

## PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE  
SAN FRANCISCO, CA 94102-3298



May 16, 2017

EA2017-747

Daniel Honeyfield  
Principal Engineer  
T&D Maintenance Planning, Grid Strategy & Operations  
Sacramento Municipal Utility District  
P.O. Box 15830  
Sacramento, CA 95852

**SUBJECT:** Audit of Sacramento Municipal Utility District (SMUD)

Mr. Honeyfield:

On behalf of the Electric Safety and Reliability Branch (ESRB) of the California Public Utilities Commission, Raymond Cho of my staff conducted an electric audit of SMUD from March 13 through March 16, 2017. The audit included a review of SMUD's records and a field inspection of its 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 16, 2017, by electronic or hard copy, of all corrective measures taken by SMUD to remedy and prevent such violations. Also, provide updated pole loading calculations that include communication conductor heights for pole UD181764 (Job No. 31559102) and poles included in Job No./SO 30123543.

If you have any questions concerning this audit please contact Raymond Cho at (415) 703-2236 or [raymond.cho@cpuc.ca.gov](mailto:raymond.cho@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

Enclosure: Audit Findings

Cc: Elizaveta Malashenko, Director, Safety and Enforcement Division, CPUC  
Lee Palmer, Deputy Director, Office of Utility Safety, SED, CPUC  
Charlotte TerKeurst, Program Manager, Electric Safety and Reliability Branch, CPUC

## AUDIT FINDINGS

### I. Records Review

My staff reviewed the following records during the audit:

- SMUD inspection and maintenance records.
- Completed and cancelled work orders reported from January 2016 through December 2016.
- Late work orders reported from January 2012 through December 2016.
- List of completed patrols and inspections from January 2012 through December 2016.
- New Construction projects and associated pole loading calculations for notification numbers: 31314031, 31559102, 31517305, 31558186, and 31439217.
- Third party safety hazard notifications from January 2012 through December 2016.

### II. Records Violations

**GO 95, Rule 18-A2a**, states in part:

*All companies shall establish an auditable maintenance program for their facilities and lines. All companies must include a timeline for corrective actions to be taken following the identification of a Safety Hazard or nonconformances with General Order 95 on the company's facilities.*

**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.*

SMUD's records (Request 3.3 Late Work Orders) indicated that 993 overhead (D1 notifications) work orders were completed past their corrective action date.

**GO 95, Rule 31.2-B, Inspection of Lines**, states:

*Supply Lines shall be inspected in compliance with the requirements of General Order 165.*

**GO 165, Section III-B, Standards for Inspection**, states:

*Each utility subject to this General Order shall conduct inspections of its distribution facilities, as necessary, to ensure reliable, high-quality, and safe operation, but in no case may the period between inspections (measured in years) exceed the time specified in Table 1.*

From January 2012 through December 2016, 9,366 overhead structures were inspected late (past the due date required by GO 165).

**GO 128, Rule 17.1, 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 [the] communication or supply lines and equipment.*

SMUD's records (Request 3.3 Late Work Orders) indicated that 117 underground (D1 notifications) work orders were completed past their corrective action date.

**GO 128, Rule 17.2, Inspection,** states:

*Systems shall be inspected by the operator frequently and thoroughly for the purpose of insuring that they are in good condition and in conformance with all applicable requirements of these rules.*

**GO 165, Section III-B, Standards for Inspection,** states:

*Each utility subject to this General Order shall conduct inspections of its distribution facilities, as necessary, to ensure reliable, high-quality, and safe operation, but in no case may the period between inspections (measured in years) exceed the time specified in Table 1.*

From January 2012 through December 2016, 5,079 underground structures and padmounted equipment were inspected late (past the due date required by GO 165).

**GO 165, Section III-C, Record Keeping,** states:

*The utility shall maintain records for (1) at least ten (10) years of patrol and detailed inspection activities, and (2) the life of the pole for intrusive inspection activities. Such records shall be made available to parties or pursuant to Commission rules upon 30 days notice. Commission staff shall be permitted to inspect such records consistent with Public Utilities Code Section 314 (a).*

*For all inspections records shall specify the circuit, area, facility or equipment inspected, the inspector, the date of the inspection, and any problems (or items requiring corrective action) identified during each inspection, as well as the scheduled date of corrective action.*

Nine hundred and five (905) overhead work orders and 783 underground work orders did not have a corrective action due date.

### III. Field Inspection

My staff inspected the following facilities:

<b>Structure Number</b>	<b>Type of Structure</b>	<b>Circuit Number/Location</b>
UD154464	Pole	Downtown Sacramento
UD040491	Pole	Downtown Sacramento
UD040492	Pole	Downtown Sacramento
UD040483	Pole	Downtown Sacramento
UD040484	Pole	Downtown Sacramento
UD040486	Pole	Downtown Sacramento
TX02006160	Padmounted Transformer	Downtown Sacramento
TX01002604	Padmounted Transformer	Downtown Sacramento
UD020930	Pole	Downtown Sacramento
UD020905	Pole	Downtown Sacramento
UD130447	Pole	Downtown Sacramento
UD020903	Pole	Downtown Sacramento
UD020906	Pole	Downtown Sacramento
TX000045	Padmounted Transformer	Downtown Sacramento
UD130448	Pole	Downtown Sacramento
UD019873	Pole	Downtown Sacramento
UD130449	Pole	Downtown Sacramento
UD156500	Pole	Downtown Sacramento
UD130450	Pole	Downtown Sacramento
UD019859	Pole	Downtown Sacramento
UD145067	Pole	Downtown Sacramento
UD019854	Pole	Downtown Sacramento
TX01011103	Padmounted Transformer	Havenside
TX01011057	Padmounted Transformer	Havenside
TX01011056	Padmounted Transformer	Havenside
TX01011044	Padmounted Transformer	Havenside
TX01011043	Padmounted Transformer	Havenside
TX01011042	Padmounted Transformer	Havenside
TX01011034	Padmounted Transformer	Havenside
TX01009211	Padmounted Transformer	Havenside
TX01011040	Padmounted Transformer	Havenside
TX01011041	Padmounted Transformer	Havenside
TX01011084	Padmounted Transformer	Havenside
U5274	Padmounted Switch	Havenside
TX01011096	Padmounted Transformer	Havenside
TX01011337	Padmounted Transformer	Havenside
TX01011038	Padmounted Transformer	Havenside
TX01011094	Padmounted Transformer	Havenside
TX01008209	Padmounted Transformer	Havenside
TX01073859	Padmounted Transformer	Bell Cottage - Arden

<b>Structure Number</b>	<b>Type of Structure</b>	<b>Circuit Number/Location</b>
UD124012	Pole	Bell Cottage – Arden
UD124011	Pole	Bell Cottage – Arden
UD124013	Pole	Bell Cottage – Arden
UD126788	Pole	Bell Cottage – Arden
UD166924	Pole	Bell Cottage – Arden
UD124818	Pole	Bell Cottage – Arden
UD124820	Pole	Bell Cottage – Arden
UD124821	Pole	Bell Cottage – Arden
TX01073890	Padmounted Transformer	Bell Cottage – Arden
UD149994	Pole	Bell Cottage – Arden
UD149993	Pole	Bell Cottage – Arden
UD126783	Pole	Bell Cottage – Arden
UD126782	Pole	Bell Cottage – Arden
TX01073839	Padmounted Transformer	Bell Cottage – Arden
TX01073856	Padmounted Transformer	Bell Cottage – Arden
TX01073855	Padmounted Transformer	Bell Cottage – Arden
TX02010952	Padmounted Transformer	Bell Cottage – Arden
TX02010953	Padmounted Transformer	Bell Cottage - Arden
UD180651	Pole	Elk Grove
UD180652	Pole	Elk Grove
UD180653	Pole	Elk Grove
UD180622	Pole	Sacramento
TX01031249	Padmounted Transformer	Sacramento
TX01015773	Padmounted Transformer	Sacramento
U7154	Padmounted Switch	Sacramento
TX01069315	Padmounted Transformer	North Highlands
TX01045118	Padmounted Transformer	Sacramento
UD116332	Pole	North Highlands
TX01042539	Padmounted Transformer	Sacramento

#### **IV. Field Inspection Violations**

My staff observed the following violations during their field inspection:

**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 pole steps on pole number UD154464 were bent.

The ground wire on the following poles was cut/damaged:

- UD020930
- UD124012
- UD124013
- UD126788
- UD020906

A cross arm on pole number UD040483 was damaged (possible decay).

**GO 95, Rule 54.7, Climbing and Working Space**, states in part:

*Climbing space shall be maintained from the ground level. Climbing space, measured from center line of pole, shall be provided on one side or in one quadrant of all poles or structures with dimensions as specified in the following...*

Vegetation obstructed climbing space on pole number UD04086.

**GO 95, Rule 54.6-B, 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...*

A portion of the ground wire attached to pole number UD020906 was exposed.

**GO 128, Rule 17.1, 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.*

An excessive amount of dirt was inside enclosure number TX01011056.

**GO 128, Rule 34.3-A, Strength**, states:

*The equipment case or enclosure shall be secured in place and be of sufficient strength to resist entrance or damage to the equipment by unauthorized persons.*

Padmounted transformer numbered TX01011042 and TX01069315 were not secured in place (bolted down) to the concrete pad.

**GO 128, Rule 34.3-B, Guarding Live Parts**, states:

*Compartments and enclosures which will, during normal operation, contain exposed live parts shall be designed and installed to prevent a person from passing a wire or other conducting material into such compartment from the outside when it is closed. This requirement is not intended to prevent normal work operations such as fishing ducts and installing cable.*

Padmounted transformer number TX01011038 had an opening at the bottom that would allow a person to pass a wire or other conducting material into the compartment.

**GO 128, Rule 17.1, 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.*

Padmounted transformers numbered TX01011038 and TX01073890 exhibited severe corrosion.