

Memorandum

To: ISO Board of Governors

From: Keith Casey, Vice President of Market and Infrastructure Development

Date: September 7, 2012

Re: Transmission Maintenance Coordination Committee Update

This memorandum does not require Board action.

EXECUTIVE SUMMARY

The Transmission Maintenance Coordination Committee (TMCC) met on July 19, 2012 and discussed the following topics:

1. CPUC Staff proposed General Order for Substation Inspection;
2. CPUC General Order 165;
3. Tour of ISO Control Room;
4. California Air Resources Board proposed SF₆ regulation requirements;
5. Direct Current Undersea Cable Sonar Inspection;
6. Tools to Detect Underground Cable Flaws;
7. Recent TMCC experiences with North American Electric Reliability Corporation (NERC) reliability standards;
8. Grid events and analysis;
9. Asset Management Programs;
10. Animal Mitigation; and
11. No Touch Days

The TMCC will meet on October 18, 2012 to decide on the minutes of its July 19, 2012 meeting. Minutes are posted to the meeting pages at:

<http://www.caiso.com/Documents/Transmission%20Maintenance%20Coordination%20Committee%20archive>.

BACKGROUND

In April 1998, in compliance with a Federal Energy Regulatory Commission order and a Board resolution, the California ISO established an advisory committee to the Board called the Maintenance Coordination Committee, subsequently renamed the Transmission Maintenance Coordination Committee. On October 18, 2011, FERC approved the ISO filing to change the TMCC to be an advisory committee to ISO Management.

Membership includes one member representing each participating transmission owner with transmission facilities subject to the ISO transmission maintenance standards, two members representing organizations representing labor interests, five members representing other organizations, and the ISO vice president responsible for transmission maintenance, or his or her designee, who shall serve as the Chair of the TMCC.

Members of the TMCC shall perform all duties specified in Appendix C to the transmission control agreement, including:

- Convey transmission facility maintenance related information to the ISO vice president responsible for transmission maintenance;
- Seek input from other participating transmission owners and interested stakeholders regarding the ISO transmission maintenance standards; and
- Review any proposed changes to the ISO transmission maintenance standards submitted by the ISO, a participating transmission owner, or any interested stakeholder, and recommend revisions to the ISO transmission maintenance standards for submittal to the Board for approval.

SUMMARY OF TMCC RECENT ACTIVITIES

Briefing on CPUC Draft General Order for Substation Inspections

CPUC Utilities Engineer, Jesse Ante, provided the current status on the development of the General Order for Substation Inspection. The purpose of this general order is to formulate, for the state of California, uniform requirements for substation inspection programs, the application of which will promote the safety of workers and the public and enable adequacy of service. As currently drafted, this order will apply to electric utilities subject to the jurisdiction of the CPUC. Substation facilities subject to the California Independent System Operator's operational control or customer substations subject to FERC reliability standards will be exempt from this general order.

Although the General Order for Substation Inspection is not yet approved, the California Public Safety Division (of the CPUC) requested data from some of the affected utilities, including a list of their substations and characteristics like voltage class, GPS coordinates, and lines going into and out of the stations. Responses to the request were due by July 13, 2012.

Briefing on CPUC General Order 165

Mr. Ante also provided the current status of the implementation of the section under General Order 165 allowing the California Public Safety Division to review the transmission facility inspection and maintenance performed by utilities under their jurisdiction. The California Public Safety Division had a review with Pacific Gas and Electric (PG&E) in May and with Southern California Edison (SCE) in August. SCE Manager of Transmission/Substation Maintenance and Inspection, Mike Palusso, indicated the California Public Safety Division requested review of approximately twenty eight 66kV and

115kV transmission facilities that were non-ISO. San Diego Gas and Electric Company (SDGE) indicated they are expecting the California Public Safety Division to schedule a review of their facilities sometime this fall. The California Public Safety Division is planning on completing all of the reviews by spring of 2013.

Briefing on California Air Resources Board proposed SF6 Regulation Requirements

Los Angeles Department of Water and Power Superintendent of Electrical Station Maintenance Support Services, David Haerle, informed the TMCC that Gas Insulated Switchgear owners and operators were mandated to submit their first SF6 report to the Environmental Protection Agency (EPA) by September 28, 2012 delineating their emission rates and demonstrating compliance with greenhouse gas emission reduction regulations.

The links for the California Air Resources Board and EPA efforts and associated reporting details are located at:

<http://www.arb.ca.gov/cc/sf6elec/sf6elec.htm>

<http://www.epa.gov/climatechange/emissions/subpart/dd.html>

Briefing on Direct Current Undersea Cable Sonar Inspection

Trans Bay Cable Director of Compliance, James Alligan, briefed the Committee on the maintenance for the ± 200 kV 53 mile underwater direct current cable located in the San Francisco Bay between converter stations at Potrero and Pittsburg. Mr. Alligan provided a project overview along with discussion on cable risk management, cable risk profile, maintenance practices, and sonar findings.

Presentation on Tools Developed to Determine Underground Cable Flaws

California Energy Commission Electrical Engineer, Jamie Patterson, introduced Igor Paprotny from UC Berkeley as the lead for developing tools to determine underground distribution cable flaws. Mr. Paprotny provided the Committee with the status of this project and how they use online diagnostics to assess cable insulation. Mr. Paprotny is continuing his research in this area under the direction of the California Energy Commission to further refine these tools and gather support from the industry.

Briefing on Recent TMCC Experiences with NERC Reliability Requirements

Mr. Palusso provided an update on the status of NERC Reliability Standard PRC-005-2 (Protection System Maintenance and Testing). The NERC standard drafting committee expects that this standard will be voted on by the NERC Board of Trustees in approximately November. The current status of PRC-005-2 can be found at:

http://www.nerc.com/filez/standards/Protection_System_Maintenance_Project_2007-17.html

Western Area Power Administration Supervisory Maintenance Management Specialist, Steve Tuggle, reported the Western Area Sierra Nevada Region's last completed WECC audit focused heavily on PRC-005 and CIP requirements.

Briefing on Major Grid Events and Analysis

Mr. Palusso and SCE Substation and Transmission Compliance Associate, Ronald Gonzalez, provided a presentation on a cracked insulator cap failure that occurred on one of its 500kV lines in 2011. Mr. Gonzalez described the root cause as a manufacturing defect that took 45 years of thermal cycling for complete failure to occur. SCE indicated their patrol personnel are aware of the problem and look for obvious cracks in similar insulator caps during their regular patrols.

Bonneville Power Administration Redmond District Manager – South Region, Adam Mikulski, provided a presentation on a recent incident where their Malin substation experienced a 500kV south bus trip.

Discussion on Asset Management Programs

Mr. Tuggle led a discussion on whether other utilities had a formal program to identify transmission line, transformer, circuit breaker, and battery system assets that need replacement based on passive and active failure rates. Mr. Tuggle indicated the Western Area Power Administration is looking for a program that could use current status configuration and outage exposure to create a substantive forecasted failure rate. No TMCC members in attendance had such a formal program but some TMCC members indicated they would like to continue further discussion with Western Area Power Administration on this effort.

Briefing on Animal Mitigation

Mr. Haerle indicated LADWP is considering installing rubber covers on insulators and insulator bushings to reduce line outages caused by nesting seagulls depositing droppings on their transmission facilities in the harbor areas. Mr. Haerle asked if any TMCC members had any experience in this area and could suggest subject matter experts he could talk to. SCE stated they have used similar bird guard installations over the last 15-20 years and found the bird mitigation results were the same regardless of whether they used the rubber covers or other types of insulator guards. The main reason SCE found for not using the rubber covers is that they impede inspection since workers are not able to inspect under the covers to see if other problems are developing. Names of expert personnel at PG&E and PacifiCorp were provided to Mr. Haerle.

Briefing on No Touch Day Status

ISO Grid Asset Transmission Asset Engineer, Tom Halford, informed the TMCC that ISO Transmission Operators and Outage Coordinators are not experiencing pushback from the PTOs regarding No Touch Days. Although there appear to be no issues with the No Touch

Day policy, SDG&E Substation Construction & Maintenance Manager, Frank Johnson, indicated the current SONGS status has caused the processing of outages to become more restrictive.