentially avoided ignition is reduced significantly to 1 percent.<sup>12</sup>*

This is faulty logic, as the number of tags generated should not have any effect on the expected failure rate. The expected failure rate should remain unchanged and drive the tag priority and associated required date of correction assigned, not the number of open tags.

**Action PGE-2:** In its 2021 WMP Update, PG&E shall: 1) provide an RSE calculation for fuel and slash management, and 2) provide a description of how this value was calculated.

**Action PGE-3:** In its 2021 WMP Update, PG&E shall: 1) explain why only hardening efforts are identified within a higher risk tranche as a solution for the 7,100 miles scoped for system hardening, and no other initiatives are viable as a solution, 2) define what hardening consists of in regards to the 7,100 miles identified to be hardened, 3) provide the supporting materials and calculations showing that assets in the 7,100 is 2.75 more likely to fail, including all conclusions as to the reason why the failure rate is higher, 4) the location of the 7,100 miles, and 5) the explanation of the overlap and increase for these 7,100 and the 5,500 discussed in PGE-5 identified for hardening.

**Action PGE-4:** In its 2021 WMP Update, PG&E shall: 1) clarify what is meant by “the likelihood of a large 300-acre fire of exponentially spreading and becoming catastrophic or destructive is closer to 70 percent,”<sup>13</sup> 2) provide the percentage of ignitions that lead to fires greater than 300-acres, 3) explain why PG&E finds 300-acres to be of significant value, 4) define what PG&E’s understanding of “catastrophic” fire is in the context of less than 1 percent of ignitions leading to a catastrophic fire, 5) provide the percent of ignitions that lead to catastrophic fires during Red Flag Warning (RFW) conditions.

**Action PGE-5:** In its 2021 WMP Update, PG&E shall: 1) provide in-depth explanations as to how a failure rate of 70 percent for Priority A tags, 50 percent for Priority B tags, and 1 percent for Priority E and F tags was calculated, 2) provide an in-depth explanation as to how a power-line failure rate from vegetation of 70 percent was calculated, 3) describe the SMEs used to determine such failure rates, and 4) implement industry standard and best practices into determining such failure rates, or describe how such have been implemented.

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<sup>11</sup> PG&E’s QR at p. 11.

<sup>12</sup> PG&E’s QR at p. 10.

<sup>13</sup> PG&E’s QR at p. 5.

**5.1.2. Condition (Guidance-2, Class B):  
Lack of alternatives analysis for chosen initiatives**

WSD finding for PG&E's Condition Guidance-2 response: Insufficient

Below is an analysis of the itemized requirements within Condition Guidance-2, corresponding discussions of specific insufficiencies for PG&E's response to Guidance-2, and the actions required to make PG&E's QR Sufficient:

*In its first quarterly report, each electrical corporation shall provide the following:*

*i. all alternatives considered for each grid hardening or vegetation management initiative in its 2020 WMP*

For many of the initiatives listed in Table 1 of its QR, PG&E defaults to "limited alternatives considered" without going into detail as to whether "limited" consists of anything at all. By requiring that PG&E list alternatives, the WSD also was requiring PG&E to consider alternatives. The response "limited alternatives considered" appears to be an admission by PG&E that it is not abiding by that requirement. Further, PG&E fails to demonstrate that any alternatives were considered for these initiatives. Additionally, initiatives do not seem to be considered as alternatives to one another, which does not allow for prioritization of effective initiatives to reduce wildfire mitigation risk, instead separately evaluating solutions without any consideration of their interrelationships or tradeoffs.

**Action PGE-6:** In its 2021 WMP Update, PG&E shall: 1) provide an explanation of what "limited alternatives considered" consists of for all initiatives in which PG&E provided such explanation in Table 1, 2) use the terminology of "no alternatives considered" if "limited" does not include anything substantive, and 3) reevaluate all initiatives with "limited" or no alternatives considered to include actual alternatives analysis.

**Action PGE-7:** In its 2021 WMP Update, PG&E shall provide a table similar to Table 1 evaluating how initiatives interact with one another as alternatives when deciding implementation.

*ii. all tools, models, and other resources used to compare alternative initiatives*

PG&E discusses use of RSE and the RAMP Risk model to determine selection of alternatives.

*iii. how it quantified and determined the risk reduction benefits of each initiative*

In this section, PG&E covers four alternatives to system hardening in which risk reduction benefits were determined. When discussing fire retardant as an alternative, it is unclear what the extent of such exploration consists of, including how and how far along PG&E plans on implementing it as a solution. PG&E also mentions a System Hardening Hybrid Program and the Wildfire Targeted System Upgrades, but does not provide any details as to what such consists of and how it differs from covered conductor, nor any details into speed, cost of deployment, and

actual risk reduction. All of these details are necessary to show the determination of benefits for these alternatives.

**Action PGE-8:** In its 2021 WMP Update, PG&E shall: 1) discuss how PG&E is piloting the use of fire retardant, including how PG&E is choosing areas to undergo the pilot, 2) discuss how long it takes to deploy fire retardant, including when such a decision would be made, 3) describe the environmental permitting process needed for deployment of fire retardant, and 4) explain what continuing “to explore the potential of this ‘fail safe’ alternative”<sup>14</sup> consists of.

**Action PGE-9:** In its 2021 WMP Update, PG&E shall: 1) provide details on the System Hardening Hybrid Program, particularly when comparing it to covered conductor and the standard system hardening projects discussed within the WMP, 2) when comparing the system hardening hybrid to standard hardening, provide the risk reduction per mile implemented, 3) provide the locations in which the system hardening hybrid has been deployed and piloted, including an explanation of the rationale and any supporting calculations to determine the use of the hybrid over standard hardening approach in those areas, and 4) provide the locations in which the system hardening hybrid is planned to be deployed, including an explanation of the rationale and any supporting calculations to determine the use of the hybrid over standard hardening approach in those areas.

**Action PGE-10:** In its 2021 WMP Update, PG&E shall: 1) provide details on the Wildfire Targeted System Upgrades, particularly when comparing it to covered conductor and other system hardening projects discussed within the WMP, 2) when comparing the Wildfire Targeted System Upgrades to covered conductor, provide the risk reduction per mile implemented; 3) provide the locations in which Wildfire Targeted System Upgrades have been deployed and piloted, including an explanation as to the reasoning and any supporting calculations to determine the use of upgrades in those areas, and 4) provide the locations in which the upgrades are planned to be deployed, including an explanation as to the reasoning and any supporting calculations to determine the use of upgrades in those areas.

*iv. why it chose to implement each initiative over alternative options*

PG&E adequately describes how initiatives were chosen, including through the use of the Frequency Reduction Value to determine the scope of EVM and system hardening programs,<sup>15</sup> stating that it is similar to RSE.

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<sup>14</sup> PG&E's QR at p. 22.

<sup>15</sup> PG&E's QR at p. 23.

**5.1.3. Condition (Guidance-4, Class B):  
Lack of discussion on PSPS impacts**

WSD finding for PG&E's Condition Guidance-4 response: Insufficient

Below is an analysis of the itemized requirements within Condition Guidance-4, corresponding discussions of specific insufficiencies for PG&E's response to Guidance-4, and the actions required to make PG&E's QR Sufficient:

*In its first quarterly report, each electrical corporation shall detail whether and how each initiative in its WMP:*

*i. affects its threshold values for initiating PSPS events*

PG&E aggregated the subparts as separate columns provided within Attachment 1 for Condition Guidance-1. Within the table, PG&E provides meager qualitative discussion of PSPS, with brief explanations given for each initiative, without providing concrete values to show how initiatives affect threshold values. In PG&E's long-term planning discussion of PSPS, there is no long-term goal to evaluate the extent to which vegetation management, covered conductor, and other hardening efforts could be used to raise shutoff thresholds.

**Action PGE-11:** In its 2021 WMP Update, PG&E shall provide quantitative values for all initiatives for all subparts included in Condition Guidance-4.

*ii. is expected to reduce the frequency (i.e. number of events) of PSPS events*

*iii. is expected to reduce the scope (i.e. number of customers impacted) of PSPS events*

PG&E states that conditions i, ii, and iii are very closely related and are the same concept. However, the WSD disagrees. While the threshold values used to determine when a utility initiates a PSPS event may be correlated to the frequency of having such events (i.e. the lower the thresholds, the more frequently such events would be expected to occur), there are elements related to locational conditions and spatial distribution of where initiatives have or have not yet been deployed that would impact such differences. Moreover, Condition Guidance-4 item iii in particular is predicated on the implementation of sectionalizing and switching initiatives, which are not necessarily associated with PSPS initiation threshold values or frequency of such events.

**Action PGE-12:** In its 2021 WMP Update, PG&E shall: 1) analyze how initiatives will impact subparts (i), (ii), and (iii) based on "protection zone", and 2) define what PSPS area was used for such analysis.

*iv. is expected to reduce the duration of PSPS events*

PG&E includes some initiatives that would reduce the duration of PSPS events within Condition Guidance-1 Table 1, primarily revolving around decreasing re-energization time through training, preparedness, and automation. However, some initiatives should have indirect impacts

to reducing the duration of PSPS events by leading to fewer instances that need correction before re-energization could occur, such as inspections and vegetation management efforts. Additionally, increased situational awareness should also indirectly decrease the length of de-energization events by allowing more granular real-time weather data to demonstrate the actual timing of risky weather conditions. PG&E also needs to provide quantitative values for estimates in decreases of duration, as covered in Action PGE-11 for subpart (i).

**Action PGE-13:** In its 2021 WMP Update, PG&E shall reevaluate all initiatives for reduction in PSPS duration, including any indirect impacts.

*v. supports its directional vision for necessity of PSPS, as outlined in Section 4.4 of its WMP*

PG&E fails to address the status and correlation to its initiatives listed in Section 4.4.<sup>16</sup> Additionally, while there are many initiatives with no direct impact to PSPS events, some could potentially indirectly affect PSPS events through mapping and modeling. PG&E needs to go into more detail on how these initiatives could impact PSPS, even if such impacts are not guaranteed to occur. The “discussion” included in Attachment 1 to Condition Guidance 1 response is simply a one sentence acknowledgment of potential impact.

**Action PGE-14:** In its 2021 WMP Update, PG&E shall: 1) reevaluate all initiatives and state if they directly support the “Evolution of the PSPS Program” (as outlined on p. 4-24 of the 2020 WMP), and 2) if so, expand on how the initiative directly supports the “Evolution of the PSPS Program”.

**5.1.4. Condition (Guidance-5, Class B):  
Aggregation of initiatives into programs**

WSD finding for PG&E's Condition Guidance-4 response: Sufficient

*In its first quarterly report, each electrical corporation shall:*

*i. break out its programs outlined in section 5.3 into individual initiatives*

PG&E provides this breakdown within its response to Condition Guidance-1, Attachment 1.

*ii. report its spend on each individual initiative*

PG&E provides this breakdown within its response to Condition Guidance-1, Attachment 1.

*iii. describe the effectiveness of each initiative at reducing ignition probability or wildfire consequence*

From a completeness point of view, PG&E seems to provide every initiative with a probability calculation. However, it seems that some of the calculations are done with the assumption of a

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<sup>16</sup> PG&E's 2020 WMP, p. 4-24, initiatives consist of: Distribution Segmentation and System Hardening, Transmission Line Sectionalizing, Transmission Line Exclusions, Establishing PSPS Criteria for Hardened Distribution Facilities, Microgrids for PSPS Mitigation, Increased Model Granularity, PSPS Guidance Review, Restoration Time, Backup Power Support for Societal Continuity, and Customer Services and Programs

linear relationship between probability of fire type and time passed.<sup>17</sup> PG&E needs to justify its use of a linear relationship and show adequacy of such an assumption in a calculation.

**Action PGE-15:** In its 2021 WMP Update, PG&E shall: 1) describe why it used a linear relationship between probability of fire type and time passed, and 2) provide supporting materials showing a linear relationship.

*iv. list all data and metrics used to evaluate effectiveness described in (iii), including the threshold values used to differentiate between effective and ineffective initiatives*

PG&E states that quantitative values are supplied for some initiatives, but not all, and that it is working on increasing quantitative assessment for initiatives with only qualitative discussion. While this is sufficient for the time being, PG&E needs to supply details on which initiatives this includes and the timeframe for which quantitative evaluations will be completed.

**Action PGE-16:** In its 2021 WMP Update, PG&E shall: 1) list all initiatives in which it is developing a quantitative threshold, 2) provide a timeline and status update for when it intends to develop such quantitative evaluations for each initiative, and 3) explain what sort of SME expertise is being used for the development of each quantitative value.

*v. provide the information required for each initiative in section 5.3 of the Guidelines*

PG&E provides this breakdown within its response to Condition Guidance 1, Table 1.

#### **5.1.5. Condition (Guidance-6, Class B):**

##### **Failure to disaggregate WMP initiatives from standard operations**

WSD finding for PG&E's Condition Guidance-6 response: Sufficient

*In its first quarterly report, each electrical corporation shall:*

*i. clearly identify each initiative in Section 5.3 of its WMP as "Standard Operations" or "Augmented Wildfire Operations"*

PG&E sufficiently categorizes each initiative as either "Standard Operations" or "Augmented Wildfire Operations" within its response to Condition Guidance-1, Attachment 1.

*ii. report WMP required data for all Standard Operations and Augmented Wildfire Operations*

*iii. confirm that it is budgeting and accounting for WMP activity of each initiative*

Related to Guidance 5 subpart (ii), PG&E provides the explicit breakdown the costs of each initiative.

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<sup>17</sup> PG&E's QR Guidance 1 Attachment 2, 5.3.2 CMEWPv1.1 Column J, Rows 9 and 10 state: "This is based on the assumption that the relation between probability of fire type and time passed is linear."

*iv. include a "ledger" of all subaccounts that show a breakdown by initiative.*

PG&E provided three sub-types of initiative specific order numbers, estimated portion of costs recorded to orders, and estimated portion of a Provider Cost Center (PCC).<sup>18</sup>

**5.1.6. Condition (Guidance-7, Class B):**

**Lack of detail on effectiveness of "enhanced" inspection programs**

WSD finding for PG&E's Condition Guidance-7 response: Insufficient

Below is an analysis of the itemized requirements within Condition Guidance-7, corresponding discussions of specific insufficiencies for PG&E's response to Guidance-7, and the actions required to make PG&E's QR Sufficient:

*In its first quarterly report, each electrical corporation shall detail:*

*i. the incremental quantifiable risk identified by such 'enhanced' inspection programs*

This response parallels PGE-15 in PG&E's RCP filing. Similarly, PG&E does not provide enough data to demonstrate effectiveness of enhanced inspections, which are covered in the action items for PG&E's RCP. PG&E also introduces the concept of "asset investment opportunities"<sup>19</sup> but it is unclear what this consists of or refers to.

**Action PGE-17:** In its 2021 WMP Update, PG&E shall: 1) define "asset investment opportunities" and, 2) explain how these opportunities benefit from enhanced inspections.

*ii. whether it addresses the findings uncovered by 'enhanced' programs differently than findings discovered through existing inspections*

PG&E sufficiently responds that findings from enhanced inspections and existing inspections are addressed in a similar manner, apart from correction time, which is based on HFTD classification. Remediation of findings are based on priority and location, which follows PG&E's procedures.

*iii. a detailed cost-benefit analysis of combining elements of such 'enhanced' inspections into existing inspection programs*

It is unclear what the cost-benefit analysis is, as insufficient data is provided. Similar conclusions were reached by the WSD in analysis of PGE-15, and are covered by the action items relative to PG&E's RCP.

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<sup>18</sup> PG&E's QR at pp. 34-35.

<sup>19</sup> PG&E's QR at p. 37.

**5.1.7. Condition (Guidance-9, Class B):  
Insufficient discussion of pilot programs**

WSD finding for PG&E's Condition Guidance-9 response: Insufficient

Below is an analysis of the itemized requirements within Condition Guidance-9, corresponding discussions of specific insufficiencies for PG&E's response to Guidance-9, and the actions required to make PG&E's QR Sufficient:

*In its quarterly report, each electrical corporation shall detail:*

*i. all pilot programs or demonstrations identified in its WMP*

Attachment 1 includes all pilot programs described in PG&E's 2020 WMP in a digestible and easy to read manner.

*ii. status of the pilot, including where pilots have been initiated and whether the pilot is progressing toward broader adoption*

Similar to the response to (i), each field is populated within the attachment, and seems to have complete information for each pilot initiative.

*iii. results of the pilot, including quantitative performance metrics and quantitative risk reduction benefits*

PG&E does not provide quantitative values. Instead, PG&E provides a narrative to discuss risk reduction. The WSD find this response insufficient, as it does not allow for adequate and comprehensive comparison of risk reduction across pilots.

**Action PGE-18:** In its 2021 WMP Update, PG&E shall provide a refiling of Attachment 1 from its QR filing that includes a column with quantitative values for both performance and risk reduction.

*iv. how the electrical corporation remedies ignitions or faults revealed during the pilot on a schedule that promptly mitigates the risk of such ignition or fault, and incorporates such mitigation into its operational practices*

Attachment 1 includes adequate discussion on how PG&E will start deployment of each pilot project.

*v. a proposal for how to expand use of the technology if it reduces ignition risk materially.*

This section is also sufficiently supplied through Attachment 1, as each pilot provided includes an adequate discussion on potential expansion in terms of details on full deployment.

**5.1.8. Condition (Guidance-10, Class B):  
Data issues – general**

The assessment of PG&E's GIS data submission is contained within the GIS data quality control (QC) report being issued separately by the WSD. Analysis of the quality and thoroughness of the data submission is deferred to the aforementioned GIS data QC report.

**5.1.9. Condition (Guidance-11, Class B):  
Lack of detail on plans to address personnel shortages**

WSD finding for PG&E's Condition Guidance-11 response: Insufficient

Below is an analysis of the itemized requirements within Condition Guidance-11, corresponding discussions of specific insufficiencies for PG&E's response to Guidance-11, and the actions required to make PG&E's QR Sufficient:

*In its first quarterly report, each electrical corporation shall detail:*

*i. a listing and description of its programs for recruitment and training of personnel, including for vegetation management*

PG&E lists and describes the programs taken by Qualified Company Representatives (QCRs, in regards to inspectors), which seems sufficient. PG&E also mentions that it has external recruitment from other utility companies. However, PG&E fails to demonstrate the differences in the hiring process between external hires and internal promotions or reassignments.

**Action PGE-19:** In its 2021 WMP Update, PG&E shall differentiate and describe the differences between the hiring and training process of an outside hire compared to an internal promotion or reassignment.

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

PG&E states that internal recruitment can apply if personnel hold the Journey Lineman credential and can pass an internal training course.<sup>20</sup> However, details on the course are not provided. Regarding contractor recruitment, PG&E states that contracted QCR inspectors take a three-day contractor orientation that does not provide basic industry training regarding the Journeyman Lineman skillset, tools or methods.<sup>21</sup>

**Action PGE-20:** In its 2021 WMP Update, PG&E shall provide the details regarding the internal training course required in order to qualify for a System Inspections Program QCR position, including: a) a description of the materials it covers, b) components of the

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<sup>20</sup> PG&E's QR at p. 55.

<sup>21</sup> PG&E's QR at p. 55.

course (such as WBT, OJT,<sup>22</sup> etc.), and c) the length of time it takes to complete each component of the course.

**Action PGE-21:** In its 2021 WMP Update, PG&E shall: 1) explain why Journeyman Lineman trainings are not provided to contracted QCR inspectors, and 2) describe any assessment taken to demonstrate qualifications of Journeyman Lineman regarding “routine job knowledge,” or explain why PG&E does not find it necessary, if one is not required.

*iii. its 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 hired.*

Inspection management does not have a standardized metric for the externally recruited QCRs. PG&E instead relies on the trainings of its multiple vendors. PG&E needs to adopt a standardized metric or assessment to ensure that all external recruits have the same base level of training and job knowledge. PG&E inspection and vegetation management could also learn from its construction management practices, which use scorecards to evaluate the performance of employees.<sup>23</sup>

**Action PGE-22:** In its 2021 WMP Update, PG&E shall develop and present a performance scorecard for vegetation management contractors similar to the scorecard used to evaluate the performance of construction contractors.

**Action PGE-23:** In its 2021 WMP Update, PG&E shall implement an assessment for all external recruits in order to ensure proper training levels are met.

**5.1.10. Condition (Guidance-12, Class B):  
Lack of detail on long-term planning**

WSD finding for PG&E's Condition Guidance-12 response: Sufficient

*In their first quarterly report, each electrical corporations shall detail:*

*i. its expected state of wildfire mitigation in 10 years, including 1) a description of wildfire mitigation capabilities in 10 years, 2) a description of its grid architecture, lines, and equipment*

While PG&E provides an adequate response, throughout Tables 4 to 13, PG&E primarily provides narrative explanations of its short and long term goals, with little incorporation of quantitative values. PG&E also relies on hard-to-enforce promises such as that it will “continue” or “increase” certain actions.<sup>24</sup> An example of useful quantitative data is provided in Table 6 and the related discussion, stating that PG&E plans to harden the highest risk distribution circuits

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<sup>22</sup> PG&E's QR at p. 53, web-based training (WBT) and on-the-job training (OTJ).

<sup>23</sup> PG&E's QR at p. 58.

<sup>24</sup> An example of such is seen in Table 5 in PG&E's QR at p. 70, “Continue to increase the geographic granularity of weather prediction.” The actual granularity in which PG&E is striving for is not provided. Similar instances happen throughout Tables 4 to 13.

(30% of HFTD) and will eliminate all non-exempt equipment. While PG&E provides adequate qualitative benchmarks, PG&E needs to provide more of such quantitative metrics, as it is crucial for goal tracking and setting.

**Action PGE-24:** In its 2021 WMP Update, PG&E shall: 1) define what “continue” or “increase” means for each instance it is used from Tables 4 to 13, and 2) either a) implement quantitative benchmarks that are reasonable and achievable for each such instance, or b) explain how it intends to track progress of each instance if a quantitative benchmark is not provided.

*ii. a year-by-year timeline for reaching these goals*

Similar to subpart (i), there are qualitative details on year-by-year goals, but PG&E is missing measurable goals, such as the percentages of non-exempt equipment in which PG&E plans on replacing within HFTDs per year.

*iii. a list of activities that will be required to achieve this end goal*

PG&E lists activities required to achieve its stated end goals.

*iv. a description of how the electrical corporation's three-year WMP is a step on the way to this 10-year goal*

PG&E has a well put together response to how its 3-year WMP is a step in the right direction of a 10-year goal. While the organization into the tables presented is useful, PG&E needs to ensure that similar discussion is provided in each individual initiative's discussion when filing the 2021 WMP to better integrate long-term planning as a goal.

**Action PGE-25:** In its 2021 WMP Update, PG&E shall integrate discussion on long-term planning within the respective section of each individual initiative.

#### **5.1.11. Condition (PGE-2, Class B): Equipment failure**

WSD finding for PG&E's Condition PGE-2 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-2, corresponding discussions of specific insufficiencies for PG&E's response to PGE-2, and the actions required to make PG&E's QR Sufficient:

*In its first quarterly report, PG&E shall:*

*i. explain why its equipment failure rate is so high compared to other large electrical corporations*

The response references the Condition PGE-3 RCP response, which ties in closely. PG&E needs to provide supporting materials regarding its ignition cause documentation improvements. PG&E explains that when an ignition cause is left blank, its system default is to assign the cause as “equipment failure.” PG&E needs to remedy this default characterization of ignition cause as

“equipment failure” in order to accurately collect data for analysis to support effective decision-making and prioritization moving forward. Also, it is unclear why PG&E is prioritizing replacement of small copper conductor when these assets seem to largely exist outside of HFTD areas (similar to the issue found in its response to Condition PGE-3).

**Action PGE-26:** In its 2021 WMP Update, PG&E shall: 1) explain why equipment failure is used as the current default for ignition cause, 2) provide the percentage of ignitions from 2016 to 2020 that are inaccurately characterized as equipment failure causes, 3) describe how PG&E checks for accuracy of ignition cause determinations currently, including any supporting documentation and procedures, 4) explain how PG&E plans to change the inaccurately documented ignition cause of “equipment failure” moving forward, including changes in procedures, training of first responders, and QA/QC checks for accuracy, 5) explain how PG&E plans on remedying inaccurately documented past ignition causes (include all relevant plans, if they differ from the plan for more accurate documentation in the future), and 6) provide a timeline for when PG&E intends to complete these improvements.

**Action PGE-27:** In its 2021 WMP Update, PG&E shall: 1) provide the percentage and overhead circuit mileage of small copper conductor replacement projects that fall within HFTD areas, 2) explain how PG&E is prioritizing small copper replacement projects, and 3) explain any parallel upgrades (pole replacements, crossarm repairs, etc.) PG&E is performing that are compatible with small copper conductor replacements, including how such are prioritized.

**Action PGE-28:** In its 2021 WMP Update, PG&E shall: 1) provide a list of the electrical corporations PG&E has worked with so far regarding identification of high equipment failure rates, and 2) explain how PG&E is working with each of the other utilities regarding data comparisons.

*ii. explain how it expects grid hardening, asset management and other initiatives affect the probability of 1) near misses and 2) ignitions*

The condition specifically asked for the effectiveness for near-misses and ignitions, but PG&E differentiates Tables 16 and 17 into ignitions and outages. The provided tables have inconsistent levels of detail. For example, in Table 16, there are 5 classifications (sub-drivers) of vegetation branches but only 1 classification for animal. Both tables also have several unknowns listed. PG&E needs to better explain any Other/Unknown values, including the types of causes categorized into those values, to determine effectiveness.

**Action PGE-29:** In its 2021 WMP Update, PG&E shall: 1) indicate which subset of outages in Table 17 it considers to be near-miss ignition events, 2) explain what each subcategory of “Unknown” or “Other” consists of in Tables 16 and 17 of PG&E's QR, and 3) explain in more detail all “Unknown” and “Other” values, including what is included within those values.

*iii. address whether its prior maintenance history is causing higher rates of equipment failure now. PG&E shall include in this report all instances where a court or other decision making body found fault with PG&E's historical equipment maintenance, either with regard to individual assets or its maintenance policies as a whole*

PG&E provided the requested information as attachments, including CPUC Notices of Violation. The overall language of this section is satisfactory.

**5.1.12. Condition (PGE-5, Class B):  
PG&E provides little discussion of how it uses  
the results of relative risk scoring method**

WSD finding for PG&E's Condition PGE-5 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-5, corresponding discussions of specific insufficiencies for PG&E's response to PGE-5, and the actions required to make PG&E's QR Sufficient:

*In its first quarterly report, PG&E shall detail:*

*i. where each of these 5,500 miles are located within its grid, including supporting GIS files;*

PG&E states that approximately 600 miles of the 5,500 miles can “no longer be accurately mapped”<sup>25</sup> due to changes to the system. This amounts to approximately 11% of the circuit miles PG&E previously identified as its highest risk. It is unacceptable for PG&E to no longer have location information on such critical assets without a clear explanation. PG&E also fails to properly describe these changes to its system. Accordingly, it is unclear if changes to PG&E's GIS data collection or storage methods have resulted in the absence of this substantive portion of critical data, or if PG&E has completely replaced these 600 miles of its distribution system and they are thus no longer considered part of its highest priority circuit segments.

**Action PGE-30:** In its 2021 WMP Update, PG&E shall: 1) provide a list of all changes to equipment as described in PG&E's QR response that would cause GIS data to no longer accurately reflect the original location of the 600 miles missing from the GIS data, 2) describe why the “start and end point” of circuit segments would no longer exist within the GIS data, broken down by percentage of cause (e.g., conductor replacement, full equipment replacements, facility removals), and 3) explain whether PG&E has completely replaced or hardened these 600 miles of its distribution system and thus no longer considers them part of the highest priority circuit segments, or if not, explain the cause of the missing information.

*ii. how this information was used to prioritize WMP initiatives;*

PG&E explains that the 5,500 miles was used exclusively for prioritizing system hardening efforts. PG&E needs to also describe whether it calculated all wildfire risk in a similar manner,

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<sup>25</sup> PG&E QR at p. 109.

not just as a function of system hardening. PG&E should not be focusing its models to only determine system hardening mitigations, instead working dynamically to lower wildfire risk as a whole with a suite of mitigations. If PG&E only uses the model to determine whether to carry out system hardening, it is biasing the outcome toward system hardening rather than other mitigation measures. PG&E's risk prioritization should be focused on determining the best mitigation – whether it is vegetation management, system hardening, other mitigation types, or a combination – to ensure it is achieving the maximum mitigation and the lowest reasonable cost.

**Action PGE-31:** In its 2021 WMP Update, PG&E shall: 1) describe how it has calculated overall wildfire risk in a similar manner as the 5,500 miles for system hardening to identify the most high-risk circuits, 2) provide the locations via GIS files on such high-risk circuits, 3) provide the percentage of the 5,500 miles fall under the total identified high-risk circuits, 4) describe how the determination of high-risk circuits was used to prioritize WMP initiatives, and 5) explain how PG&E's risk modeling considers a range of potential mitigation types, rather than assuming system hardening is the appropriate mitigation.

*iii. how this information was used to target where to implement WMP initiatives;*

While PG&E provides a list of different initiatives that help determine how system hardening is targeted, PG&E does not describe how it prioritizes among these targeted areas in comparison with one another. PG&E also does not supply the percentage and locations of each targeted approach, making it difficult to determine the pervasiveness of the approaches for system hardening in comparison to one another.

**Action PGE-32:** In its 2021 WMP Update, PG&E shall explain how the system hardening initiatives provided in this response are prioritized in comparison to one another.

**Action PGE-33:** In its 2021 WMP Update, PG&E shall: 1) provide the number of circuit miles and percentage of the 5,500 identified miles each of the targeted approaches consist of, and 2) provide the GIS file for the locations of each targeted approach.

*iv. what percentage of its total planned spend for each of the years 2020-2022 are targeted toward these identified 5,500 circuit miles comprising 95% of PG&E's wildfire risk*

PG&E provides information on its allocation of planned spend, in which it states that 90% of its total system hardening costs are allotted to the 5,500 miles.

*v. what percentage of total vegetation management personnel hours are targeted toward these identified 5,500 circuit miles comprising 95% of PG&E's wildfire risk*

Consistent with PG&E's previous responses, PG&E clarifies that the 5,500 miles are for system hardening focused risk, so is not an accurate representation for vegetation work. However, it seems that a significant amount of resources overlap, since PG&E indicates 70% of enhanced vegetation management (EVM) personnel hours are allocated to the 5,500 miles. PG&E needs to provide more details on this overlap to better understand system hardening in comparison to

vegetation management. Additionally, PG&E should be demonstrating proper prioritization of EVM in comparison to system hardening.

**Action PGE-34:** In its 2021 WMP Update, PG&E shall: 1) provide the number and percentage of circuit miles out of the 5,500 miles in which EVM work is being completed, 2) provide the location of such miles via GIS, 3) provide the number and miles in which the high risk circuits identified with the Distribution EVM model overlap with the 5,500 miles, and 4) provide the location of the circuit miles in GIS and in accordance with data attributes and metadata specified in the WSD's GIS data reporting requirements.

*vi. its rationale for this level of spend and resource allocation to these 5,500 circuit miles and whether PG&E expects to change its allocation of spend and resources from these 5,500 circuit miles*

PG&E explains that the risk spend efficiency (RSE) score has greatly increased from 2023-2026 in comparison to 2020-2022 within the 2020 RAMP filing<sup>26</sup> but does not provide detail in its response about the reason for this change. PG&E aims to harden 1,060 miles of its system in HTFD areas in 2020-22, but does not explain how that was calculated nor where those miles are located.

**Action PGE-35:** In its 2021 WMP Update, PG&E shall: 1) describe the reason behind the increase in RSE for system hardening between 2020-2022 and 2023-2026, and 2) provide the calculations used to determine the RSEs for both date ranges.

**Action PGE-36:** In its 2021 WMP Update, PG&E shall: 1) explain how and why the 1,060 miles were prioritized, and 2) provide the location of the 1,060 circuit miles via GIS.

### **5.1.13. Condition (PGE-6, Class B):**

#### **Discrepancy between ignition reduction projections**

WSD finding for PG&E's Condition PGE-6 response: Sufficient

*In its first quarterly report, PG&E shall detail:*

*i. how it arrived at each of these estimates*

PG&E better describes the difference between the three percentages described within the deficiency of 2, 8, and 10% and why the discrepancy exists for each.

*ii. how these estimates can be reconciled.*

While PG&E provides an explanation for the differences between the three percentage calculations, PG&E fails to provide any input on the impact of such low percentages being present, particularly with how low 2% is.

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<sup>26</sup> PG&E's QR at p. 111.

**5.1.14. Condition (PGE-7, Class B):**

**It is not clear if PG&E's line risk scoring sufficiently incorporates all risks that cause ignition and PSPS**

WSD finding for PG&E's Condition PGE-7 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-7, corresponding discussions of specific insufficiencies for PG&E's response to PGE-7, and the actions required to make PG&E's QR Sufficient:

*PG&E shall in a first quarterly report:*

*i. list and describe the inputs to its line risk scoring and summary risk map*

In PG&E's response, three sub-models are described. PG&E's description of Sub-Model #1 is a clear and concise outline of all the inputs besides the age score, as PG&E has not sufficiently demonstrated it has such data. Sub-Model #2, based on Reax Engineering's website, is used to identify elevated risk areas by overhead electrical utilities. Sub-Model #3 is based on egress score, for which the WSD raises issues in its analysis for Condition PGE-9. At this time, PG&E provides an adequate explanation of its inputs, but further analysis will be conducted during the 2021 WMP Update review to vet the accuracy and use of the data within PG&E's modeling efforts.

**Action PGE-37:** In its 2021 WMP Update, PG&E shall: 1) provide the age score used for each conductor installation year, and 2) explain how it calculates the age score input for Sub-Model #1 when it has not provided complete conductor age information to the WSD in its GIS data submissions to date.

*ii. if PG&E primarily relies on outage data and asset condition, PG&E shall outline other risks that it does not include*

PG&E states that it does use the three sub-models to determine risk and that the three sub-models use various factors besides the outage data. PG&E also states that it will also include LiDAR, field inspections, maintenance tags, and meteorology data as additional inputs for risk modeling. PG&E needs to provide an update for the implementation of such additional inputs moving forward to ensure integration is taking place.

**Action PGE-38:** In its 2021 WMP Update, PG&E shall: 1) provide an update to the status of integrating any new inputs into its risk modeling, and 2) describe how such new inputs have been integrated into its risk modeling.

*iii. PG&E shall further explain why those risks are currently excluded, and outline a plan including a detailed timeline to include those risks, if applicable*

PG&E fails to outline a plan that includes a detailed timeline. Moreover, PG&E gave extra inputs for risk modeling but fails to expand on how those inputs will help with or be incorporated in its risk modeling.

**Action PGE-39:** In its 2021 WMP Update, PG&E shall provide the timeline in detail for when it plans to include all outstanding inputs, broken down by each input.

**Action PGE-40:** In its 2021 WMP Update, PG&E shall: 1) describe in detail how each of the currently outstanding inputs will contribute to PG&E's modeling efforts, 2) describe how PG&E determined the need to include each of these inputs, and 3) further explain why each of these inputs were not already included within modeling efforts.

**5.1.15. Condition (PGE-9, Class B):  
How PG&E weighs egress as a risk factor**

WSD finding for PG&E's Condition PGE-9 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-9, corresponding discussions of specific insufficiencies for PG&E's response to PGE-9, and the actions required to make PG&E's QR Sufficient:

*In its first quarterly report, PG&E shall detail:*

*i. how egress factors into its risk assessment, including how egress is weighted against other factors*

While it makes sense that PG&E has a complex geographical territory, this section is incomplete without further explanation of how egress is weighted against other factors. Additionally, PG&E's response on egress lacks details, including failure to consider wooden poles along evacuation routes, which should be of higher importance since that issue directly affected evacuations during the Camp Fire.

**Action PGE-41:** In its 2021 WMP Update, PG&E shall explain how egress is weighted against other factors during risk modeling and selection of initiatives.

**Action PGE-42:** In its 2021 WMP Update, PG&E shall: 1) provide a quantitative description of how egress score is calculated and incorporated into its prioritization calculations, particularly in comparison to the other factors, 2) explain how it factors in identification of wooden poles near evacuation routes. If such information is not currently factored in, explain why, and ensure that wooden poles are included as a factor for calculating egress in its 2021 WMP Update, and 3) provide an example showing the calculation of egress assessment.

*ii. how egress impacts the prioritization and deployment of initiatives.*

PG&E states that egress plays a small role compared to other factors but does not provide sufficient detail to demonstrate such or provide a comprehensive understanding of how egress actually impacts its prioritization of initiatives. Action PGE-42 for subpart (i) should cover this deficiency.

**5.1.16. Condition (PGE-10, Class B):  
PG&E lacks sufficient weather station coverage**

WSD finding for PG&E's Condition PGE-10 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-10, corresponding discussions of specific insufficiencies for PG&E's response to PGE-10, and the actions required to make PG&E's QR Sufficient:

*In its first quarterly report, PG&E shall:*

*i. explain in detail how it chooses to locate its weather stations and explain gaps or areas of lower weather station density, including in the National Forest Areas*

PG&E states that part of its new installations include many weather stations "far from PG&E electrical assets." PG&E needs to provide more explanation as to why it deems these weather stations necessary, as these weather stations could be put in areas with higher expected winds than actual speeds occurring where PG&E assets are located.

**Action PGE-43:** In its 2021 WMP Update, PG&E shall: 1) provide the locations via GIS of the 111 stations awaiting installation, and 2) explain how PG&E chose these 111 locations.

**Action PGE-44:** In its 2021 WMP Update, PG&E shall: 1) explain why it finds installation of weather stations far from PG&E electrical assets to be necessary, and 2) explain how installation of such weather stations will augment its situational awareness.

*ii. provide a cost/benefit analysis of the impact of having a higher density of weather stations across its territory, including on U.S. Forest Service National Forest lands*

PG&E failed to provide any sort of cost/benefit analysis in its response, instead stating that one was not conducted and that a program is being developed to better understand the benefits of higher density weather stations across its territory.

**Action PGE-45:** In its 2021 WMP Update, PG&E shall provide the internal cost/benefit analysis being conducted in the interim while a program is being developed.

**5.1.17. Condition (PGE-11, Class B):  
Including additional relevant reports**

WSD finding for PG&E's Condition PGE-11 response: Sufficient

*In its quarterly reports, PG&E shall append the following:*

*i. all internal reports provided to its executive officers and/or Board of Directors, as described in Section 5.2A of its 2020 WMP, during the previous quarter. In its first quarterly report, PG&E shall also produce all internal reports or other documents provided to its executive officers and/or Board of Directors related to its electric grid from January 1, 2018 to the present*

PG&E sufficiently supplies these reports as an attachment, with a delay on public version of reports in order to redact any confidential information.

*ii. all reports or other documents related to its electric grid it provided to the federal monitor in the previous quarter. In its first quarterly report, PG&E shall also produce all reports or other documents related to its electric grid provided to the federal monitor from January 1, 2018 to the present*

In this response, PG&E did not provide some federal monitor dashboards due to them “not directly impacting the electric grid.”<sup>27</sup> PG&E otherwise provided the required reports and documents, and the excluded dashboards are not deemed necessary at this time.

**5.1.18. Condition (PGE-12, Class B):  
PG&E's fuse replacement program planned to take 7 years**

WSD finding for PG&E's Condition PGE-12 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-12, corresponding discussions of specific insufficiencies for PG&E's response to PGE-12, and the actions required to make PG&E's QR Sufficient:

*In its first quarterly report, PG&E shall detail:*

*i. its plans for replacing non-exempt fuses, including the pace of fuse replacements*

Based off PG&E's response, the scope seems to be doubled due to increased replacement speed but no reduction in timeframe, as PG&E is moving from 625 replacements a year to 1,200 but still planning to run the program through 2026. PG&E does not explain how fuse replacements are being prioritized. Additionally, it is unclear where the fuses scheduled for replacement are located and if these fuses are within HFTD areas.

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<sup>27</sup> PG&E's QR at p. 134.

**Action PGE-46:** In its 2021 WMP Update, PG&E shall: 1) explain whether it is increasing the scope of fuse replacements and, if so, why, 2) explain whether the replacement of the originally identified fuses (i.e. 625 per year) are being prioritized before replacement of those in the increased scope (i.e. 1,200 per year), and 3) describe how prioritization has changed since the initial scope in 2019.

**Action PGE-47:** In its 2021 WMP Update, PG&E shall provide the locations via GIS of the fuses that have already been replaced.

*ii. how this pace is supported by wildfire risk analysis, including providing the cost and benefit estimates of launching a faster fuse replacement program*

PG&E failed to provide the cost/benefit analysis performed for fuse replacements as required by this section of the condition.

**Action PGE-48:** In its 2021 WMP Update, PG&E shall provide the cost/benefit analysis performed regarding fuse replacements, including the calculation of reduction of VM costs per fuse replaced.

#### **5.1.19. Condition (PGE-13, Class B):**

**PG&E does not explain how the factors limiting microgrid deployment will impact its microgrid plans**

WSD finding for PG&E's Condition PGE-13 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-13, corresponding discussions of specific insufficiencies for PG&E's response to PGE-13, and the actions required to make PG&E's QR Sufficient:

*In its first quarterly report, PG&E shall:*

*i. state all factors that will limit microgrid deployment or identify limitations to microgrid deployment posed by its network system design*

PG&E explains that it can only energize a microgrid (whether permanent or temporary) when it is safe to do so in the context of high wind conditions that trigger a PSPS de-energization. PG&E asserts it has limited flexibility, due to land constraints, cost, and necessary upgrades. PG&E does not provide much detail on its current deployment of temporary solutions, such as backup generation sites.

**Action PGE-49:** In its 2021 WMP Update, PG&E shall provide additional information about its specific backup generation sites, including a) the number of times used and b) challenges faced with the completion of this project and its operation.

*ii. explain if it considered microgrid proposals as alternate solutions to other grid solutions*

PG&E explains that high costs and the need for a “bridge” solution is necessary for microgrids as a solution,<sup>28</sup> but it is not clear what this entails. PG&E also explains that instead of microgrids, the Remote Grid Initiative could similarly eliminate the need for overhead distribution infrastructure that eliminates or significantly minimizes wildfire risk to provide power to those customers. In agreement with GPI, PG&E should advance this concept, particularly since PG&E asserts this proposal aligns with the Distribution Resource Plan (DRP) proceeding.<sup>29</sup> For this reason, PG&E should ensure coordination with the Microgrid and DRP proceedings in relation to the WMP.

**Action PGE-50:** In its 2021 WMP Update, PG&E shall: 1) provide the cost/benefit analysis completed for microgrids as a mitigation, and 2) define what is meant by a “bridge” solution and “other solutions” and 3) include a timeline for how long an interim “bridge” solution would be in place.

**Action PGE-51:** In its 2021 WMP Update, PG&E shall expand on the remote grid initiative in detail and explain the feasibility of it.

*iii. address whether options the other large electrical corporations are exploring might be feasible in its territory*

PG&E briefly states that it meets with other utilities regarding wildfire mitigation as a whole, but does not really detail any discussion on microgrids as a solution at this time beyond stating that other utilities are approaching microgrids in a similar manner.

**5.1.20. Condition (PGE-14, Class B):  
Level 3 findings**

WSD finding for PG&E's Condition PGE-14 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-14, corresponding discussions of specific insufficiencies for PG&E's response to PGE-14, and the actions required to make PG&E's QR Sufficient:

*In its first quarterly report, PG&E shall detail:*

*i. how it determines the priority level of its inspection findings in accordance with high, moderate, and low risk to safety and reliability, as detailed in GO 95, Rule 18*

PG&E provides the breakdown of priority levels and provides attachments that adequately show determination of such priorities.

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<sup>28</sup> PG&E's QR at p. 145

<sup>29</sup> R.14-08-013.

*ii. how it utilizes its models that produce outputs measuring impact to people, structures or the environment, as detailed in Table 7 of its WMP, to assess the potential between high, moderate, and low risk on safety and reliability for the purposes of classifying priority levels in accordance with Rule 18*

PG&E provides an explanation of the models used in Table 7 of the 2020 WMP but does not explain how the models assess the potential between risk levels on safety and reliability for the purposes of classifying priority levels in accordance with Rule 18. PG&E also mentions that a third model, developed by Technosylva, is being evaluated for its fit in PG&E's Risk Modeling analysis.

**Action PGE-52:** In its 2021 WMP Update, PG&E shall explain how the models in Table 7 assess the potential between risk levels on safety and reliability for the purposes of classifying priority levels in accordance with Rule 18.

*iii. if PG&E does not utilize its models for such a purpose, PG&E shall develop a plan for doing so*

PG&E states that the first version of the tag prioritization model is under development and that it will lead to more frequent electric system risk scoring. PG&E also lists three directional steps for the maturation of risk modeling.

**Action PGE-53:** In its 2021 WMP Update, PG&E shall: 1) create a framework for the maturation of risk modeling outlining each step, including a timeline for completion and progress updates, and 2) expand on the details of each step.

#### **5.1.21. Condition (PGE-17, Class B):**

##### **Effectiveness of inspections using infrared technology**

WSD finding for PG&E's Condition PGE-17 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-17, corresponding discussions of specific insufficiencies for PG&E's response to PGE-17, and the actions required to make PG&E's QR Sufficient:

*In its first quarterly report, PG&E shall:*

*i. provide a detailed description of how its infrared inspections incrementally identify issues or faults along PG&E's grid that lead to ignitions, including evidence for the number of inspection findings uncovered by infrared inspections that would not have been uncovered in detail and patrol inspections*

PG&E states that the industry finds "about 70 percent of the problems identified with IR were not visible using visual-only means." However, PG&E does not provide where this statistic originates from, nor does PG&E confirm whether it sees the same amount in-field. Additionally, PG&E provides the number of Priority B and E findings based on found hotspots.

**Action PGE-54:** In its 2021 WMP Update, PG&E shall: 1) provide the source that states 70% of IR findings are not identified visually, and 2) provide the percentage of PG&E findings via IR that were not identified during prior visual inspections.

*ii. if it has no evidence that infrared inspections identify findings that would not have been identify in other inspections, describe and provide evidence for the expected outcomes in the context of risk reduction or cost savings that its infrared inspection program is expected to generate.*

PG&E fails to sufficiently meet this criterion, as none of it is present in PG&E's response. Instead, PG&E provides a short description of splice count findings, which should seemingly already be within PG&E's database based on records of repairs, or should be able to be identified visually without the use of IR.

**Action PGE-55:** In its 2021 WMP Update, PG&E shall: 1) provide the expected risk reduction for using IR inspections, as well as all inputs and algorithms used for the calculation, and 2) provide the estimated cost savings, both overall and per Overhead (OH) circuit mile, that IR inspections provide.

**Action PGE-56:** In its 2021 WMP Update, PG&E shall explain why IR inspections are used to determine splice count, and why it does not currently retain that information otherwise.

#### **5.1.22. Condition (PGE-18, Class B):**

**PG&E does not describe in detail how its hazard tree analysis focuses on at-risk trees**

WSD finding for PG&E's Condition PGE-18 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-18, corresponding discussions of specific insufficiencies for PG&E's response to PGE-18, and the actions required to make PG&E's QR Sufficient:

*In its first quarterly report, PG&E shall detail:*

*i. how it will ensure its hazard tree program prioritizes the highest risk areas and types of trees*

PG&E's response fails to address the deficiency as it spends the majority of its response providing definitions and provides minimal description of its actual process behind hazard tree prioritization. Instead, PG&E points to its Tree Assessment Tool (TAT), and does not expand at all on information provided in its 2020 WMP filing. PG&E's response makes no linkages between its highest risk areas and hazard trees, and fails to provide any prioritization discussion surrounding species type or geographic areas. PG&E needs to provide a full explanation about how it evaluates the outcomes of the TAT to prioritize the whole inventory of trees based on species and scores received in terms of scheduling tree work.

PG&E also brings up a new concept of a "Green Hazard Tree," which should be supported with statistics to demonstrate the prevalence of such an occurrence to provide a better understanding of how "particular and unusual" the classification is.<sup>30</sup>

**Action PGE-57:** In its 2021 WMP Update, PG&E shall: 1) explain the prioritization of hazard tree work in relation to the highest risk areas, and 2) prioritization of work relative to TAT scoring.

**Action PGE-58:** In its 2021 WMP Update, PG&E shall: 1) provide the top 10 at-risk EVM species categorized by geographical area,<sup>31</sup> and 2) provide a list of vegetation work prescribed based on specific tree species, if such exists and differs from at-risk identification.

**Action PGE-59:** In its 2021 WMP Update, PG&E shall: 1) provide the percentage of trees within PG&E's inventory that are classified as a "Green Hazard Tree," and 2) provide the percentage of both "Green Hazard Trees" worked and removed in relation to a) identified "Green Hazard Trees," b) total tree inventory, c) work performed on tree inventory, and d) total tree removals.

*ii. how it accounts for hazard tree programs in its memorandum accounts.*

PG&E sufficiently describes how these programs are tracked. During the routine maintenance inspection, any tree that is identified as dead and dying is classified as "first patrol" and has a unique work request and order number to separate it from routine maintenance work. During the CEMA inspection (or second patrol), trees identified as dead or dying are listed as "second patrol" and are given a unique work request and order number.

**5.1.23. Condition (PGE-19, Class B):  
Low pass rate on EVM QA**

WSD finding for PG&E's Condition PGE-19 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-19, corresponding discussions of specific insufficiencies for PG&E's response to PGE-19, and the actions required to make PG&E's QR Sufficient:

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<sup>30</sup> PG&E's QR at p. 156.

<sup>31</sup> Geographical area should be set by PG&E based on the finest level of granularity in which PG&E has performed this calculation. How PG&E defines this geographical area should also be provided in the response.

*In its first quarterly report, PG&E shall detail:*

*i. its enhanced vegetation management QA process, including identifying what type of process was used to determine the 60 percent pass rate and the 98 percent pass rate as well as the credentials and experience of the employees that did the inspections (title, rank and number of employees)*

PG&E needs to provide any details on changes on what constitutes Work Verification (WV) as used for the 2019 audit in comparison to the 2020 audit and needs to provide all criteria to ensure that the comparison of pass rates is due to PG&E performance changes and not due to calculation changes. PG&E also needs to provide a full definition of the "Pass w/ Observation"<sup>32</sup> designation and how that differs from a "Pass," since it is included in the percentage for passed within the WV audit.

**Action PGE-60:** In its 2021 WMP Update, PG&E shall: 1) describe what WV consists of when comparing the 2019 audit to the 2020 audit, and 2) provide all criteria for both the 2019 and 2020 pass rates.

**Action PGE-61:** In its 2021 WMP Update, PG&E shall: 1) define what "Pass w/ Observations" consists of, including all supporting procedures and criteria, and 2) provide a list of the observations made that "Pass w/ Observations" consists of from Table 21.

*ii. how PG&E plans to achieve its stated goal of a 92 percent rate of "meets expectations" on the "first pass" of inspections going forward, including the specific capabilities that PG&E plans to build or acquire and the timeline against which PG&E will build these, and the cost savings and other resource efficiencies that would be achieved by meeting this goal*

While PG&E outlines some of the shortcomings of the first pass, details such as the specific capabilities, cost, and timeline are not provided.

**Action PGE-62:** In its 2021 WMP Update, PG&E shall: 1) provide details on specific capabilities being implemented to improve inspection pass rates, 2) the cost increase or savings of each capability, and 3) the timeline for implementation of each capability, including past dates for any already implemented.

*iii. when PG&E plans to meet its stated goal of a 92 percent rate of "meets expectations" on the "first pass" of inspections*

PG&E explains that it has seemingly met this goal as of May 2020 with a trending monthly rate at 92 percent or better, but also that the yearly percentage is at 88 percent. PG&E needs to provide further detail showing the trend of pass rate on a month-by-month basis to better demonstrate improvements.

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<sup>32</sup> PG&E's QR at p. 166, Table 21.

**Action PGE-63:** In its 2021 WMP Update, PG&E shall: 1) provide the 2019 and 2020 monthly passing rate both in miles and percent, including the breakdown between “Pass” and “Pass w/Observation,” 2) explain whether criteria for pass rate changed, along with the month in which new criteria was utilized, and 3) continue providing monthly results in PG&E's future WMP and QR filings.

**5.1.24. Condition (PGE-20, Class B):**

**PG&E is redistributing resources to focus more on transmission clearances**

WSD finding for PG&E's Condition PGE-20 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-20, corresponding discussions of specific insufficiencies for PG&E's response to PGE-20, and the actions required to make PG&E's QR Sufficient:

*In its first quarterly report, PG&E shall:*

*i. explain in more detail why it made the change to transmission clearance, including whether the change was caused by recent fire(s) involving PG&E transmission lines*

PG&E uses Camp and Kincade as examples for transmission-related incidents to demonstrate the need for VM on the transmission side, but neither of these ignitions were vegetation-related, so increased VM would not have affected the cause of these fires. PG&E's rationale for this change therefore appears baseless based on the information provided.

*ii. identify all ignitions that resulted in spread on transmission assets*

Table 22 in PG&E's QR response seemingly incorrectly claims demonstration of transmission ignitions from vegetation based on the information in Table 11-2 of its 2020 WMP filing, but Table 11-2 shows only 1 transmission ignition. PG&E needs to clarify where the data in Table 22 is coming from and whether it accurately reflects actual vegetation-related ignitions, as currently it seems as though PG&E is presenting irrelevant information that does not reflect upon the need for increased transmission VM work. PG&E also does not identify the difference between ignitions in general compared to ignitions that resulted in significant spread, as required by this portion of the condition, which is necessary to better understand ignitions that were more likely to result in catastrophic wildfires.

**Action PGE-64:** In its 2021 WMP Update, PG&E shall: 1) explain where the numbers in Table 22 originated and why they differ from Table 11-2, 2) provide a revision of Table 22 showing only transmission-related ignitions caused by vegetation contact, and 3) include an additional row showing transmission-related ignitions caused by vegetation contact that led to fires greater than 500-acres.

*iii. explain what vegetation management will not occur as result of the change in focus*

PG&E fails to provide an actual explanation of the work that will not be completed as a result of shifting labor towards increased Transmission VM (TVM) efforts. PG&E also needs to provide more labor and resource details for a better understanding of the work shift outside of just miles.

**Action PGE-65:** In its 2021 WMP Update, PG&E shall: 1) include an estimated change from 2019 to 2020 in personnel hours for a) distribution EVM work and b) TVM work, and 2) provide the targeted miles for 2019 and 2020 of TVM.

#### **5.1.25. Condition (PGE-21, Class B):**

**PG&E fails to describe why additional programs for transmission clearances are necessary**

WSD finding for PG&E's Condition PGE-21 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-21, corresponding discussions of specific insufficiencies for PG&E's response to PGE-21, and the actions required to make PG&E's QR Sufficient:

*In its first quarterly report, PG&E shall explain:*

*i. the reason for PG&E's vegetation management focus on transmission*

The reason provided by PG&E does not justify the additional programs. PG&E explains that transmission de-energization could affect customers that are not in an HFTD area should a PSPS event be initiated. However, in PG&E's response to Guidance-4, PG&E states that currently completed VM does not impact the scope of PSPS events. Additionally, PG&E does not provide adequate data demonstrating the effect of vegetation risk on transmission lines when deciding the scope and locations for PSPS events, and even states that "the relative frequency of vegetation contacts with transmission assets is low."<sup>33</sup>

From there, PG&E states that TVM would "reduce the need to include transmission lines"<sup>34</sup> in de-energization events but fails to quantify how much this reduction would be. Additionally, PG&E states that shifting VM resources to TVM would reduce catastrophic wildfire risk by "reducing the probability of ignitions for transmission lines all the time,"<sup>35</sup> which seems inaccurate since vegetation contact is not the only driver causing ignitions at the transmission level. Based on data presented, including transmission assets in de-energization events should be more associated with asset health instead of vegetation management, as Table 11-2 of PG&E's WMP shows equipment failure as a much higher driver of ignition-cause.<sup>36</sup>

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<sup>33</sup> PG&E's QR at p. 172.

<sup>34</sup> PG&E's QR at p. 173.

<sup>35</sup> PG&E's QR at p. 173.

<sup>36</sup> While Table 11-2 shows object contact to be the highest probability cause of ignition for transmission assets, the majority are comprised of causes outside of PG&E's control (animal, car pole, etc.) and are uncorrelated to wildfire consequence risk factors. Therefore, the main cause within PG&E's control is from equipment failure, which is 28 times on average more likely to cause ignition than vegetation contact (5.60 compared to 0.20).

**Action PGE-66:** In its 2021 WMP Update, PG&E shall: 1) provide the percent reduction to transmission de-energization during PSPS events associated with TVM, including a description and supporting data of how such was calculated, 2) describe how PG&E factors in areas that have not undergone TVM when determining transmission de-energization during PSPS events, including all supporting procedures and models used, and 3) describe all instances in which a transmission line stayed energized due to TVM being completed, where it otherwise would have been subject to PSPS.

*ii. why this is an effective use of resources, and how PG&E has reached this conclusion, supported by quantitative data*

Condition ii requires the use of quantitative data, which this response lacks. The small amount of quantitative data provided regarding the Right of Way (ROW) expansion pilot needs further clarification to determine whether it proves the effectiveness of TVM. PG&E also fails to discuss how and why it deemed TVM to be a more effective use of resources when compared to distribution EVM. Instead, PG&E just states the percentage for both TVM and EVM within Table 23.

**Action PGE-67:** In its 2021 WMP Update, PG&E shall: 1) provide the number of OH circuit miles tested in the transmission ROW Expansion Program, 2) break down the number of vegetation-caused outages per year for the ten years prior to the 2017 ROW expansion pilot, 3) provide the number of vegetation-caused outages along the circuit miles demonstrating the ROW Expansion Program pilot in the ten years prior to the pilot, and 4) provide data on any ignition(s) that have occurred in areas that have undergone TVM outside of the pilot.

**Action PGE-68:** In its 2021 WMP Update, PG&E shall explain the resource shift from distribution EVM to TVM with the support of quantitative data and figures demonstrating increased effectiveness for decreasing catastrophic wildfire risk.

*iii. whether the focus on transmission level vegetation management is driven by short-term goals related to PSPS or long-term goals to reduce ignition risk*

PG&E describes TVM as a benefit to its long-term goals, even when PSPS focused, and is therefore not driven by short-term goals. This section is adequately covered by the analysis of the previous sections.

*iv. the amount of labor and resources being allocated to the program*

PG&E does not provide adequate detail for the amount of labor and resources in terms of quantitative values, and also lumps the TVM as ROW expansion and PSPS risk-tree work, which need to be decoupled.

**Action PGE-69:** In its 2021 WMP Update, PG&E shall provide the percentage of all VM resources (labor, costs, etc.) being allocated to TVM.

**Action PGE-70:** In its 2021 WMP Update, PG&E shall: 1) provide the resource allocation in terms of percentage between transmission ROW expansion and PSPS risk-tree work, and 2) provide the number of circuit miles completed in 2020 for transmission ROW expansion and PSPS risk-tree work, respectively.

*v. and the opportunity costs of its transmission clearance program on its broader vegetation management efforts for the distribution system*

PG&E states that costs for TVM are independent from distribution EVM, therefore making it difficult to provide a quantitative comparison, and instead provides that “700-725 of additional EVM distribution line-miles could have been mitigated”<sup>37</sup> given a standardized estimation based on “veg points,” number of full-time employees, and weekly EVM mile work.

**Action PGE-71:** In its 2021 WMP Update, PG&E shall: 1) define what a “veg point” is, and 2) discuss how 3.82 “veg points” was calculated for use when determining distribution EVM reallocation.

#### **5.1.26. Condition (PGE-22, Class B):**

##### **Some of PG&E's vegetation management inspectors may lack proper certification**

WSD finding for PG&E's Condition PGE-22 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-22, corresponding discussions of specific insufficiencies for PG&E's response to PGE-22, and the actions required to make PG&E's QR Sufficient:

*In PG&E's quarterly reports, PG&E shall detail:*

*i. the portion of its inspectors who are ISA certified*

PG&E states that only 29% of Pre-Inspectors are ISA certified, arguing that certification is not necessary and has in instances been disadvantageous, as out-of-state or even some experienced Pre-Inspectors with ISA certification have misidentified trees, or are not aware of California-specific conditions. PG&E instead relies more on training, WV, and the TAT to maintain proper inspection completion. However, WSD has brought up issues with each of these processes, some of which are identified in other conditions from the RCP.<sup>38</sup> PG&E needs to provide more details and clarification on these three focuses.

**Action PGE-72:** In its 2021 WMP Update, PG&E shall provide the pass-rate and identify the score required to pass the Pre-Inspector assessment.

**Action PGE-73:** In its 2021 WMP Update, PG&E shall: 1) explain whether and how it ensures that pre-inspection work not completed by an ISA certified pre-inspector is verified by an ISA certified arborist during the WV process, 2) furnish any supporting procedures and documents demonstrating that VM work is checked by an ISA certified

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<sup>37</sup> PG&E's QR at p. 174.

<sup>38</sup> See PG&E RCP Action Statement Action Item PGE-29.

arborist at some point in the process, and 3) clarify if PG&E's understanding of "vast majority" of work professionals having ISA certification correlates to the "50 percent" of the WV Team being ISA Certified Arborists, mentioned earlier within its response to the "Work Verification" explanation of this section.<sup>39</sup>

**Action PGE-74:** In its 2021 WMP Update, PG&E shall: 1) explain how it verifies and improves the TAT, 2) provide the timeline/frequency of verification and improvements, and 3) provide a list of SMEs that contributed to and "endorsed"<sup>40</sup> the TAT.

*ii. the portion of its inspectors who plan to be ISA certified by the time of its 2021 WMP supplement filing*

PG&E estimates that about one to two percent of pre-inspectors will become ISA certified by the 2021 filing, and states that it is encouraging its pre-inspector employees to do so. However, PG&E needs to provide more details as to how it plans on increasing ISA certification.

**Action PGE-75:** In its 2021 WMP Update, PG&E shall explain the resources and processes it provides to employees to support ISA certification of its pre-inspectors.

*iii. how it will ensure effective inspection quality control protocols if some inspectors are not ISA certified*

PG&E further describes the processes from subpart (i). However, PG&E needs to substantiate its response with concrete examples and statistics to better evaluate the resources being used for these efforts. In particular, PG&E needs to provide more explanation as to the need for 100 percent WV of EVM work.

**Action PGE-76:** In its 2021 WMP Update, PG&E shall: 1) explain what the verification process entails for the 100 percent of EVM work being checked, including the length of time it takes the WV process to be completed per circuit mile, and 2) explain why it finds it necessary to increase the WV process for Routine Maintenance from 10 percent to 25 percent.<sup>41</sup>

#### **5.1.27. Condition (PGE-23, Class B):**

##### **Vegetation waste and fuel management processes unclear**

WSD finding for PG&E's Condition PGE-23 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-23, corresponding discussions of specific insufficiencies for PG&E's response to PGE-23, and the actions required to make PG&E's QR Sufficient:

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<sup>39</sup> PG&E's QR at p. 177.

<sup>40</sup> PG&E's QR at p. 177.

<sup>41</sup> PG&E's QR at p. 178.

## WSD Evaluation of PG&E's First QR

*In its first quarterly report, PG&E shall:*

*i. the criteria it uses to identify and prioritize areas for fuel management to enhance defensible space*

PG&E states that the first areas for the Transmission Utility Defensible Space (UDS) pilot were selected because they had already undergone transmission ROW expansion and will potentially no longer be de-energized during a PSPS event. However, as addressed in Condition PGE-21, determining de-energization of transmission assets would seemingly depend more on asset health and not vegetation management, so it is unclear how PG&E is determining a transmission circuit would not be de-energized based on TVM. Additionally, it is unclear why PG&E finds both TVM and UDS to be necessary, as these programs may be redundant, particularly since transmission presents less risk than distribution regarding vegetation-caused incidents. Additionally, PG&E provides no discussion on use of similar UDSs for distribution, regarding whether it has been evaluated as an option nor if it is being utilized in any areas.

**Action PGE-77:** In its 2021 WMP Update, PG&E shall: 1) provide the percentage and number of OH circuit miles that underwent the Transmission UDS pilot program, including the Transmission UDS and ROW Expansion overlap, for both completed and scheduled work, and 2) explain how it determines UDS is beneficial on top of TVM, and how the benefits between the two differ.

**Action PGE-78:** In its 2021 WMP Update, PG&E shall: 1) describe whether it has evaluated implementing UDS for distribution ROW, and either a) provide locations where UDS for distribution ROW is being implemented or planned to be implemented, or b) explain why PG&E is not utilizing UDS for distribution ROW vegetation maintenance.

*ii. what specific areas were treated during the previous reporting period, including supporting GIS files*

*iii. what specific areas are planned to be treated during the upcoming reporting period, including supporting GIS files*

For subparts (ii) and (iii), PG&E adequately lists out the circuits included in the programs.

*iv. the types of vegetation waste treatments it uses across its grid, including how it chooses where to use each treatment, and how effective each of these vegetation waste treatments are in the location where they are deployed*

PG&E explains how it determines effectiveness and provides a set of before and after photos for one example. However, the means of determining effectiveness are primarily qualitative in how PG&E describes them, and do not demonstrate actual calculations of effectiveness based on area, instead relying on PG&E SME input and not measurable outputs.

**Action PGE-79:** In its 2021 WMP Update, PG&E shall provide quantitative determinations of effectiveness for its fuel management efforts broken down by geographical area,<sup>42</sup> demonstrating how PG&E tracks effectiveness when optimizing its processes based on geography.

*v. its work with federal and state landowners, including the U.S. Forest Service, on fuel reduction programs, including a listing of all programs it has in place with these entities, and the end date of each program, if applicable*

PG&E adequately describes its current efforts with U.S. Forest Service, California State Parks, Bureau of Land Management, National Parks Service, and U.S Fish and Wildlife Service.

**5.1.28. Condition (PGE-24, Class B):  
Improving prioritization**

WSD finding for PG&E's Condition PGE-24 response: Insufficient

Below is an analysis of the itemized requirements within Condition PGE-24, corresponding discussions of specific insufficiencies for PG&E's response to PGE-24, and the actions required to make PG&E's QR Sufficient:

*In its first quarterly report, PG&E shall explain its method and process for:*

*i. prioritizing between system hardening and vegetation management efforts in a single location*

PG&E states that system hardening and VM are independent and cannot be assessed congruently, and points back to the modeling efforts currently being developed, particularly in regards to the MAVF, which should be developed by mid-2021.

**Action PGE-80:** In its 2021 WMP Update, PG&E shall: 1) provide a framework or outline of the modeling efforts underway to integrate system hardening and VM, and 2) describe the initiatives it is taking in order to integrate the two moving forward.

*ii. leveraging past initiative performance data and lessons learned for improving future prioritization decisions*

PG&E states that it is developing new strategies for data governance, management, integration and access. However, it is unclear whether these new strategies will be able to integrate past data, which is essential for analyzing trends over time.

**Action PGE-81:** In its 2021 WMP Update, PG&E shall: 1) explain whether these developments are solely for newly collected data or if these developments allow retroactive data integration for previously collected data, and 2) if they do not allow for previous data usage, explain a) why PG&E does not have such capability and b) why PG&E deems its plan to be sufficient.

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<sup>42</sup> Geographical area should be set by PG&E based on the finest level of granularity in which PG&E has performed this calculation. How PG&E defines this geographical area should also be provided in the response.

*iii. balancing hardening and remediation work to reduce ignition probability related to asset failure*

PG&E adequately addresses this section by explaining it is transitioning from a semi-quantitative process that is heavily dependent on SMEs to a system that uses internally and externally developed technology and tools for data collection and risk evaluation.

*iv. determining the quantitative effect on PSPS thresholds from hardening initiatives*

PG&E provides a demonstration of system hardening effectiveness based on a type of outage cause broken down into five categories: all, high, medium, low, and none. However, this action only demonstrates the effectiveness of outage chance reduction, and fails to tie system hardening to changes in PSPS thresholds.

**Action PGE-82:** In its 2021 WMP Update, PG&E shall provide an update and explanation as to how its hardening initiatives have directly impacted its threshold values for initiating de-energization events, giving a) particular locations and b) quantitative data showing such changes.

**Action PGE-83:** In its 2021 WMP Update, PG&E shall provide the calculations used to determine the percent outage reduction of the five categories (all, high, medium, low, and none) presented on pg. 194 of PG&E's QR.

**5.1.29. Condition (PGE-28, Class B):**

**Lack of justification and detail for PG&E's self-assessed stakeholder engagement capabilities**

WSD finding for PG&E's Condition PGE-28 response: Sufficient

*In a quarterly report, PG&E shall:*

*i. list and describe all actions it is taking to coordinate and collaborate with local communities regarding its wildfire mitigation activities and PSPS*

PG&E provides adequate descriptions of the initiatives it has taken in order to better coordinate and collaborate with local communities, including listening sessions, wildfire safety working sessions, PSPS advisory boards formation, PSPS portal improvements, county reporting, customer outreach, website improvements, meetings with stakeholders, and AFN community outreach. Any action items required were addressed within the evaluation of PG&E's RCP.

*ii. the timeline for completion of the actions identified in (i)*

The timeline for each action is integrated in the response to subpart (i).

*iii. actions it completed in the previous quarter*

*iv. actions planned for completion in the following quarter*

PG&E adequately integrates the criteria for subparts (iii) and (iv) into Tables 28 to 34.

**5.1.30. Condition (PGE-29, Class B):  
Cooperation and sharing of best practices**

WSD finding for PG&E's Condition PGE-29 response: Sufficient

*In its first quarterly report, PG&E shall:*

*i. provide a report detailing its progress regarding best practice sharing with entities outside of California*

PG&E's response is brief, providing a short list of examples of initiatives taken outside of California.

*ii. include a description of how such interactions have changed or improved, including specific examples*

PG&E mentions "lessons learned and tools to share"<sup>43</sup> and briefly discusses PSPS lessons learned and shared.

*iii. include a description of how it has applied lessons learned into its 2020 WMP*

PG&E provides a list of specific examples learned, but needs to directly correlate how lessons are incorporated into initiatives moving forward.

**Action PGE-84:** In its 2021 WMP Update, PG&E shall incorporate lessons learned from the 2020 WMP filing into its discussion of each initiatives.

**6. QR Response Timeline**

While it is the WSD's goal to receive responses to the Actions identified in Section 5.1 of this document in the 2021 WMP Update, the WSD recognizes the limited time between the issuance of this evaluation and the February 5, 2021 due date for the 2021 WMP Update. Accordingly, the WSD urges PG&E to respond to as many of the Actions in Section 5.1 as reasonably possible in its 2021 WMP Update but will permit a single supplemental filing to address all insufficient elements of its QR not previously addressed in its 2021 WMP Update. This supplemental filing shall be submitted as soon as it is available but no later than February 26, 2021.

**7. 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 QR, 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

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<sup>43</sup> PG&E's QR at p. 218.

WSD Evaluation of PG&E's First QR

WMP, RCP, QR and other required updates through the Division's continued audit and compliance work.

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. The WSD notes that 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 the present document.

Sincerely,

A handwritten signature in blue ink, appearing to read 'C. Thomas Jacobs', with a stylized flourish at the end.

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