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

August 5, 2020 SA2020-854

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

SUBJECT: Records Review Findings - Audit of PG&E San Carlos Substation Headquarters

Dear Ms. Jordan:

On behalf of the Electric Safety and Reliability Branch (ESRB) of the California Public Utilities Commission (CPUC), Raymond Cho, Ogeonye Enyinwa, Rajan Mutialu, and Samuel Mandell of my staff conducted a substation records audit of PG&E's San Carlos Substation Headquarters (San Carlos HQ). The records audit included a review of PG&E's substation procedures and maintenance records.

During the records review portion of the audit, my staff identified violations of General Order 174. A copy of the audit findings itemizing the violations is enclosed. Please provide a response no later than September 7, 2020, via electronic transmittal of all corrective actions and preventive measures taken by PG&E to correct the identified violations and prevent the recurrence of such violations along with responses to the follow up questions.

If you have any questions concerning this audit, please contact Raymond Cho at (415) 703-2236 or raymond.cho@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

Enclosures: CPUC Audit Findings
Spreadsheet of Pending Notifications

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

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Cc (continued):

Raymond Cho, Senior Utilities Engineer-Specialist, ESRB, SED, CPUC
Rickey Tse, Senior Utilities Engineer- Supervisor, ESRB, SED, CPUC
Nathan Sarina, Senior Utilities Engineer- Supervisor- ESRB, SED, CPUC
Ogeonye Enyinwa, Utilities Engineer, ESRB, SED, CPUC
Rajan Mutialu, Regulatory Analyst, ESRB, SED, CPUC
Samuel Mandell, Utilities Engineer, ESRB, SED, CPUC

AUDIT FINDINGS

I. Records Review

During the audit, ESRB staff reviewed the following standards, procedures, and records for San Carlos HQ:

- Lists and locations of all assigned PG&E substations
- Map showing all assigned PG&E substations
- Lists of equipment at selected substations
- Last two routine substation inspection checklists
- PG&E Substation Equipment Maintenance Requirements, Utility Standard: TD-3322S with Attachments 1 through 12
- PG&E Condition Based Management Transition Process, TD-3322B-012
- PG&E Substation Inspections, TD-3322B-024
- PG&E Substation Inspection Implementation Plan, TD-3322B-026
- PG&E Substation Maintenance and Construction (SM&C) Manual
- PG&E Infrared Inspection Procedures
- PG&E Insulating Oil Testing Manual
- PG&E Circuit Breakers Booklet
- PG&E Substation Fire Protection Systems and Equipment – Inspection, Test and Maintenance of Fire Protection Systems and Equipment at Substations: TD-3320P-07
- List of inspections performed over the last five years
- Maintenance records for selected substations; Line Corrective (LC) Notifications in the last 24 months
- Infrared Testing records for selected substations in the last 24 months
- Last oil test results for selected substations
- Last electric test results for selected substations

II. Records Violations

ESRB staff observed the following violations during the records review portion of the audit:

GO 174, Rule 12, General states in part:

> *"Substations shall be designed, constructed and maintained for their intended use, regard being given to the conditions under which they are to be operated, to promote the safety of workers and the public and enable adequacy of service.*
>
> *Design, construction and maintenance should be performed in accordance with accepted good practices for the given local conditions known at the time by those responsible."*

1. PG&E Substation Equipment Maintenance Requirements, Utility Standard: TD-3322S,[1] establishes PG&E's Basic Finish Date and Past Due dates as follows:

Priority Code	Basic Finish Date	Past Due Date
A	Within 30 days	1st day of the month following the month in which the basic finish date occurs
B	Within 90 days	1st day of the 2nd month following the month in which the basic finish date occurs
E	Within 365 days	1st day of the year following the year in which the basic finish date occurs

Based on PG&E's response to ESRB's first follow-up data request regarding work orders, "the work is still open pending completion and work order closure" if a notification is missing a "Completed On" date.[2] ESRB identified a total of 1,672 Priority A, B, and E notifications (56 Priority A, 465 Priority B and 1,151 Priority E) that PG&E categorized as "Closed" but did not specify a "Completed On" date.[3] Therefore, ESRB determined that PG&E failed to take corrective actions and complete these 1,672 work orders by their past due date. See attached spreadsheet for pending, past-due notifications.

2. Based on PG&E's Substation Equipment Maintenance Requirements (TD-3322S Attachment 5)[4], infrared inspections are triggered yearly. Also, PG&E's SM&C Manual, which includes an Infrared Inspections section, states in part:

> *"Infrared inspections are conducted in electric substations, as triggered in Utility Standard TD-3322S Attachment 5 maintenance template or by condition or trouble."*[5]

[1] PG&E Utility Standard TD-3322S, November 6, 2019, Rev. 6.
[2] PG&E Response to San Carlos Pre-Audit DR 1, Question 11, June 19, 2020.
[3] PG&E Response to San Carlos Pre-Audit DR, Question 15, April 10, 2020.
[4] PG&E Utility Standard TD-3322S, Published 01/1/2018, Revision 5, p.4.
[5] PG&E SM&C Manual, Infrared Inspection, Revision 9, p.3.

Based on ESRB's review of completed infrared inspection forms (TD-3322M-F80), PG&E did not perform infrared re-inspections or maintenance activities as required by the results of each completed form. Also, in response to ESRB's first follow-up request, PG&E noted that it had missed re-inspections from 2018 to 2020.[6] ESRB identified the missed re-inspections for the following substations:

Substation	2018 Infrared Inspection Result	2019 Infrared Inspection Result
San Mateo	Reinspect in 90 days	Reinspect in 90 days
Redwood City	Reinspect in 90 days	Reinspect in 90 days
Ralston	Reinspect in 90 days	No anomalies found
Ravenswood	Reinspect in 90 days	Reinspect in 90 days
Bair	Reinspect in 90 days	Reinspect in 90 days
Bay Meadows	No anomalies found	Reinspect in 90 days
Belle Haven	Reinspect in 90 days	Reinspect in 90 days

3. According to PG&E Utility Standard TD-3322S,[7] hot stick testing is required every two years. ESRB's second follow-up data request, requested the last two hot stick tests performed by PG&E. In its response, PG&E provided a list of substation hot-stick tests.[8] PG&E identified the following substations as having hot stick testing performed in 2019 but did not provide a second test date conducted prior to 2019:

Substation	Completion Date of Hot Stick Test
Jefferson	3/30/2019
Burlingame	3/30/2019
Carolands	3/30/2019
Crystal Springs	3/30/2019

According to PG&E Utility Standard TD-3322S, PG&E should have performed hot stick testing in 2017 but did not provide record of the tests for the above-mentioned substations.

Additional Follow-up Requests:

1. ESRB requested training procedures and staff training records but PG&E did not possess or did not provide responsive documentation. However, in response to ESRB's second follow-up data request, PG&E provided "a list of courses (and brief descriptions) that are offered to Substation Maintenance Employees, Substation Maintenance Supervisors, and Substation Maintenance Delegates."[9]
    a. Please explain whether or not substation inspectors are required to take any of the courses listed in order to conduct inspections.

[6] PG&E Response to San Carlos Pre-Audit DR 1, Questions 14-17, June 19, 2020.
[7] PG&E Utility Standard TD-3322S, Attachment 5, Revision 5, dated 1/19/2018, p.3.
[8] PG&E Response to San Carlos Pre-Audit DR 2, Question 6, July 24, 2020.
[9] PG&E Response to San Carlos Pre-Audit DR 2, Question 14, July 24, 2020.

b. If not, explain why they are not required? Additionally, please explain how PG&E ensures that the Substation Maintenance Employees, Supervisors, and Delegates are properly trained to be qualified to perform substation maintenance and related tasks.
c. If PG&E has other means of ensuring the qualification of substation maintenance employees, supervisors, and delegates given in 1.b, provide a copy of related training procedures and/or policies that PG&E currently follows and all previous versions that were effective in the last two years.

2. In response to ESRB's second follow-up data request, PG&E provided a list of substations with overloaded transformer banks.[10] Please explain how PG&E plans to address the repeatedly overloaded transformers. Provide applicable procedures to address overloaded transformers and PG&E's detailed plan and schedule of corrective action.

3. In response to ESRB's second follow-up data request, PG&E provided a list of the last two insulator washes performed. Please explain whether PG&E plans to perform insulator washes in 2020 for substations identified below and provide PG&E's insulator wash plan for 2020:
    - Emerald Lake
    - Hillsdale
    - Las Pulgas
    - Menlo
    - Ralston
    - Ravenswood
    - Redwood City
    - San Mateo
    - Woodside

[10] PG&E Response to San Carlos Pre-Audit DR 2, Question 1, July 24, 2020.