PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

January 13, 2021 TA2020-884

Lise Jordan, Sr. Director
Regulatory Compliance and Quality Assurance
Pacific Gas and Electric Company (PG&E)
77 Beale Street
San Francisco, CA 94105

**SUBJECT**: Electric Transmission Audit of PG&E's Fresno Division

Dear Ms. Jordan:

On behalf of the Electric Safety and Reliability Branch (ESRB) of the California Public Utilities Commission (CPUC), Stephen Lee and Brandon Vazquez of ESRB conducted an electric transmission audit of PG&E's Fresno Division from November 16, 2020 through November 20, 2020. ESRB staff conducted field inspection of PG&E's transmission facilities and equipment and reviewed pertinent documents and records.

During the audit, ESRB staff identified violations of one or more General Orders (GOs). A copy of the audit findings itemizing the violations is enclosed. Please provide a response no later than February 10, 2021, by electronic copy of all corrective actions and preventive measures taken by PG&E to correct the identified violations and prevent the recurrence of such violations. The response should indicate the date of each remedial action and preventive measure completed. For any outstanding items not addressed, please provide the projected completion dates of all corrective actions for the violations outlined in Sections II, IV, and V of the enclosed Audit Findings.

If you have any questions concerning this audit, please contact Brandon Vazquez at (415) 703-1076 or brandon.vazquez@cpuc.ca.gov.

Sincerely,

Banu Acimis, P.E.
Program and Project Supervisor
Electric Safety and Reliability Branch
Safety and Enforcement Division
California Public Utilities Commission

Enclosure: CPUC Audit Findings

Cc: Lee Palmer, Director, Safety and Enforcement Division, CPUC
Nika Kjensli, Program Manager, ESRB, SED, CPUC

Nathan Sarina, Senior Utilities Engineer (Supervisor), ESRB, SED, CPUC
Rickey Tse, Senior Utilities Engineer (Supervisor), ESRB, SED, CPUC
Brandon Vazquez, Utilities Engineer, ESRB, SED, CPUC

**PG&E Fresno Division Electric Transmission Audit Report**
**November 16 – 20, 2020**

## I. Records Review

During the record review part of the audit, ESRB staff reviewed the following records:

- The current version of PG&E's "Electric Transmission Preventive Maintenance (ETPM) Manual TD-1001M"
- Inspection Job Aids
- Vegetation Management Quality Control and Quality Assurance policy and procedures
- A list of all circuits in the division and circuit maps, with the circuits in Tier 2 or Tier 3 High Fire Hazard areas identified
- The circuits in the division that are subject to Public Safety Power Shutoff (PSPS)
- Detailed inspections, detailed climbing inspections and patrols for the Fresno Division for the past 10 years
- A summary of modifications, to the inspection and patrol procedures as a result of the Wildfire Safety Inspection Program (WSIP)
- Completed work orders with notifications from the past 12 consecutive calendar months, cancelled work orders with notifications from the past 12 consecutive calendar months, and completed late work orders from April 1, 2015 to October 6, 2020
- Infrared testing results from four of the circuits in the division
- LiDAR and spectral imagery records taken in the Fresno Division
- Intrusive test results from four poles in each of the circuits in the division
- New overhead and underground construction projects completed in the last 12 months for the entire division
- Insulator wash records for 2018-October 6, 2020
- Vegetation management records from January 2018 through October 6, 2020
- Relevant periodic or non-periodic inspection records or maintenance items for 2019 and 2020.
- Qualification records of all PG&E employees and contractors who conducted inspections, patrols, and vegetation related inspections and tree trimming in the Fresno Division in 2018, 2019, and 2020

## II. Records Violations

ESRB staff found the following violations during the record review portion of the audit:

1. **General Order (GO) 95, Rule 31.1, Design, Construction and Maintenance** states in part:

> *"Electrical supply and communication systems shall be designed, constructed, and maintained for their intended use, regard being given to the conditions under which they are to be operated, to enable the furnishing of safe, proper, and adequate service.*
>
> *For all particulars not specified in these rules, design, construction, and maintenance should be done in accordance with accepted good practice for the given local conditions known at the time by those responsible for the design, construction, or maintenance of communication or supply lines and equipment."*

ESRB staff reviewed work orders from Data Request Item #10 – "Q10 A, B, and C" that were created between April 1, 2015 and October 6, 2020 for the Fresno Division. PG&E's Electric Transmission Preventive Maintenance Manual (ETPM), Revision 5, effective August 31, 2020, Table 3 below defines the priority codes and associated time frames for the response/repair action.

**Table 3. Priority Codes**

| Priority Code[1] | Priority Description |
|---|---|
| A[2] | The condition is urgent and requires **immediate** response and continued action until the condition is repaired or no longer presents a potential hazard. SAP due date will be 30 days to allow time for post-construction processes and notification close-out. |
| B[3] | Corrective action is required within **3 months** from the date the condition is identified. The condition must be reported to the transmission line supervisor as soon as practical. |
| E | Corrective action is required within **12 months** from the date the condition is identified ***EXCEPT FOR ITEMS WITHIN HFTD TIER 3 ARE REQUIRED WITHIN 6 MONTHS.***[4]. |
| F | Corrective action is recommended within **24 months** from the date the condition is identified, (due beyond 12 months, not to exceed 24 months). ***EXCEPT FOR ITEMS WITHIN HFTD TIER 3 ARE REQUIRED WITHIN 6 MONTHS AND WITHIN HFTD TIER 2 ARE REQUIRED WITHIN 12 MONTHS.***[5] |

[1] Refer to 2.3.5.2, "Priority Code Due Dates for High Fire Risk Conditions within HFTDs" and 2.3.5.3, "Priority Code Due Dates for Non-Fire Risk Conditions within HFTDs."

[2] QCRs must report immediately any "Priority Code A" abnormal condition to the transmission line supervisor, and the transmission supervisor or QCR contacts GCC.

[3] In addition, QCRs must report any "Priority Code B" condition to the transmission line supervisor as soon as practical, to ensure that correction occurs within the appropriate time.

[4] If the condition in the HFTD Tier 3 does NOT create a fire risk (non-threatening) the corrective action is required within 12 months.

[5] If the condition in the HFTD Tier 3 OR Tier 2 does NOT create a fire risk (non-threatening) the corrective action is required within 24 months.

ESRB acknowledges that under PG&E's Wildfire Safety Inspection Program Compliance Plan and Interim Controls, PG&E monitors open work orders by performing annual safety reassessments, prioritizes work orders based on risk, and deploys interim safety controls for open work orders, and executes corrective action work associated with the WSIP-identified work orders. PG&E provides ESRB with regular quarterly reports regarding the status of work orders that are past their initially scheduled completion dates.

ESRB found a total of 1,766 work orders in Data Request Item #10 – "Q10 A, B, and C", Tab Q10 C, that were past due from their respective due dates per Table 3, Priority Codes specified in PG&E's ETPM, Revision 5. Table 1 below is a breakdown of the 1,766 past due work orders for each priority. For work orders that are still open but past their initially scheduled completion date, ESRB used the reference date of October 6, 2020 to calculate the number of days past due. This is the date ESRB sent PG&E the audit's data request.

**Table 1 - Number and percentage of work orders past their initially scheduled completion dates by priority codes**

| Priority Codes | Work Orders Past Original Due Date | Total Percent of Past Due Work Orders |
|---|---|---|
| **B** | 50 | 2.8% |
| **E** | 1,447 | 82.0% |
| **F** | 269 | 15.2% |
| **Total** | **1,766** | **100%** |

Table 2 below identifies the most overdue past due work orders for each priority.

**Table 2 - Most overdue past due work orders per priority and the number of days past due**

| Priority Codes | Most Overdue Work Orders (WO #s) | Number of Days Past Required End Dates |
|---|---|---|
| **B** | 112529245 | 276 |
| **E** | 102512534 and 117176901 | 363 |
| **F** | 102518854, 102542419, and 102567261 | 553 |

The Priority B work order #112529245 was identified on January 22, 2016 and given a required end date of April 21, 2016 for the corrective action. PG&E did not complete the work until January 22, 2017.

The Priority E work order #102512534 was identified on August 24, 2006 and given a required end date of October 30, 2015 for the corrective action. PG&E did not complete the work until October 27, 2016. In PG&E's response, please explain why the required end date for this work order is inconsistent with the required end date for Priority E as defined in the ETPM.

The Priority E work order #117176901 was identified on April 9, 2019 and given a required end date of October 9, 2019. As of October 6, 2020, PG&E has not completed this work order.

The Priority F work order #102518854 was identified on November 21, 2006 and given a required end date of December 31, 2015 for the corrective action. PG&E did not complete the work until July 6, 2017. In PG&E's response, please explain why the required end date for this work order is inconsistent with the required end date for Priority F as defined in the ETPM.

The Priority F work order #102542419 was identified on January 31, 2007 and given a required end date of December 31, 2015 for the corrective action. PG&E did not complete the work until July 6, 2017. In PG&E's response, please explain why the required end date for this work order is inconsistent with the required end date for Priority F as defined in the ETPM.

The Priority F work order #102567261 was identified on July 16, 2007 and given a required end date of December 31, 2015 for the corrective action. PG&E did not complete the work until July 6, 2017. In PG&E's response, please explain why the required end date for this work order is inconsistent with the required end date for Priority F as defined in the ETPM.

## III. Field Inspection List

During the field inspection, ESRB staff inspected the following facilities:

| Location | Structure Number | Main Host Circuit | Voltage (kV) |
|---|---|---|---|
| 1 | 12/102 | Herndon-Barton | 115 |
| 2 | 8/4 | Sanger-Malaga | 115 |
| 3 | 8/5 | Sanger-Malaga | 115 |
| 4 | 8/6 | Sanger-Malaga | 115 |
| 5 | 8/7 | Sanger-Malaga | 115 |
| 6 | 8/8 | Sanger-Malaga | 115 |
| 7 | 10/10 | McCall-Malaga | 115 |
| 8 | 0/19 | Malaga-KRCD | 115 |
| 9 | 3/27 | Gregg-Ashlan | 230 |
| 10 | 4/31 | Herndon-Barton | 115 |
| 11 | 4/30 | Herndon-Barton | 115 |
| 12 | 3/26 | Gregg-Ashlan | 230 |
| 13 | 13/14 | Oro Loma-Canal #1 | 70 |
| 14 | 13/15 | Oro Loma-Canal #1 | 70 |
| 15 | 13/16 | Oro Loma-Canal #1 | 70 |
| 16 | 13/17 | Oro Loma-Canal #1 | 70 |
| 17 | 14/1 | Oro Loma-Canal #1 | 70 |
| 18 | 14/1A | Oro Loma-Canal #1 | 70 |
| 19 | 14/1B | Oro Loma-Canal #1 | 70 |
| 20 | 20/9 | Mercy Springs SW STA-Canal-Oro Loma | 70 |
| 21 | 20/8 | Mercy Springs SW STA-Canal-Oro Loma | 70 |
| 22 | 20/7 | Mercy Springs SW STA-Canal-Oro Loma | 70 |
| 23 | 36/152 | Los Banos-Midway #2 | 500 |
| 24 | 36/152 | Los Banos-Gates #1 | 500 |
| 25 | 36/151 | Los Banos-Midway #2 | 500 |
| 26 | 36/151 | Los Banos-Gates #1 | 500 |
| 27 | 3/6 | Camden-Kingsburg | 70 |
| 28 | 3/5 | Camden-Kingsburg | 70 |
| 29 | 3/4 | Camden-Kingsburg | 70 |
| 30 | 3/3 | Camden-Kingsburg | 70 |
| 31 | 3/2 | Camden-Kingsburg | 70 |

| Location | Structure Number | Main Host Circuit | Voltage (kV) |
|---|---|---|---|
| 32 | 3/5 | Kingsburg-Lemoore | 70 |
| 33 | 27/205 | Kingsburg-Corcoran #1 | 115 |
| 34 | 27/204 | Kingsburg-Corcoran #1 | 115 |
| 35 | 27/203 | Kingsburg-Corcoran #1 | 115 |
| 36 | 27/202 | Kingsburg-Corcoran #1 | 115 |
| 37 | :2/6 | Kingsburg-Lemoore | 70 |
| 38 | :2/5 | Kingsburg-Lemoore | 70 |
| 39 | :2/4 | Kingsburg-Lemoore | 70 |
| 40 | 14/13 | Five Points SW STA-Huron-Gates | 70 |
| 41 | 14/12 | Five Points SW STA-Huron-Gates | 70 |
| 42 | 15/1 | Five Points SW STA-Huron-Gates | 70 |
| 43 | C0/3 | Le Grand-Chowchilla | 115 |
| 44 | C0/2B | Chowchilla-Kerckhoff | 115 |
| 45 | C0/2A | Le Grand-Chowchilla | 115 |
| 46 | 77/500 | Wilson-Borden | 230 |
| 47 | 24/2 | Exchequer-Le Grand | 70 |
| 48 | 24/1 | Exchequer-Le Grand | 70 |
| 49 | 24/0 | Exchequer-Le Grand | 70 |
| 50 | 7/9 | Briceburg Jct-Mariposa Tap | 70 |
| 51 | 19/5 | Exchequer-Mariposa | 70 |
| 52 | 19/4 | Exchequer-Mariposa | 70 |
| 53 | 19/3 | Exchequer-Mariposa | 70 |
| 54 | 7/13 | Briceburg Jct-Mariposa Tap | 70 |
| 55 | 7/14 | Briceburg Jct-Mariposa Tap | 70 |
| 56 | 7/15 | Briceburg Jct-Mariposa Tap | 70 |
| 57 | 7/12 | Briceburg Jct-Mariposa Tap | 70 |
| 58 | 7/11 | Briceburg Jct-Mariposa Tap | 70 |
| 59 | 7/10 | Briceburg Jct-Mariposa Tap | 70 |
| 60 | 7/9 | Briceburg Jct-Mariposa Tap | 70 |
| 61 | 6/6 | Merced #1 | 70 |
| 62 | 6/7 | Merced #1 | 70 |
| 63 | 6/5 | Merced #1 | 70 |
| 64 | 6/4 | Merced #1 | 70 |
| 65 | 6/3 | Merced #1 | 70 |

| Location | Structure Number | Main Host Circuit | Voltage (kV) |
|---|---|---|---|
| 66 | 6/2 | Merced #1 | 70 |
| 67 | 6/1 | Merced #1 | 70 |
| 68 | 5/16 | Merced #1 | 70 |
| 69 | 5/15 | Merced #1 | 70 |
| 70 | :0/1 | Merced #1 | 70 |
| 71 | :0/2 | Merced #1 | 70 |
| 72 | :0/3 | Merced #1 | 70 |
| 73 | :0/4 | Merced #1 | 70 |

## IV. Field Inspection – Violations List

ESRB staff observed the following violations during the field inspection. Prior to the field inspection, PG&E did not have LC Notifications for the violations below:

1. **GO 95, Rule 31.1, Design, Construction and Maintenance** states in part:

   *"Electrical supply and communications systems shall be designed, constructed, and maintained for their intended use, regard being given to the conditions under which they are to be operated, to enable the furnishing of safe, proper, and adequate service.*

   *For all particulars not specified in these rules, design, construction, and maintenance should be done in accordance with accepted good practice for the given local conditions known at the time by those responsible for the design, construction, or maintenance of communication or supply lines and equipment."*

1.1. The tower 3/27 on the Gregg-Ashlan, 230 kV circuit (Location 9) had a bent secondary member. During the field inspection, PG&E created the Priority E Line Corrective (LC) LC Notification #120047990 to replace the damaged member by November 17, 2021.

1.2. The tower 4/31 on the Herndon-Barton, 115 kV circuit (Location 10) had a bent secondary member. During the field inspection, PG&E created the Priority E LC Notification #120048068 to replace the damaged member by November 17, 2021.

1.3. The wooden pole 13/16 on the Oro Loma-Canal #1, 70 kV circuit (Location 15) had conductor splices less than 10 feet from the supporting point of attachment. During the field inspection, PG&E created the Priority B LC Notification 120048862 to either install vibration dampers to mitigate vibration from the splices or to relocate the splices to more than 10 feet by February 17, 2021.

1.4. The wooden pole 20/9 on the Mercy Springs SW STA-Canal-Oro Loma (Location 20) was missing required visibility strips. During the field inspection, PG&E corrected the issue by attaching new visibility strips to the pole.

1.5. The wooden pole 20/8 on the Mercy Springs SW STA-Canal-Oro Loma (Location 21) was missing required visibility strips. During the field inspection, PG&E corrected the issue by attaching new visibility strips to the pole.

1.6. The wooden pole 20/7 on the Mercy Springs SW STA-Canal-Oro Loma (Location 22) was missing required visibility strips. During the field inspection, PG&E corrected the issue by attaching new visibility strips to the pole.

1.7. The wooden pole 3/5 on the Kingsburg-Lemoore, 70 kV circuit (Location 32) was missing required visibility strips. During the field inspection, PG&E corrected the issue by attaching new visibility strips to the pole.

1.8. The tower C0/2A on the Le Grande-Chowchilla, 115 kV circuit (Location 45) had a missing bolt on the A leg stub. PG&E created the Priority E LC Notification 120074373 to replace the missing bolt by November 19, 2021.

1.9. The wooden pole 7/9 on the Briceburg Jct-Mariposa Tap, 70 kV line (Location 60) had a woodpecker hole near the pole's split bolt and insulator dead end bolt. PG&E created the Priority E LC Notification 120076252 to replace the pole by November 19, 2021.

1.10. The wooden pole 6/2 on the Merced #1, 70 kV circuit (Location 66) had a damaged ceramic insulator skirt on the top phase. PG&E created the Priority E LC Notification 120079548 to replace all three ceramic insulators with new polymer insulators by November 20, 2021.

1.11. The wooden pole 5/16 on the Merced #1, 70 kV circuit (Location 68) had a missing fiberglass link on the span guy. PG&E created the Priority E LC Notification 120079712 to install fiberglass strain insulators on all down guys by November 20, 2021.

1.12. The wooden pole 5/15 on the Merced #1, 70 kV circuit (Location 69) had a missing fiberglass link on the span guy. PG&E created the Priority E LC Notification 120079774 to install fiberglass strain insulators on all down guys by November 20, 2021.

1.13. The wooden pole :0/1 on the Merced #1, 70 kV circuit (Location 70) had a missing fiberglass link on the span guy. PG&E created the Priority E LC Notification 120079850 to install fiberglass strain insulators on all down guys by November 20, 2021.

**2. GO 95, Rule 61.7, Stepping** states in part:

*"All towers which are required to be climbed by workmen shall be provided with steps or ladders. Steps or ladders shall start at not less than 7 feet 6 inches from the ground line or from any easily climbed foreign structure, within 6 feet of a tower, from which one could reach or step,*

*including tower footings. The spacing between steps on the same side of the tower legs shall not exceed 36 inches."*

The tower 10/10 on the McCall-Malaga, 115 kV circuit (Location 7) had a pole step that was less than 7 feet 6 inches from the ground line. During the field inspection, PG&E corrected the issue by removing the low pole step.

**3. GO 95, Rule 56.2, Use** states in part:

*"Guys shall be attached to structures, as nearly as practicable, at the center of load. They shall be maintained taut and of such strength as to meet the safety factors of Rule 44."*

The wooden pole 3/5 on the Kingsburg-Lemoore, 70 kV circuit (Location 32) had a loose anchor guy. During the field inspection, PG&E corrected the issue by tightening the anchor guy.

## V. Field Inspection – Documented Violations List

ESRB staff observed the following violations during the field inspection. ESRB staff acknowledges that PG&E had already discovered and created LC Notifications for all the findings below during PG&E's past patrols and inspections. However, ESRB includes these findings in the audit report because the conditions themselves, such as bent structure members and rotten crossarms, are violations to General Order 95 Rules.

**1. GO 95, Rule 31.1, Design, Construction and Maintenance** states in part:

*"Electrical supply and communications systems shall be designed, constructed, and maintained for their intended use, regard being given to the conditions under which they are to be operated, to enable the furnishing of safe, proper, and adequate service.*

*For all particulars not specified in these rules, design, construction, and maintenance should be done in accordance with accepted good practice for the given local conditions known at the time by those responsible for the design, construction, or maintenance of communication or supply lines and equipment."*

1.1. The tower 3/26 on the Gregg-Ashlan, 230 kV circuit (Location 12) had multiple bent members. On May 22, 2019, PG&E created the Priority E LC Notification 117299061 to replace the bent members by May 22, 2020. PG&E performed a field safety reassessment on April 29, 2020 and now expects to complete the work by May 31, 2021.

1.2. The tower 14/1 on the Oro Loma-Canal #1, 70 kV circuit (Location 17) had multiple damaged members. On November 3, 2020, PG&E created the Priority E LC

Notification 119988395 to replace all damaged members. PG&E expects to complete the work by November 3, 2021.

1.3. The tower 36/152 on the Los Banos-Gates #1, 500 kV circuit (Location 24) had multiple bent members. On August 20, 2020, PG&E created the Priority E LC Notification 119643015 to replace all bent members. PG&E expects to complete the work by August 20, 2021.

1.4. The wooden pole 3/6 on the Camden-Kingsburg, 70 kV circuit (Location 27) had a rotten crossarm. On November 2, 2020, PG&E created the Priority E LC Notification 119973258 to reframe the structure. PG&E expects to complete the work by November 2, 2021.

1.5. The wooden pole 3/5 on the Camden-Kingsburg, 70 kV circuit (Location 28) had a rotten crossarm. On November 2, 2020, PG&E created the Priority E LC Notification 119973262 to reframe the structure. PG&E expects to complete the work by November 2, 2021.

1.6. The wooden pole 3/3 on the Camden-Kingsburg, 70 kV circuit (Location 30) had a twisted top crossarm. On July 27, 2020, PG&E created the Priority E LC Notification 119508896 to replace the pole. PG&E expects to complete the work by July 27, 2021.

1.7. The wooden pole 3/2 on the Camden-Kingsburg, 70 kV circuit (Location 31) had a missing fiberglass link on the down guy. On September 28, 2020, PG&E created the Priority E LC Notification 119827897 to install fiberglass strain insulators on all down guys. PG&E expects to complete the work by September 28, 2021.

1.8. The tower 27/203 on the Kingsburg-Corcoran #1, 115 kV circuit (Location 35) had exposed earth footing and dirty insulators. On April 22, 2019, PG&E created the Priority E LC Notification 117074792 to modify the structure with screw anchors to correct the exposed earth footing issue. PG&E expected to complete this work by April 22, 2020. ESRB notes that PG&E did not perform a field safety reassessment for this LC Notification and that the notification is past its required end date; therefore, it is a violation. On July 21, 2020, PG&E created the Priority E LC Notification 119483347 to wash dirty insulators on the structure. PG&E expects to complete this work by July 21, 2021.

1.9. The tower C0/3 on the Le Grand-Chowchilla, 115 kV circuit (Location 43) had a bird’s nest near one of the top insulators. On March 12, 2019, PG&E created the Priority E LC Notification 116718492 to remove the nest by March 12, 2020. PG&E performed a field safety reassessment on April 8, 2020 and now expects to remove the nest by May 31, 2021. ESRB notes that PG&E performed the field safety reassessment past this LC Notification’s original due date.

2. **GO 95, Rule 44.3, Replacement** states in part:

> *"Lines or parts thereof shall be replaced or reinforced before safety factors have been reduced (due to factors such as deterioration and/or installation of additional facilities) in Grades 'A' and 'B' construction to less than two-thirds of the safety factors specified in Rule 44.1 and in Grade 'C' construction to less than one-half of the safety factors specified in Rule 44.1."*

The wooden pole 15/1 on the Five Points SW STA-Huron Gates, 70 kV circuit (Location 42) requires replacement. On March 29, 2019, PG&E created the Priority F LC Notification 117500693 to stub the pole by March 29, 2021. On November 18, 2020, PG&E performed a safety reassessment and expedited the LC Notification to Priority B. PG&E expects to replace the pole in 90 days from the safety reassessment by February 16, 2021.