

PUBLIC UTILITIES COMMISSION

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February 15, 2012

EA2011-017

Mr. Tom Lyons
Principal Engineer – Distribution Maintenance
Distribution Services
Sacramento Municipality Utility District
1708 59th Street, Mailstop E-203, Sacramento, CA 95819
P.O. Box 15830, Sacramento, CA 95852-1830

Subject: Sacramento Municipality Utility District Electric Audit

Dear Mr. Lyons:

On behalf of the Electric Safety and Reliability Branch (ESRB) of the California Public Utilities Commission, Ryan Yamamoto, Kenneth How and I conducted an electric audit of Sacramento Municipality Utility District (SMUD) from December 5-9, 2011. The audit included a review of the division's records for the period January 2008 through December 2011. Field portions of the audit were conducted throughout the city of Sacramento.

During the audit, we identified violations of one or more General Orders. I have enclosed a copy of our audit summary itemizing those violations. By March 16, 2012 SMUD must send me a response to this letter detailing its plans to address those violations and when SMUD expects to complete them. You may email an electronic copy of the response to iag@cpuc.ca.gov or send a hard copy to:

Attn: Ivan Garcia
California Public Utilities Commission
180 Promenade Circle Suite 115
Sacramento, CA 95834-2939

Should you have any questions concerning this letter I can be reached at by phone at (916) 928-5875 or by email at iag@cpuc.ca.gov.

Sincerely,



Ivan Garcia
Electric Safety and Reliability Branch
Consumer Protection and Safety Division
California Public Utilities Commission

Enclosures: Audit Summary

CC: Kenneth How, Utilities Engineer, CPUC ESRB
Ryan Yamamoto, Utilities Engineer, CPUC ESRB
Alok Kumar, Senior Utilities Engineer, CPUC ESRB
Raymond Fugere, Program and Project Supervisor, CPUC ESRB

AUDIT SUMMARY

I. Violations Identified During Records Review

This section summarizes the General Order (GO) violations that we found during our review of SMUD's maintenance records.

A. Patrol and Inspection Issues

1. Unable To Determine Inspection Cycles

GO 165 Section IV, specifies in part,

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

In 2011, SMUD found gaps in its inspection history. Tens of thousands of facilities were missing data, so it was unknown whether they were or were not inspected. SMUD re-inspected these facilities in 2011. ESRB was unable to determine SMUD's inspection cycles for any detailed inspections completed prior to 2011. SMUD must perform and document detailed inspections on all of its facilities as required by GO 165.

2. No Diagnostic Equipment Tests

GO 165 Section III: Definitions states in part:

"Detailed" inspection shall be defined as one where individual pieces of equipment and structures are carefully examined, visually and through use of routine diagnostic test, as appropriate, and (if practical and if useful information can be so gathered) opened, and the condition of each rated and recorded.

GO 165 specifies the frequency a utility must inspect its facilities. During our audit, we found that SMUD was not performing diagnostic testing on its capacitors and switching/protective devices. SMUD must diagnostically test GO 165 listed equipment within the interval specified in GO 165.

3. No Inspections Completed On Submersible Transformers

GO 165 Section IV, specifies in part,

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

GO 128 Rule 17.2 Inspection [of Underground Systems] states in part:

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 these rules.

SMUD provided a list of 103 subsurface (submersible) transformers that have never been inspected. SMUD does not inspect submersible transformers since they tend to be damaged when opened. SMUD must perform and document detailed inspections on all of its underground facilities as required by the GO 165 Inspection Cycle Table.

In addition, ESRB discovered that a number of the 103 submersible transformers may actually be padmount transformers. SMUD must determine whether they are padmount or submersible and inspect these facilities as required by GO 165.

4. Late Inspections On Overhead Poles

GO 165 Section IV, specifies in part,

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

GO 95 Rule 31.2 Inspection of [Overhead] 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. Lines temporarily out of service shall be inspected and maintained in such condition as not to create a hazard.

SMUD provided a list of 21,330 overhead poles that were late for inspection as of December 6, 2011. SMUD must perform and document detailed inspections on all of its overhead facilities as required by the GO 165 Inspection Cycle Table.

5. Late Inspections On Padmount Transformers

GO 165 Section IV, specifies in part,

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

GO 128 Rule 17.2 Inspection [of Underground Systems] states in part:

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 these rules.

SMUD provided a list of 265 padmount transformers that were late for inspection as of December 6, 2011. SMUD must perform and document detailed inspections on all of its overhead facilities as required by GO 165.

6. Notifications Of Safety Hazards Not Documented

GO 19 Rule 18A, specifies in part,

“If a company, while inspecting its facilities, discovers a safety hazard on or near a communications facility, electric transmission or distribution facility involving another company, the inspecting company shall notify the other company and/or facility owner of such safety hazard no later than 10 business days after the discovery. The inspecting company shall also provide a copy of the notice to the pole owner(s). To the extent the inspecting company cannot determine the owner/operator of other company, it shall contact the pole owner(s), who shall be responsible for promptly notifying the company owning/operating the facility with the safety hazard. The notification shall be in writing and must be preserved by all parties for at least five years. It is the responsibility of each pole owner to know the identity of each entity using or maintaining equipment on its pole.”

SMUD has stated that most communications between other utilities concerning safety hazards are handled via telephone conversations. On occasion, email messages are sent, but there is no procedure to document them. SMUD must document in writing all notifications of safety hazards and preserve these records for at least five years.

B. Late Corrective Actions

GO 95 Rule 31.1 Design, Construction and Maintenance [of overhead lines] and GO 128 Rule 17.1 Design, Construction and Maintenance [of underground systems] state 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.

SMUD has a methodology for prioritizing (with end dates) corrective actions for abnormal issues that it finds on its electric system. ESRB considers the completion of corrective actions by their priority end dates as a method of ensuring that its system is maintained to enable the furnishing of safe, proper, and adequate service. SMUD's method of ensuring that its system is maintained to "enable the furnishing of safe, proper, and adequate service" per GO 95 Rule 31.1 and GO 128 Rule 17.1 is established by prioritizing any abnormal issues. Any corrective action not completed by its prioritization end date is a violation of GOs 95 and/or 128.

For many abnormal condition notifications ("D1" notifications), ESRB found that SMUD did not write proposed completion dates. As a result, ESRB was unable to determine how many D1 completed abnormal condition notifications were completed late. SMUD was able to determine that there were a total of 37,646 "open" still pending notifications as of December 6, 2011.

C. No Pole Loading Calculations

GO 95 Section IV covers the mechanical strength requirements for all lines. Utilities must be able to show that facilities meet these GO 95 strength requirements during the installation of new poles or when newly installed facilities negatively impact the strength of a pole. At the time of our audit, SMUD was unable to furnish pole loading records for new poles or poles that had new facilities that negatively impact pole. SMUD must perform and keep pole loading calculations in order to show that it is compliant with the pole strength requirements required by GO 95.

II. Violations Identified During Field Audit

This section lists the GO 95 and 128 violations that we identified during our field inspections of SMUD facilities. For the field work, we primarily chose locations that SMUD recently inspected.

A.	Location:	1401 Arden Way, Sacramento
	Transformer No.:	TX-01080789
	Previous Visit by Utility:	Underground Inspection Map 340/161 Completed 11/16/11
	Date Visited by CPUC:	12/7/11
Explanation of Violation(s):		
<u>No Identification of Enclosure</u>		
<p>GO 128 Rule 17.8, Identification of Manholes, Handholes, Subsurface and Self-contained Enclosures:</p> <p><i>Manholes, handholes, subsurface and self-contained surface-mounted equipment enclosures shall be marked as to ownership to facilitate identification by persons authorized to work therein and by other persons performing work in their vicinity.</i></p> <p>The enclosure was missing ownership identification.</p>		
<u>Transformer Leaking</u>		
<p>GO 128 Rule 12.2, Maintenance:</p> <p><i>Systems shall be maintained in such condition as to secure safety to workmen and the public in general. Systems and portions thereof constructed, reconstructed, or replaced on or after the effective date of these rules shall be kept in conformity with the requirement of these rules.</i></p> <p>The pad mount transformer at this location was leaking oil.</p>		

B.	Location:	1510 Arden Way, Sacramento
Transformer No:		TX-01080802
Previous Visit by Utility:		Underground Inspection Map 340/161 Completed 10/29/11
Date Visited by CPUC:		12/7/11
Explanation of Violation(s):		
<p><u>Dirt Inside Padmount</u></p> <p>GO 128 Rule 12.2, Maintenance:</p> <p><i>Systems shall be maintained in such condition as to secure safety to workmen and the public in general. Systems and portions thereof constructed, reconstructed, or replaced on or after the effective date of these rules shall be kept in conformity with the requirement of these rules.</i></p> <p>The padmount had about 2 feet of dirt inside the enclosure.</p>		

C.	Location:	1598 Arden Way, Sacramento
Transformer No.:		TX-01080804
Previous Visit by Utility:		Underground Inspection Map 340/161 Completed 10/29/11
Date Visited by CPUC:		12/7/11
Explanation of Violation(s):		
<p><u>Padmount Not Secured</u></p> <p>GO 128 Rule 34.3-A, Self-contained Surface-mounted Equipment, Strength:</p> <p><i>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.</i></p> <p>The padmount at this location was not secured to the base of the pad.</p>		
<p><u>Padmount Corroding</u></p> <p>GO 128 Rule 12.2, Maintenance:</p> <p><i>Systems shall be maintained in such condition as to secure safety to workmen and the public in general. Systems and portions thereof constructed, reconstructed, or replaced on or after the effective date of these rules shall be kept in conformity with the requirement of these rules.</i></p> <p>The padmount at this location was corroding on the surface and on the inside.</p>		

D.	Location:	1500 Arden Way, Sacramento
Transformer No.:		TX-01080801
Previous Visit by Utility:		Underground Inspection Map 340/161 Completed 10/30/11
Date Visited by CPUC:		12/7/11
Explanation of Violation(s):		
<p><u>Padmount Not Secured</u></p> <p>GO 128 Rule 34.3-A, Self-contained Surface-mounted Equipment, Strength:</p> <p><i>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.</i></p> <p>The padmount at this location was not secured to the base of the pad.</p>		
<p><u>Hole In Enclosure</u></p> <p>GO 128 Rule 34.3-B, Self-contained Surface-mounted Equipment, Guarding Live Parts:</p> <p><i>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.</i></p> <p>The padmount at this location had a hole in corner edge.</p>		

E.	Location:	1221 35 th St., Sacramento
	Pole No.:	UD042734
	Previous Visit by Utility:	Overhead Inspection Map 310/140 Completed 9/7/11
	Date Visited by CPUC:	12/7/11
Explanation of Violation(s):		
<p><u>Exposed Ground Wire</u></p> <p>GO 95 Rule 54.6-B, Vertical and Lateral Conductors, Ground Wires:</p> <p><i>That portion of the ground wires attached on the face or back of wood cross arms or on the surface of wood poles and structures shall be covered by a suitable protective covering</i></p> <p>The ground on this pole was exposed.</p>		
<p><u>High Voltage Signs Missing</u></p> <p>GO 95 Rule 51.6-A, Marking and Guarding, High Voltage Marking Of Poles :</p> <p><i>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.</i></p> <p>A high voltage sign was missing on one side of the primary cross arm.</p>		

F.	Location:	10475 Bruceville Rd., Sacramento
	Pole No.:	UD037419
	Previous Visit by Utility:	Overhead Inspection Map 258/167 Completed 10/14/11
	Date Visited by CPUC:	12/8/11
	Explanation of Violation(s):	
	<p><u>Guy Insulator Damaged</u></p> <p>GO 95, Rule 49.5, Guy Insulators:</p> <p><i>Guy insulators, including insulators in messengers, shall have mechanical strength at least equal to that required of the guys in which they are installed.</i></p> <p>The guy insulator on this pole was damaged.</p>	

G.	Location:	10475 Bruceville Rd. Sacramento
	Equipment No.:	UD037418
	Previous Visit by Utility:	Overhead Inspection Map 258/167 Completed 10/14/11
	Date Visited by CPUC:	12/8/11
Explanation of Violation(s):		
<p><u>Ground Molding Broken</u></p> <p>GO 95 Rule 54.6-B, Vertical and Lateral Conductors, Ground Wires:</p> <p><i>That portion of the ground wires attached on the face or back of wood cross arms or on the surface of wood poles and structures shall be covered by a suitable protective covering.</i></p> <p>The ground molding at this pole was broken.</p>		
<p><u>Down Guy Clearance From Communication Cable</u></p> <p>GO 95 Rule 38, Table 2, Case 19C</p> <p><i>Guys and span wires passing conductors supported on the same poles have a minimum allowable clearance of 3 inches from communication conductors.</i></p> <p>The down guy was less than 3 inches from contact of the communication conductor.</p>		

H.	Location:	10519 Bruceville Rd., Sacramento
Pole No.:		UD037417
Previous Visit by Utility:		Overhead Inspection Map 258/167 Completed 10/14/11
Date Visited by CPUC:		12/8/11
Explanation of Violation(s):		
<p><u>Slack Guy</u></p> <p>GO 95 Rule 56.2, Overhead Guys, Anchor Guys and Span Wires:</p> <p><i>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.</i></p> <p>The down guy at this pole location was found slack.</p>		
<p><u>Guy Guard Missing</u></p> <p>GO 95 Rule 56.9, Guy Marker (Guy Guard) states:</p> <p><i>A substantial marker of suitable material, including but not limited to metal or plastic, not less than 8 feet in length, shall be securely attached to all anchor guys. Where more than one guy is attached to an anchor rod, only the outermost guy is required to have a marker</i></p> <p>A guy guard for the down guy was missing at this pole location.</p>		

I.	Location:	6821 Havenhurst Dr., Sacramento
	Transformer No.:	TX-01009698
	Previous Visit by Utility:	Electric Underground Inspection Map 304/137 Completed 9/3/11
	Date Visited by CPUC:	12/8/11
	Explanation of Violation(s):	
	<p><u>Transformer Leaking</u></p> <p>GO 128 Rule 12.2, Maintenance:</p> <p><i>Systems shall be maintained in such condition as to secure safety to workmen and the public in general. Systems and portions thereof constructed, reconstructed, or replaced on or after the effective date of these rules shall be kept in conformity with the requirement of these rules.</i></p> <p>The pad mount transformer at this location was leaking oil.</p>	

J.	Location:	6861 Havenhurst Dr., Sacramento
	Transformer No.:	TX-01009685
	Previous Visit by Utility:	Underground Inspection Map 304/137 Completed 9/3/11
	Date Visited by CPUC:	12/8/11
	Explanation of Violation(s):	
	<p><u>Unable To Inspect Padmount Transformer.</u></p> <p>GO 95 Rule 17.1, Design, Construction, and Maintenance:</p> <p><i>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.</i></p> <p>During our field SMUD was unable to inspect this Padmount Transformer due to excessive vegetation.</p>	
	<p><u>Vegetation Interfering With Accessibility</u></p> <p>GO 128, Rule 34.2, Equipment in Manholes, Vaults, Rooms and Other Enclosures states:</p> <p><i>Equipment shall be so arranged as to provide reasonable accessibility to personnel and working space for the safe operation, maintenance, and replacement of said equipment.</i></p> <p>Excessive vegetation prevented SMUD from access to transformer.</p>	

K.	Location: 6871 Flintwood Way, Sacramento
	Transformer No.: TX-01009736
	Previous Visit by Utility: Electric Underground Inspection Map 304/137 Completed 9/3/11
	Date Visited by CPUC: 12/8/11
Explanation of Violation(s):	
<p><u>Transformer Leaking</u></p> <p>GO 128 Rule 12.2, Maintenance:</p> <p><i>Systems shall be maintained in such condition as to secure safety to workmen and the public in general. Systems and portions thereof constructed, reconstructed, or replaced on or after the effective date of these rules shall be kept in conformity with the requirement of these rules.</i></p> <p>The pad mount transformer at this location was leaking oil.</p>	

L.	Location: 6521 Driftwood St, Sacramento
	Transformer No.: TX-01008207
	Previous Visit by Utility: Electric Underground Inspection Map 306/128 Completed 8/21/11
	Date Visited by CPUC: 12/8/11
	Explanation of Violation(s):
	<p><u>Transformer Leaking</u></p> <p>GO 128 Rule 12.2, Maintenance:</p> <p><i>Systems shall be maintained in such condition as to secure safety to workmen and the public in general. Systems and portions thereof constructed, reconstructed, or replaced on or after the effective date of these rules shall be kept in conformity with the requirement of these rules.</i></p> <p>The pad mount transformer at this location was leaking oil.</p>
	<p><u>Insufficient Cubicle Clearance</u></p> <p>GO 128, Rule 34.2, Equipment in Manholes, Vaults, Rooms and Other Enclosures:</p> <p><i>Equipment shall be so arranged as to provide reasonable accessibility to personnel and working space for the safe operation, maintenance, and replacement of said equipment.</i></p> <p>Vegetation near the cubicle did not provide working space for the safe operation of the padmount.</p>

M.	Location:	6449 Driftwood St, Sacramento
Transformer No.:		TX-01008208
Previous Visit by Utility:		Electric Underground Inspection Map 306/128 Completed 8/21/11
Date Visited by CPUC:		12/8/11
Explanation of Violation(s):		
<p><u>Transformer Leaking</u></p> <p>GO 128 Rule 12.2, Maintenance:</p> <p><i>Systems shall be maintained in such condition as to secure safety to workmen and the public in general. Systems and portions thereof constructed, reconstructed, or replaced on or after the effective date of these rules shall be kept in conformity with the requirement of these rules.</i></p> <p>The secondary bushing of this transformer at this location was leaking oil.</p>		

N.	Location:	6456 Harmon Dr., Sacramento
	Transformer No.:	TX-01008209
	Previous Visit by Utility:	Electric Underground Inspection Map 306/128 Completed 8/21/11
	Date Visited by CPUC:	12/8/11
	Explanation of Violation(s):	
	<p><u>Unable To Inspect Padmount Transformer.</u></p> <p>GO 95 Rule 17.1, Design, Construction, and Maintenance:</p> <p><i>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.</i></p> <p>SMUD was unable to inspect this Padmount Transformer due to excessive vegetation.</p>	
	<p><u>Vegetation Interfering With Accessibility</u></p> <p>GO 128, Rule 34.2, Equipment in Manholes, Vaults, Rooms and Other Enclosures:</p> <p><i>Equipment shall be so arranged as to provide reasonable accessibility to personnel and working space for the safe operation, maintenance, and replacement of said equipment.</i></p> <p>Excessive vegetation prevented SMUD from access to the transformer.</p>	

O.	Location: 6501 Harmon Dr., Sacramento
	Transformer No.: TX-01008227
	Previous Visit by Utility: Electric Underground Inspection Map 306/128 Completed 8/29/11
	Date Visited by CPUC: 12/8/11
	Explanation of Violation(s):
	<p><u>Padmount Not Secured</u></p> <p>GO 128 Rule 34.3-A, Self-contained Surface-mounted Equipment, Strength:</p> <p><i>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.</i></p> <p>The padmount at this location was not secured to the base of the pad.</p>