STATE OF CALIFORNIA GAVIN C. NEWSOM, *Governor*

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

January 27, 2023 TA2022-1013

Marco Villegas, P.E.
Supervising Principal Engineer, T&D Maintenance Planning
Sacramento Municipal Utility District (SMUD)
4401 Bradshaw Road, Sacramento, CA 95827

SUBJECT: Electric Transmission Audit of SMUD

Dear Mr. Villegas:

On behalf of the Electric Safety and Reliability Branch (ESRB) of the California Public Utilities Commission (CPUC), Brandon Vazquez, Dmitriy Lysak, and Emiliano Solorio of ESRB staff conducted an electric transmission audit of SMUD from December 12, 2022 through December 16, 2022. During the audit, ESRB staff conducted field inspections of SMUD's transmission facilities and equipment and reviewed pertinent documents and records.

As a result of 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 24, 2023, by electronic copy of all corrective actions and preventive measures taken by SMUD to correct the identified violations and prevent the recurrence of such violations. The response should indicate the date each remedial action and preventive measure was completed. For any outstanding items not addressed, please provide the projected completion dates of all corrective actions for the violations outlined in Section II and IV of the enclosed Audit Report.

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 Electric Transmission Audit Report for SMUD

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
Dmitriy Lysak, Utilities Engineer, ESRB, SED, CPUC
Emiliano Solorio, Utilities Engineer, ESRB, SED, CPUC

SACRAMENTO MUNICIPAL UTILITY DISTRICT (SMUD)
ELECTRIC TRANSMISSION AUDIT FINDINGS
DECEMBER 12-16, 2022

I. Records Review

During the audit, ESRB staff reviewed the following records:

- SMUD's inspection, maintenance, and vegetation management procedures.
- Overhead and underground facilities statistics.
- SMUD's Electrical Interconnection Map.
- SMUD's Service Territory Map and list of all transmission facilities owned or jointly owned by SMUD.
- Patrol, detailed, aerial, climbing, infrared, drone, helicopter, and vegetation inspection records from October 2017 to October 2022.
- Third Party Safety Hazard notifications sent and received from October 2017 to October 2022.
- Intrusive, LiDAR, and foundation test records from October 2017 to October 2022.
- Completed work orders, canceled work orders, and open work orders from October 2017 to October 2022.
- Pole loading and safety factor calculations completed from October 2020 to October 2022.
- New construction projects (both overhead and underground) completed from October 2021 to October 2022.
- Quality Control (QC) and Quality Assurance (QA) audits conducted from October 2017 to October 2022.
- Inspector list and inspector qualifications from October 2017 to October 2022.

II. Records Violations

1. **General Order (GO) 95, Rule 18-B1(a), Maintenance Programs** states in part:

   "The maximum time periods for corrective actions associated with potential violation of GO 95 or a Safety Hazard are based on the following priority levels:

   (i) Level 1 -- An immediate risk of high potential impact to safety or reliability:
   - *Take corrective action immediately, either by fully repairing or by temporarily repairing and reclassifying to a lower priority.*

   (ii) Level 2 -- Any other risk of at least moderate potential impact to safety or reliability:
   - *Take corrective action within specified time period (either by fully repair or by temporarily repairing and reclassifying to Level 3 priority). Time period for corrective action to be determined at the time of identification by a qualified company representative, but not to exceed: (1) six months for potential violations that create a fire risk located in Tier 3 of the High Fire-Threat District; (2) 12 months for potential violations that create a fire risk located in Tier 2 of the High Fire-Threat District; (3) 12 months for potential violations*

that compromise worker safety; and (4) 36 months for all other Level 2 potential violations.

(iii) Level 3 -- Any risk of low potential impact to safety or reliability:

- *Take corrective action within 60 months subject to the exception specified below."*

ESRB's review of SMUD's work orders from October 20, 2017 to October 20, 2022 found that SMUD had a total of 23 late-pending work orders and seven late-closed work orders. Late-pending work orders are open work orders that have not been completed by their assigned due date based on their hazard level, and late-closed work orders are work orders that were completed past their assigned due date based on their hazard level.

III. Field Inspection

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

Location #	Structure #	Structure Type	Circuit/Line	Structure Location	City
1	959	Steel Pole	ECY - HED 115 kV ECY - HUR 115 kV	38.55247058, -121.4276063	Sacramento
2	958	Steel Pole	ECY - HED 115 kV ECY - HUR 115 kV	38.55202629, -121.4259499	Sacramento
3	957	Steel Pole	ECY - HED 115 kV ECY - HUR 115 kV	38.55157887, -121.4243395	Sacramento
4	967	Steel Pole	ECY - MCY 1 115 kV ECY - MCY 2 115 kV	38.55804174, -121.4479058	Sacramento
5	966	Steel Pole	ECY - MCY 1 115 kV ECY - MCY 2 115 kV	38.55731959, -121.4452655	Sacramento
6	490	A Frame	HUR - PGG 230 kV	38.58479929, -121.4246328	Sacramento
7	488	A Frame	HUR - NAT 230 kV	38.58479728, -121.4249339	Sacramento
8	487	Tower	HUR - NAT 230 kV HUR - PGG 230 kV	38.58456012, -121.4247872	Sacramento
9	1422	A Frame	HUR - STE 2 115 kV	38.58575422, -121.4253435	Sacramento
10	513	Tower	ECY - HUR 115 kV HUR - PGG 230 kV	38.55406399, -121.391121	Sacramento
11	514	Tower	ECY - HUR 115 kV HUR - PGG 230 kV	38.55128233, -121.3909503	Sacramento
12	943	Steel Pole	ECY - HED 115 kV ECY - HUR 115 kV	38.5477026, -121.3888214	Sacramento
13	525	Tower	ECY - HED 115 kV HED - PGG 230 kV	38.52737576, -121.3719461	Sacramento
14	1145	Steel Pole	CPP - RAN 3 230 kV	38.342766, -121.122841	Herald
15	1140	Steel Pole	CPP - RAN 1 230 kV CPP - RAN 2 230 kV	38.342757, -121.12266	Herald
16	1144	Steel Pole	CPP - RAN 3 230 kV	38.344345, -121.12281	Herald

17	1139	Steel Pole	CPP - RAN 1 230 kV CPP - RAN 2 230 kV	38.344097, -121.12249	Herald
18	1138	Steel Pole	CPP - RAN 1 230 kV CPP - RAN 2 230 kV	38.344649, -121.122408	Herald
19	904	Tower	POC - RAN 1 230 kV POC - RAN 2 230 kV	38.35002092, -121.2025914	Wilton
20	867	Tower	ELK - RAN 1 230 kV ELK - RAN 2 230 kV	38.35001016, -121.201826	Wilton
21	1380	Steel Pole	ELK - HED 1 230 kV ELK - HED 2 230 kV	38.39110121, -121.351463	Elk Grove
22	1384	Steel Pole	ELK - HED 1 230 kV ELK - HED 2 230 kV	38.40198302, -121.3504611	Elk Grove
23	1383	Steel Pole	ELK - HED 1 230 kV ELK - HED 2 230 kV	38.39975473, -121.3506596	Elk Grove
24	1388	Steel Pole	ELK - HED 1 230 kV ELK - HED 2 230 kV	38.41273832, -121.3506641	Elk Grove
25	1151	Wood Pole	SCY - STB 115 kV	38.51022682, -121.4659829	Sacramento
26	1152	Steel Pole	SCY - STB 115 kV	38.51023737, -121.4672581	Sacramento
27	1161	Wood Pole	SCY - STB 115 kV	38.5102467, -121.4737736	Sacramento
28	1160	Wood Pole	SCY - STB 115 kV	38.51024548, -121.4730718	Sacramento
29	1159	Wood Pole	SCY - STB 115 kV	38.51024206, -121.4724393	Sacramento
30	1158	Wood Pole	SCY - STB 115 kV	38.51025354, -121.4718402	Sacramento
31	181	Tower	COR - WHT 230 kV ORV - WHT 230 kV	38.75828425, -120.7924209	Placerville
32	649	Tower	CAM - LAK 230 kV	38.75826381, -120.7910418	Placerville
33	180	Tower	COR - WHT 230 kV ORV - WHT 230 kV	38.7585594, -120.7905967	Placerville
34	663	Tower	CAM - LAK 230 kV COR - WHT 230 kV	38.73817485, -120.8511091	Placerville
35	196	Tower	ORV - WHT 230 kV	38.73838506, -120.8513052	Placerville
36	197	Tower	ORV - WHT 230 kV	38.73727844, -120.8532544	Placerville
37	664	Tower	CAM - LAK 230 kV COR - WHT 230 kV	38.73712701, -120.8530775	Placerville
38	672	Tower	CAM - LAK 230 kV COR - WHT 230 kV	38.72992129, -120.8840525	Cold Springs
39	205	Tower	ORV - WHT 230 kV	38.73012497, -120.8842539	Cold Springs
40	304	A Frame	ORV - WHT 230 kV	38.71737639, -121.2137343	Granite Bay
41	305	A Frame	ELV - ORV 230 kV	38.71742401, -121.2139186	Granite Bay
42	303	Tower	FOL - ORV 230 kV ELV - ORV 230 kV FTL - ORV 230 kV ORV - WHT 230 kV	38.71705714, -121.2138764	Granite Bay
43	1257	Steel Pole	FTL - ORV 230 kV FOL - ORV 230 kV	38.7165906, -121.2144634	Granite Bay
44	306	A Frame	ORV - WHT 230 kV	38.71608922, -121.2153403	Orangevale
45	307	A Frame	ELV - ORV 230 kV	38.71618637, -121.2154555	Orangevale

46	1221	Wood Pole	SCY - STB 115 kV	38.552941, -121.488625	Sacramento
47	1220	Wood Pole	SCY - STB 115 kV	38.552338, -121.488439	Sacramento
48	1222	Wood Pole	SCY - STB 115 kV	38.55380111, -121.4888126	Sacramento
49	399	Tower	ELV - FTL 230 kV ELV - ORV 230 kV	38.74694879, -121.4369933	Elverta
50	398	Tower	ELV - FTL 230 kV ELV - ORV 230 kV	38.74744326, -121.4357362	Elverta
51	348	Tower	ELV - ORV 230 kV FTL - ORV 230 kV	38.75283092, -121.2502882	Roseville
52	349	Tower	ELV - ORV 230 kV FTL - ORV 230 kV	38.75526746, -121.2534044	Roseville
53	814	Tower	COR - HED 230 kV COR - POC 230 kV	38.52240596, -121.2497475	Sacramento
54	813A	Steel Pole	COR - POC 230 kV	38.52262643, -121.2483896	Sacramento
55	813B	Steel Pole	COR - HED 230 kV	38.52267933, -121.248268	Sacramento

IV. Field Inspection Violations

ESRB staff observed the following violations during the field inspection:

1. GO 95, Rule 51.6-A, High Voltage Marking 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. Such signs shall be of weather and corrosion–resisting material, solid or with letters cut out therefrom and clearly legible."*

1.1. Steel Pole #959 located at GPS coordinates 38.55247058, -121.4276063 in Sacramento (Location 1) has faded high voltage signs.
1.2. Steel Pole #958 located at GPS coordinates 38.55202629, -121.4259499 in Sacramento (Location 2) has faded high voltage signs.
1.3. Steel Pole #957 located at GPS coordinates 38.55157887, -121.4243395 in Sacramento (Location 3) has faded high voltage signs.
1.4. Steel Pole #967 located at GPS coordinates 38.55804174, -121.4479058 in Sacramento (Location 4) has faded high voltage signs.
1.5. Steel Pole #966 located at GPS coordinates 38.55731959, -121.4452655 in Sacramento (Location 5) is missing high voltage signs.
1.6. Tower #904 located at GPS coordinates 38.35002092, -121.2025914 in Wilton (Location 19) is missing a high voltage danger sign.
1.7. Tower #649 located at GPS coordinates 38.75826381, -120.7910418 in Placerville (Location 32) has a faded high voltage danger sign.
1.8. A Frame #304 located at GPS coordinates 38.71737639, -121.2137343 in Granite Bay (Location 40) has a partially missing/damaged voltage sign.
1.9. Steel Pole #1257 located at GPS coordinates 38.7165906, -121.2144634 in Granite Bay (Location 43) is missing a high voltage sign.

2. 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."*

2.1. A Frame #1422 located at GPS coordinates 38.58575422, -121.4253435 in Sacramento (Location 9) has dirt on 3 foundation legs and hardware.
2.2. Tower #513 located at GPS coordinates 38.55406399, -121.391121 in Sacramento (Location 10) has a bent support member.
2.3. Tower #514 located at GPS coordinates 38.55128233, -121.3909503 in Sacramento (Location 11) has grass and dirt on its foundation legs and hardware.
2.4. Steel Pole #943 located at GPS coordinates 38.5477026, -121.3888214 in

Sacramento (Location 12) has minor soil erosion at its foundation.

2.5. Steel Pole #1380 located at GPS coordinates 38.39110121, -121.351463 in Elk Grove (Location 21) is missing high-vis strips.
2.6. Wood Pole #1160 located at GPS coordinates 38.51024548, -121.4730718 in Sacramento (Location 28) is missing a high-vis strip.
2.7. Tower #663 located at GPS coordinates 38.73817485, -120.8511091 in Placerville (Location 34) has an old gate leaning against it.
2.8. Tower #664 located at GPS coordinates 38.73712701, -120.8530775 in Placerville (Location 37) has an insulator that is out of plumb.
2.9. Tower #205 located at GPS coordinates 38.73012497, -120.8842539 in Cold Springs (Location 39) has grass and dirt on its foundation legs and hardware.
2.10. Wood Pole #1222 located at GPS coordinates 38.55380111, -121.4888126 in Sacramento (Location 48) has a damaged/cracked 21 kV crossarm and a 21 kV insulator out of plumb.
2.11. Tower #398 located at GPS coordinates 38.74744326, -121.4357362 in Elverta (Location 50) had an unattached support member left on it.
2.12. Tower #348 located at GPS coordinates 38.75283092, -121.2502882 in Roseville (Location 51) has trees growing into the bottom third of the tower.
2.13. Tower #814 located at GPS coordinates 38.52240596, -121.2497475 in Sacramento (Location 53) has a cart leaning on it.
2.14. Steel Pole #813A located at GPS coordinates 38.52262643, -121.2483896 in Sacramento (Location 54) is in contact with a barbwire fence.

3. 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."

3.1. Wood Pole #1161 located at GPS coordinates 38.5102467, -121.4737736 in Sacramento (Location 27) needs to be replaced due to a failed intrusive test.
3.2. Wood Pole #1159 located at GPS coordinates 38.51024206, -121.4724393 in Sacramento (Location 29) needs to be replaced due to a failed intrusive test.
3.3. Wood Pole #1221 located at GPS coordinates 38.552941, -121.488625 in Sacramento (Location 46) needs to be replaced due to a failed intrusive test.
3.4. Wood Pole #1222 located at GPS coordinates 38.55380111, -121.4888126 in Sacramento (Location 48) needs to be replaced due to a failed intrusive test.

4. GO 95, Rule 56.2, Overhead Guys, Anchor Guys and Span Wires, 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."

A Frame #305 located at GPS coordinates 38.71742401, -121.2139186 in Granite Bay

(Location 41) has two slacked anchor guys.

5. **GO 95, Rule 54.6-B, Vertical and Lateral Conductors, Ground Wires** states in part:

   "That portion of the ground wire 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)."

   Wood Pole #1220 located at GPS coordinates 38.552338, -121.488439 in Sacramento (Location 47) has an exposed secondary ground wire.