

## PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE  
SAN FRANCISCO, CA 94102-3298



August 24, 2011

EA2011-16

Douglas Draeger  
Assistant General Manager, Engineering & Operations  
Alameda Municipal Power  
2000 Grand Street  
P.O. Box H  
Alameda, CA 94501-0263

Subject: Alameda Municipal Power Electric Audit

Dear Mr. Draeger:

On behalf of the Utilities Safety and Reliability Branch (USRB) of the California Public Utilities Commission, Ryan Yamamoto and I conducted an audit of Alameda Municipal Power's (AMP's) electric distribution system from August 8-9, 2011. The audit included a review of AMP's records for the period January 2008 through August 2011.

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 September 23, 2011, AMP must send me a response to this letter detailing its plans to address those violations and when AMP expects to complete them. You may email an electronic copy of the response to [kh2@cpuc.ca.gov](mailto:kh2@cpuc.ca.gov) or send a hard copy to:

Attn: Kenneth How  
California Public Utilities Commission  
505 Van Ness Avenue  
San Francisco, CA 94102-3298

Should you have any questions concerning this letter I can be reached at by phone at (415) 703-2875 or by email at [kh2@cpuc.ca.gov](mailto:kh2@cpuc.ca.gov).

Sincerely,

  
Kenneth K. How

Utilities Safety and Reliability Branch  
Consumer Protection and Safety Division  
California Public Utilities Commission

Enclosures: Audit Summary

CC: Ryan Yamamoto, Utilities Engineer, CPUC USRB  
Alok Kumar, Senior Utilities Engineer, CPUC USRB  
Raymond Fugere, Program and Project Supervisor, CPUC USRB  
Jim McRory, Line Section, AMP  
John Deschaine, Line Superintendent, AMP

# AUDIT SUMMARY

## I. Record Violations

This section summarizes the General Order (GO) violations that we found during our review of Alameda Municipal Power (AMP) maintenance records.

### **A. Incorrect Underground Detailed Inspection Cycle**

GO 165 Section IV: Standards for Inspection, Record-keeping, and Reporting states 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 165 requires a 5 year cycle for overhead detailed inspections and a 3 year cycle for underground detailed inspections. During our audit, we found that AMP was performing detailed inspections of its underground facilities on a 5 year cycle. AMP must perform its detailed underground inspections every 3 years as required by GO 165.

### **B. 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.*

And GO 165 Section IV: Standards for Inspection, Record-keeping, and Reporting states 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.*

During our audit, we found that AMP was not performing diagnostic testing on of capacitors and switching/protective devices. AMP must diagnostically test GO 165 listed equipment per, at a minimum, the detailed inspection cycles outlined in GO 165

### **C. Pole Loading Calculation Issues**

GO 95 Section IV covers the mechanical strength requirements for all lines. Utilities must be able to show that these GO 95 strength requirements are met on all their facilities. To ensure that poles meet these requirements, AMP performs pole loading calculations. During our audit, we found issues with AMP's pole loading calculations. The items below detail our findings.

#### **1. Incorrect Grade of Construction Used in Loading Calculations**

GO 95 Table 3 outlines the different grades of construction that must be used under different scenarios. The table requires Grade "A" construction for lines with Class H circuits at the upper level and Class C circuits at the lower level. In the pole loading calculations listed below, AMP incorrectly used Grade "B" construction numbers instead of Grade "A". As a result, AMP was overestimating the capacity of those poles.

<b>Loading Calculations with Incorrect Grade of Construction</b>	
<b>Location</b>	<b>Year Completed</b>
1634 High St, Alameda, CA	2009
Pole 1348	2010
167 Maitland, Alameda, CA	2006

#### **2. Pole Loading Calculations Do Not Match Facilities in the Field**

While verifying the facilities listed in the pole loading calculations for poles #1889 and #1348, we found that the supply facilities listed on those calculations did not match what was present in the field. AMP must perform accurate pole loading calculations to ensure that its poles are not overloaded.

#### **3. Incorrect Code Used in Pole Loading Calculations**

On a pole loading calculation performed on Pole 1889 in 2006, AMP used NESC strength requirements to complete the calculation instead of GO 95 requirements. AMP must use GO 95 requirements to complete its pole loading calculations.

#### **4. Missing Pole Loading Calculations**

AMP provided us with six pole loading calculation records and indicated that some were missing. AMP must keep records of its pole loading calculations to show that its poles were correctly loaded during new construction or when the safety factors on those poles were negatively impacted.

#### **5. Service Drops Not Included in Pole Loading Calculations**

AMP does not include service drops in their pole loading calculations. When performing calculations, AMP must include all facilities, including service drops, street lights and any other pole attachments that may negatively affect the pole's safety factor.

## II. Field Violations

This section lists the GO 95 and 128 violations that we identified during our field inspections of AMP facilities. For the field work, we chose locations that AMP inspected for GO violations per its maintenance program recent to our audit date.

<b>A.</b>	<b>Location:</b>	8 <sup>th</sup> and Eagle, Alameda, CA
	<b>Pole No.:</b>	N/A
	<b>Previous Visit by Utility:</b>	Feeder 3105 Patrol Section Completed 3/9/11
	<b>Date Visited by CPUC:</b>	8/8/11
<b>Explanation of Violation(s):</b>		
<p>GO 95 Table 2 Case 19C requires a 3 inch clearance between guys in proximity and communication conductors.</p> <p>A communication span was touching a primary down guy.</p>		

<b>B.</b>	<b>Location:</b>	Pole at 2501 Clement, Alameda, CA
	<b>Pole No.:</b>	N/A
	<b>Previous Visit by Utility:</b>	Feeder 4115Patrol Section Completed 4/2010
	<b>Date Visited by CPUC:</b>	8/8/11
<b>Explanation of Violation(s):</b>		
<p><u>Missing High Voltage Signs</u></p> <p>GO 95 Rule 51.6 A3:</p> <p><i>Crossarms where present may be marked in lieu of marking the pole. Such signs shall be placed on the face and back of each crossarm supporting line conductors</i></p> <p>A high voltage sign was missing from the crossarm supporting the conductors crossing Everett. A pole north of this location was also missing a high voltage sign on the top crossarm.</p>		

<b>C.</b>	<b>Location:</b>	Pole across from 2413 Clement, Alameda, CA
	<b>Pole No.:</b>	N/A
	<b>Previous Visit by Utility:</b>	Feeder 4212 Detailed Inspection Section Completed 5/10/11
	<b>Date Visited by CPUC:</b>	8/8/11
<b>Explanation of Violation(s):</b>		
<p><u>Missing High Voltage Sign</u></p> <p>GO 95 Rule 51.6 A3:</p> <p><i>Crossarms where present may be marked in lieu of marking the pole. Such signs shall be placed on the face and back of each crossarm supporting line conductors</i></p> <p>A high voltage sign was missing from the top crossarm.</p>		

<b>D.</b>	<b>Location:</b>	Pole at Park & Clement (next to 1825 Park), Alameda, CA
	<b>Pole No.:</b>	N/A
	<b>Previous Visit by Utility:</b>	Feeder 4212 Detailed Inspection Section Completed 5/10/11
	<b>Date Visited by CPUC:</b>	8/8/11
<b>Explanation of Violation(s):</b>		
<p><u>Missing High Voltage Sign</u></p> <p>GO 95 Rule 51.6 A3:</p> <p><i>Crossarms where present may be marked in lieu of marking the pole. Such signs shall be placed on the face and back of each crossarm supporting line conductors</i></p> <p>A high voltage sign was missing from the bottom crossarm.</p>		

<b>E.</b>	<b>Location:</b>	Pole across 834 Taylor, Alameda, CA
	<b>Pole No.:</b>	N/A
	<b>Previous Visit by Utility:</b>	Feeder 3208 Detailed Inspection Section Completed 3/30/10
	<b>Date Visited by CPUC:</b>	8/9/11
<b>Explanation of Violation(s):</b>		
<p><u>Broken Ground Molding</u></p> <p>GO 95 Rule 54.6 B:</p> <p><i>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</i></p> <p>The ground molding was broken at this location.</p>		
<p><u>Missing High Voltage Sign</u></p> <p>GO 95 Rule 51.6 A3:</p> <p><i>Crossarms where present may be marked in lieu of marking the pole. Such signs shall be placed on the face and back of each crossarm supporting line conductors</i></p> <p>The pole at this location was missing a high voltage sign.</p>		

<b>F.</b>	<b>Location:</b>	Pole across 828 Taylor, Alameda, CA
	<b>Pole No.:</b>	N/A
	<b>Previous Visit by Utility:</b>	Feeder 3208 Detailed Inspection Section Completed 3/30/10
	<b>Date Visited by CPUC:</b>	8/9/11
<b>Explanation of Violation(s):</b>		
<p><u>Broken Ground Molding</u></p> <p>GO 95 Rule 54.6 B:</p> <p><i>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</i></p> <p>The ground molding was broken at this location</p>		
<p><u>Supply Service Touching Communication Service</u></p> <p>GO 95 Rule 54.8-C4 requires a 12 inch clearance between communication and supply service drops where within 15 ft from the point of attachment.</p> <p>At this location, the secondary service was touching the communication service to 822 Taylor.</p>		

<b>G.</b>	<b>Location:</b>	Pole across 807 Santa Clara, Alameda, CA
	<b>Pole No.:</b>	N/A
	<b>Previous Visit by Utility:</b>	Feeder 3208 Detailed Inspection Section Completed 3/30/10
	<b>Date Visited by CPUC:</b>	8/9/11
<b>Explanation of Violation(s):</b>		
<p><u>Missing High Voltage Sign</u></p> <p>GO 95 Rule 51.6 A3:</p> <p><i>Crossarms where present may be marked in lieu of marking the pole. Such signs shall be placed on the face and back of each crossarm supporting line conductors</i></p> <p>The pole at this location was missing a high voltage sign.</p>		

<b>H.</b>	<b>Location:</b>	Pole across 807 Santa Clara, Alameda, CA
	<b>Pole No.:</b>	N/A
	<b>Previous Visit by Utility:</b>	Feeder 3208 Detailed Inspection Section Completed 3/30/10
	<b>Date Visited by CPUC:</b>	8/9/11
<b>Explanation of Violation(s):</b>		
<p><u>Missing High Voltage Sign</u></p> <p>GO 95 Rule 51.6 A3:</p> <p><i>Crossarms where present may be marked in lieu of marking the pole. Such signs shall be placed on the face and back of each crossarm supporting line conductors</i></p> <p>The pole at this location was missing a high voltage sign.</p>		

<b>I.</b>	<b>Location:</b>	Pole across 831 Santa Clara, Alameda, CA
	<b>Pole No.:</b>	N/A
	<b>Previous Visit by Utility:</b>	Feeder 3208 Detailed Inspection Section Completed 3/30/10
	<b>Date Visited by CPUC:</b>	8/9/11
<b>Explanation of Violation(s):</b>		
<p><u>Missing High Voltage Sign</u></p> <p>GO 95 Rule 51.6 A3:</p> <p><i>Crossarms where present may be marked in lieu of marking the pole. Such signs shall be placed on the face and back of each crossarm supporting line conductors</i></p> <p>The pole at this location was missing a high voltage sign.</p>		

<b>J.</b>	<b>Location:</b>	Padmount Transformer T-173 Behind Washington Elementary School, Alameda, CA
	<b>Pole No.:</b>	N/A
	<b>Previous Visit by Utility:</b>	Feeder 3208 Detailed Inspection Section Completed 3/30/10
	<b>Date Visited by CPUC:</b>	8/9/11
<b>Explanation of Violation(s):</b>		
<p><u>Insufficient Working Space</u></p> <p>GO 128 Rule 34.2:</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>At this location, the padmounted transformer was enclosed in a chain linked cage. There was insufficient clearance in front of the padmount if workers needed to use insulated tools. A sticker on the padmount requires 8 ft of clearance in front of the padmount.</p>		
<p><u>Primary Cables Unmarked</u></p> <p>GO 128 Rule 35.1:</p> <p><i>Cables operating at a voltage in excess of 750 volts shall be permanently and clearly identified by tags or other suitable means to indicate their operating voltage and the circuit with which they are normally associated at each manhole or other commonly accessible location of the underground system.</i></p> <p>The primary cables were unmarked at this location.</p>		

<b>K.</b>	<b>Location:</b>	Pole at 39 Maitland, Alameda, CA
	<b>Pole No.:</b>	N/A
	<b>Previous Visit by Utility:</b>	Feeder 4214 Detailed Inspection Section Completed 8/30/10
	<b>Date Visited by CPUC:</b>	8/9/11
<b>Explanation of Violation(s):</b>		
<p><u>Supply Service Touching Communication Service</u></p> <p>GO 95 Rule 54.8-C4 requires a 12 inch clearance between communication and supply service drops where within 15 ft from the point of attachment.</p> <p>At this location, a secondary service coming off the pole was touching a communication service</p>		
<p><u>Broken High Voltage Sign</u></p> <p>GO 95 Rule 51.6 A3:</p> <p><i>Crossarms where present may be marked in lieu of marking the pole. Such signs shall be placed on the face and back of each crossarm supporting line conductors</i></p> <p>The high voltage sign at this location had broken off.</p>		

<b>L.</b>	<b>Location:</b>	Pole at 53 Maitland, Alameda, CA
	<b>Pole No.:</b>	N/A
	<b>Previous Visit by Utility:</b>	Feeder 4214 Detailed Inspection Section Completed 8/30/10
	<b>Date Visited by CPUC:</b>	8/9/11
<b>Explanation of Violation(s):</b>		
<p><u>Broken High Voltage Sign</u></p> <p>GO 95 Rule 51.6 A3:</p> <p><i>Crossarms where present may be marked in lieu of marking the pole. Such signs shall be placed on the face and back of each crossarm supporting line conductors</i></p> <p>The high voltage sign at this location had broken off.</p>		

<b>M.</b>	<b>Location:</b>	Pole at 61 Maitland, Alameda, CA
	<b>Pole No.:</b>	N/A
	<b>Previous Visit by Utility:</b>	Feeder 4214 Detailed Inspection Section Completed 8/30/10
	<b>Date Visited by CPUC:</b>	8/9/11
<b>Explanation of Violation(s):</b>		
<p><u>Supply Service touching Street Light</u></p> <p>GO 95 Rule 54.8-D1:</p> <p><i>Supply service drops of 0 - 750 volts passing (unattached) nonclimbable street lighting and traffic signal poles or standards including mastarms, brackets and lighting fixtures, shall clear a radial distance of 15 inches as specified in Table 1, Case 10, Column B , except when the drops are mechanically protected from abrasion by materials specified in Rule 22.8 . Such mechanical protection shall extend not less than 15 inches in each direction along the drop from centerline of pole, standard, attaching mastarm or fixture, whether passing above, below or alongside. The drops shall be installed in such a manner so as not to interfere with light distribution from lighting fixtures and shall not hamper workmen when changing lamps or maintaining equipment</i></p> <p>A supply service was touching a street light at this location.</p>		

<b>N.</b>	<b>Location:</b>	Pole at 83 Maitland, Alameda, CA
	<b>Pole No.:</b>	N/A
	<b>Previous Visit by Utility:</b>	Feeder 4214 Detailed Inspection Section Completed 8/30/10
	<b>Date Visited by CPUC:</b>	8/9/11
<b>Explanation of Violation(s):</b>		
<p><u>Broken High Voltage Sign</u></p> <p>GO 95 Rule 51.6 A3:</p> <p><i>Crossarms where present may be marked in lieu of marking the pole. Such signs shall be placed on the face and back of each crossarm supporting line conductors</i></p> <p>Missing high voltage sign at this location.</p>		

<b>O.</b>	<b>Location:</b>	Padmounted Transformer LT-501 at El Portal & Camino Del Valle, Alameda, CA
	<b>Pole No.:</b>	N/A
	<b>Previous Visit by Utility:</b>	Feeder 4212 Detailed Inspection Section Completed 7/5/11
	<b>Date Visited by CPUC:</b>	8/9/11
	<b>Explanation of Violation(s):</b>	
<p><u>Insufficient Working Space</u></p> <p>GO 128 Rule 34.2:</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>At this location, there was a structure encroaching on the padmount's 8 ft (front side) working clearance required by the warning label on the padmount. This clearance is necessary if work is needed to be done on the padmount with insulated tools.</p>		

<b>P.</b>	<b>Location:</b>	Padmounted Transformer LT-502 at La Cresta & Camino Del Valle, Alameda, CA
	<b>Pole No.:</b>	N/A
	<b>Previous Visit by Utility:</b>	Feeder 4212 Detailed Inspection Section Completed 7/5/11
	<b>Date Visited by CPUC:</b>	8/9/11
	<b>Explanation of Violation(s):</b>	
<p><u>Insufficient Working Space</u></p> <p>GO 128 Rule 34.2:</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>At this location, there was a structure encroaching on the padmount's 8 ft (front side) working clearance required by the warning label on the padmount. This clearance is necessary if work is needed to be done on the padmount with insulated tools.</p>		

<b>Q.</b>	<b>Location:</b>	Padmounted Transformer LT-503 at La Campania & Camino Del Valle, Alameda, CA
	<b>Pole No.:</b>	N/A
	<b>Previous Visit by Utility:</b>	Feeder 4212 Detailed Inspection Section Completed 7/5/11
	<b>Date Visited by CPUC:</b>	8/9/11
<b>Explanation of Violation(s):</b>		
<p><u>Insufficient Working Space</u></p> <p>GO 128 Rule 34.2:</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>At this location, there was a structure encroaching on the padmount's 8 ft (front side) working clearance required by the warning label on the padmount. This clearance is necessary if work is needed to be done on the padmount with insulated tools.</p>		

### **III. Concerns and Recommendations**

This section discusses any concerns and recommendations we have regarding items we found during our audit or AMP's maintenance program in general. These items are not necessarily rule violations.

#### **A. Pole Loading Calculations on all Pole Replacement Work**

In part due to the pole loading calculation issues we found during our Audit (see I.C.), we recommend that AMP perform pole loading calculations on all pole replacement work, even if the facilities attached to the replacement poles do not change.

#### **B. Hot Center Fuse on Padmount LC 906**

There was a hot center fuse on padmounted capacitor bank LC 906 off of Harbor Bay Parkway. Please investigate the condition and provide us with AMP's findings. If remedial action is necessary, please send us AMP's remedial plan for this issue along with your response to this letter.