

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298



May 25, 2023

TA2023-1043

Melvin Stark
Principal Manager, T&D Compliance Integration
Southern California Edison
1 Innovation Way
Pomona, CA 91786

Subject: Transmission Audit of Southern California Edison's Oak Hills Grid

Mr. Stark:

On behalf of the Electric Safety and Reliability Branch of the California Public Utilities Commission (CPUC), Eric Ujiiye of my staff conducted an electric transmission audit of Southern California Edison's (SCE) Oak Hills Grid from February 6, 2023 to February 10, 2023. The audit included a review of SCE's records and field inspections of SCE's facilities.

During the audit, my staff identified violations of one or more General Orders (GOs). A copy of the audit findings itemizing the violations is enclosed. Please advise me no later than June 26, 2023, by electronic or hard copy, of all corrective measures taken by SCE to remedy and prevent the recurrence of such violations.

If you have any questions concerning this audit, you can contact Eric Ujiiye at (213) 620-2598 or eric.ujiiye@cpuc.ca.gov.

Sincerely,

A handwritten signature in blue ink that reads "Fadi Daye".

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

Enclosures: Audit Findings

Cc: Lee Palmer, Director, Safety and Enforcement Division, CPUC
Nika Kjensli, Program Manager, ESRB, CPUC
Eric Ujiiye, Utilities Engineer, ESRB, CPUC

AUDIT FINDINGS

I. Records Review

During the audit, my staff reviewed the following records:

- Circuit facility inspection records.
- Completed and pending corrective action work orders.
- Pole loading calculations.
- Tower Structure Analysis Records
- Safety hazard notifications.
- Intrusive test records
- SCE's documented inspection program.

II. Records Review – Violations List

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

GO 165, Section IV, Transmission Facilities, states in part:

Each utility shall prepare and follow procedures for conducting inspections and maintenance activities for transmission lines.

GO 95, Rule 31.2, Inspection of Lines, states in part:

Lines shall be inspected frequently and thoroughly for the purpose of insuring that they are in good condition so as to conform with these rules.

SCE's inspection records indicated that from 2017 to 2021, SCE performed 3 underground detailed inspections past SCE's assigned inspection due dates.

GO 95, Rule 18, Rule 18-B1, Maintenance Programs, states in part:

Companies shall undertake corrective actions within the time periods stated for each of the priority levels set forth below. Scheduling of corrective actions within the time periods below may be based on additional factors, including the following factors, as appropriate ...

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

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.

SCE's records indicated that from January 2019 to January 2023, there were 776 "pending" work orders that are past SCE's scheduled due date. Additionally, from January 2019 to January 2023, SCE completed 3000 work orders past SCE's scheduled due date.

III. Field Inspections

My staff inspected the following facilities during the field inspection:

No.	Structure ID	Circuit	Structure	Location
1	7001042	Victor-Black Mountain-So Port South Cap South Down (115 kV)	H-Frame	Apple Valley
2	7001043	Victor-Black Mountain-So Port South Cap South Down (115 kV)	H-Frame	Apple Valley
3	7001044	Victor-Black Mountain-So Port South Cap South Down (115 kV)	H-Frame	Apple Valley
4	7001045	Victor-Black Mountain-So Port South Cap South Down (115 kV)	H-Frame	Apple Valley
5	7001046	Victor-Black Mountain-So Port South Cap South Down (115 kV)	H-Frame	Apple Valley
6	7001047	Victor-Black Mountain-So Port South Cap South Down (115 kV)	H-Frame	Apple Valley
7	7001048	Victor-Black Mountain-So Port South Cap South Down (115 kV)	H-Frame	Apple Valley
8	7001049	Victor-Black Mountain-So Port South Cap South Down (115 kV)	H-Frame	Apple Valley
9	7001050	Victor-Black Mountain-So Port South Cap South Down (115 kV)	H-Frame	Apple Valley
10	7001051	Victor-Black Mountain-So Port South Cap South Down (115 kV)	H-Frame	Apple Valley
11	1580805E	Victor-Black Mountain-So Port South Cap South Down (115 kV)	Wood Pole	Apple Valley
12	1580806E	Victor-Black Mountain-So Port South Cap South Down (115 kV)	Wood Pole	Apple Valley
13	1580807E	Victor-Black Mountain-So Port South Cap South Down (115 kV)	Wood Pole	Apple Valley
14	4457241E	Victor-Black Mountain-So Port South Cap South Down (115 kV)	Wood Pole	Apple Valley
15	4457242E	Victor-Black Mountain-So Port South Cap South Down (115 kV)	Wood Pole	Apple Valley
16	1580810E	Victor-Black Mountain-So Port South Cap South Down (115 kV)	Wood Pole	Apple Valley
17	1580811E	Victor-Black Mountain-So Port South Cap South Down (115 kV)	Wood Pole	Apple Valley
18	1580813E	Victor-Black Mountain-So Port South Cap South Down (115 kV)	Wood Pole	Apple Valley
19	1580812E	Victor-Black Mountain-So Port South Cap South Down (115 kV)	Wood Pole	Apple Valley
20	1580814E	Victor-Black Mountain-So Port South Cap South Down (115 kV)	Wood Pole	Apple Valley
21	1580815E	Victor-Black Mountain-So Port South Cap South Down (115 kV)	Wood Pole	Apple Valley
22	M7-T3	Caldwell Colusa Victor	Tower	Victorville
23	M7-T2	Caldwell Colusa Victor	Tower	Victorville

24	M7-T1	Caldwell Colusa Victor	Tower	Victorville
25	M6-T4	Caldwell Colusa Victor	Tower	Victorville
26	M6-T3	Caldwell Colusa Victor	Tower	Victorville
27	M6-T2	Caldwell Colusa Victor	Tower	Victorville
28	M6-T1	Caldwell Colusa Victor	Tower	Victorville
29	M5-T6	Caldwell Colusa Victor	Tower	Victorville
30	M5-T5	Caldwell Colusa Victor	Tower	Victorville
31	M178-T1	Lugo – Pisgah No. 2 (220 kV)	Tower	Lucerne Valley
32	M178-T2	Lugo – Pisgah No. 1 (220 kV)	Tower	Lucerne Valley
33	M178-T2	Lugo – Pisgah No. 2 (220 kV)	Tower	Lucerne Valley
34	M178-T3	Lugo – Pisgah No. 2 (220 kV)	Tower	Lucerne Valley
35	M178-T3	Lugo – Pisgah No. 1 (220 kV)	Tower	Lucerne Valley
36	M178-T4	Lugo – Pisgah No. 2 (220 kV)	Tower	Lucerne Valley
37	M178-T4	Lugo – Pisgah No. 1 (220 kV)	Tower	Lucerne Valley
38	M179-T1	Lugo – Pisgah No. 2 (220 kV)	Tower	Lucerne Valley
39	1319142E	Cottonwood – Savage (115 kV)	Wood Pole	Lucerne Valley
40	1721772E	Cottonwood – Savage (115 kV)	Wood Pole	Lucerne Valley
41	1721773E	Cottonwood – Savage (115 kV)	Wood Pole	Lucerne Valley
42	1721774E	Cottonwood – Savage (115 kV)	Wood Pole	Lucerne Valley
43	M179-T1	Lugo – Pisgah No. 1 (220 kV)	Tower	Lucerne Valley
44	1721775E	Cottonwood – Savage (115 kV)	Wood Pole	Lucerne Valley
45	1721776E	Cottonwood – Savage (115 kV)	Wood Pole	Lucerne Valley
46	1721777E	Cottonwood – Savage (115 kV)	Wood Pole	Lucerne Valley
47	M0-T2	Kramer - Cool water (115 KV)	Wood Pole	Daggett
48	A1331706AE	Cool Water – Gale (115 kV)	Wood Pole	Daggett
49	A1331706BE	Cool Water – Gale (115 kV)	Wood Pole	Daggett
50	129709AE	Ivanpah-Baker-Cool water-Dunn Siding- Mt. Pass (115 kV)	Wood Pole	Daggett
51	129709BE	Ivanpah-Baker-Cool water-Dunn Siding- Mt. Pass (115 kV)	Wood Pole	Daggett
52	A257001E	Cool water -Tier fort (115 kV)	Wood Pole	Daggett
53	M0-T1	Cool water -Kramer, Cool water-Sandlot (220 kV)	Tower	Daggett
54	129711AE	Ivanpah-Baker-Cool water-Dunn Siding- Mt. Pass (115 kV)	Wood Pole	Daggett
55	129711BE	Ivanpah-Baker-Cool water-Dunn Siding- Mt. Pass (115 kV)	Wood Pole	Daggett
56	129711CE	Ivanpah-Baker-Cool water-Dunn Siding- Mt. Pass (115 kV)	Wood Pole	Daggett
57	A257004E	Cool water -Tier fort (115 kV)	Wood Pole	Daggett
58	M0-T4	Kramer - Cool water (115 KV)	Tower	Daggett
59	M0-T3	Cool water -Kramer, Cool water-Sandlot (220 kV)	Tower	Daggett
60	M0-T4	Cool water -Kramer, Cool water-Sandlot (220 kV)	Tower	Daggett
61	4620197E	Kramer - Cool water (115 KV)	Steel Pole	Daggett
62	4620198E	Kramer - Cool water (115 KV)	Steel Pole	Daggett
63	4620196E	Kramer - Cool water (115 KV)	Steel Pole	Daggett
64	4620195E	Kramer - Cool water (115 KV)	Steel Pole	Daggett

65	M0-T5	Cool water -Kramer, Cool water-Sandlot (220 kV)	Tower	Daggett
66	4620193E	Kramer - Cool water (115 KV)	Steel Pole	Daggett
67	4620194E	Kramer - Cool water (115 KV)	Steel Pole	Daggett
68	1546360E	Kramer - Cool water (115 KV)	Wood Pole	Daggett
69	1546361E	Kramer - Cool water (115 KV)	Wood Pole	Daggett
70	M0-T6	Cool water -Kramer, Cool water-Sandlot (220 kV)	Tower	Daggett
71	A1363015AE	Coolwater Segs-Tortilla	Wood Pole	Daggett
72	A1363015BE	Coolwater Segs-Tortilla	Wood Pole	Daggett
73	4428427E	Kramer - Tortilla	Wood Pole	Hinkley
74	4428428E	Kramer - Tortilla	Wood Pole	Hinkley
75	4053437E	Kramer - Tortilla	Wood Pole	Hinkley
76	4053436E	Kramer - Tortilla	Wood Pole	Hinkley
77	4053435E	Kramer - Tortilla	Wood Pole	Hinkley
78	4053434E	Kramer - Tortilla	Wood Pole	Hinkley
79	4053433E	Kramer - Tortilla	Wood Pole	Hinkley
80	4053432E	Kramer - Tortilla	Wood Pole	Hinkley
81	4053431E	Kramer - Tortilla	Wood Pole	Hinkley
82	4053430E	Kramer - Tortilla	Wood Pole	Hinkley
83	4053428E	Kramer - Tortilla	Wood Pole	Hinkley
84	4053429E	Kramer - Tortilla	Wood Pole	Hinkley
85	4428426E	Kramer - Tortilla	Wood Pole	Hinkley
86	4428425E	Kramer - Tortilla	Wood Pole	Hinkley
87	4428424E	Kramer - Tortilla	Wood Pole	Hinkley
88	M23 – T3	Lugo – Mohave (500 kV)	Tower	Lucerne Valley
89	M23 – T3	El Dorado – Lugo	Tower	Lucerne Valley
90	M41 – T1	Lugo – Mohave (500 kV)	Tower	Lucerne Valley
91	M41 – T1	El Dorado – Lugo	Tower	Lucerne Valley
92	4613977E	Victor River Tex	Steel Pole	Victorville
93	7000524	Victor Aqueduct Phelan	Tower	Hesperia
94	7003626	Victor Apple Valley – Hesperia	Tower	Hesperia
95	M0 – T3	Eldorado Lugo	Tower	Hesperia

IV. Field Inspection Violations List

My staff observed the following violations during the field inspections portion of the audit:

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.

The following SCE transmission facilities required maintenance:

- Steel H-Frame 7001044 - a string of insulators had a chipped ceramic insulator bell.
- Steel H-Frame 7001045 - a string of insulators had a chipped ceramic insulator bell.
- Steel H-Frame 7001047 – a string of insulators had a chipped ceramic insulator bell.
- Pole 1580810E - a 4-inch section of ground wire was missing at 3 feet above the ground.
- Pole 1580812E - a section of ground wire was severed and exposed midway up the pole.
- Tower 7/2 of Caldwell-Colusa-Victor circuit – a garden hose was hanging off the tower 20 feet above the ground.
- Pole 4053437E - a 10-foot section of ground wire was missing starting at ground level. Additionally, the ground moulding was missing.

GO 95, Rule 51.6-A, Marking and Guarding, High Voltage Marking of Poles, states in part:

Poles which support line conductors of more than 750 volts shall be marked with high voltage signs. This marking shall consist of a single sign showing the words “HIGH VOLTAGE”, or pair of signs showing the words “HIGH” and “VOLTAGE”, not more than six (6) inches in height with letters not less than 3 inches in height. A pair of signs may be stacked to a height of no more than 12 inches. Such signs shall be of weather and corrosion-resisting material, solid or with letters cut out therefrom and clearly legible.

The “HIGH VOLTAGE” signs on the following poles were either damaged or missing.

- Pole 1580805E - The “HIGH VOLTAGE” sign was missing the “HIGH” portion and the “VOLTAGE” portion was cracked in the middle.
- Pole 1580806E - The “HIGH VOLTAGE” sign was damaged only displaying the “H” and the “TAGE” portion of the sign.
- Pole 1580807E - The “HIGH VOLTAGE” sign was missing the “HIGH” portion and only displayed “VOL” of the sign.
- Pole 1580812E - A single sign or a pair of signs with the words “HIGH VOLTAGE” were not supported on the pole.
- Pole 1580814E – The “HIGH VOLTAGE” signs were damaged by only displayed the “HIG” and the “TAGE” of the sign.
- Pole 1580815E - A “HIGH VOLTAGE” sign was missing.

GO 95, Rule 54.6-B, Ground Wires, states in part:

That portion of the ground wires attached on the face or back of wood crossarms or on the surface of wood poles and structures shall be covered by a suitable protective covering (see Rule 22.8).

The following poles had missing or damaged sections of ground molding:

- Pole 1580805E - A 2-foot section of ground wire was not covered at 8 feet above the ground.
- Pole 1580805E - A 1-foot section of ground wire was not covered at 8 feet from above the ground.
- Pole 1580812E - A section of ground moulding near the top of the pole detached from the surface and is exposing the ground wire.
- Pole 4053436E – The ground wire was not covered by ground moulding from 10 feet to the top of the pole.
- Pole 4053435E – The ground moulding was broken exposing the ground wire at 3 feet above the ground.
- Pole 4053434E – A 7-foot section of ground wire was not covered with ground moulding near ground level.
- Pole 4053430E – A 2-foot section of ground wire was not covered with ground moulding near ground level.
- Pole 4053428E – A 1-foot section of ground wire was not covered with ground moulding 7 feet above the ground.
- Pole 4053429E – A 2-foot section of ground wire was not covered with ground moulding 7 feet above the ground.
- Pole 4053426E – A 8-inch section of ground wire was not covered with ground moulding 7 feet above the ground.

GO 95, Rule 61.6, Marking and Guarding, states in part:

All towers shall be equipped with signs designed to warn the public of the danger of climbing same. Additionally, such signs shall include a graphic depiction of the dangers of falling or electrocution associated with climbing the towers. Such signs shall be placed and arranged so that they may be read from the four corners of the tower.

The warning signs at each of the following SCE transmission towers and structures could not be read from all four corners of the tower or structures.

- Steel H-Frame 7001048
- Tower 7 / 3 (Circuit: Caldwell – Colusa – Victor)
- Tower 7 / 2 (Circuit: Caldwell – Colusa – Victor)
- Tower 6 / 2 (Circuit: Caldwell – Colusa – Victor)