



Joint Synchronized Information Subcommittee Meeting

Salt River Project
PERA Club
1 Continental Drive
Tempe, Arizona 85821-1053

January 15, 2013 from 1:00 pm to 5:00 pm
January 16, 2013 from 8:00 pm to 5:00 pm
January 17, 2012 from 8:00 am to 11:30 am

Agenda

- I. Welcome / Introductions / Antitrust Guidelines
- II. NERC NASPI, WECC OC and PCC meeting updates
 - a. PCC assignments to JSIS – Dmitry Kosterev, BPA
- III. Future of NERC NASPI, transition plan, NERC SMS

ENGINEERING ANALYSIS (JANUARY 15)

- IV. System events
 - a. Review of recent events – Armando Salazar and Naim Logic
 - b. Update on WECC MVWG model validation for July 4, 2012 Palo Verde + Arlington Valley generation outage – Dmitry Kosterev
 - c. Disturbance triggers for engineering analysis (report on trigger implementation) – Zea Flores
 - d. CELL method for disturbance classification – Yuri Makarov and Pavel Etignov - PNNL
 - e. Recognition of Fault-Induced Delayed Voltage recovery events – Dmitry Kosterev
 - f. Monitoring equipment
- V. Frequency Response Analysis update
 - a. Frequency Response Tool – Pavel Etignov, PNNL
 - b. Frequency Response Baseline – Dmitry Kosterev
 - c. Next Steps

- VI. Power Plant Model Validation (PPMV) Application
 - a. Overview of Power Plant Model Validation application – Dmitry Kosterev and Steve Yang, BPA
 - b. PPMV data management – Pavel Etignov, Dmitry Kosterev
 - c. Using PMU data to supplement baseline testing – Bernard Lesieutre
 - d. DOE paper on Power Plant Model Validation – Joe Eto
 - e. Model validation reports – Dmitry Kosterev

- VII. Oscillation and Modal Analysis
 - a. 2012 Probing test report – Dan Trudnowski, MTU
 - b. 2012 Summer oscillation baselining – Dan Trudnowski, MTU
 - c. PCC assignment – Oscillation Mode Classification

- VIII. Engineering Applications for Oscillation Analysis
 - a. Overview of Oscillation Analysis Applications – Dmitry Kosterev, BPA
 - b. Guidelines for Applications for Oscillation Detection and Analysis – APPROVAL ITEM**
 - c. Applications used by MTU – Dan Trudnowski
 - d. Applications used by WSU – Mani Venkatasubramanian
 - e. Applications used by PNNL – Ning Zhou
 - f. Applications used by University of Wisconsin – Bernie Lesieutre
 - g. Oscillation analysis in PGDA – Bharat Bhargava
 - h. Next steps discussion

- IX. PCC Assignment
 - a. PSS settings

CONTROL ROOM APPLICATIONS (JANUARY 16)

- X. Project Update Round Table (WECC RC, CISO, PG&E, SCE, BPA, SRP, APS, NVE, IPC, WAPA, PNM, ...)
 - a. Infrastructure deployment – where you are in your project, what are the challenges, what help do you need from WECC JSIS
 - b. Control center application – what applications you are deploying, what platform/vendor you are using, what is your historian, what applications would you like JSIS to work on
 - c. Data exchange – when will you be available to do data exchange, are you interested in receiving data from others
 - d. Inter-utility real-time data exchange – Nick Leitschuh
 - e. Phase rotation convention – Dan Brancaccio
 - f. Interconnection-wide phase angle reference - Dan Brancaccio

- XI. DRILL DOWN – Voltage Stability Applications Session #1
 - a. Overview of Voltage Stability Applications application – Dmitry Kosterev, BPA
 - b. DOE CERTC Project on Voltage Stability Applications – Dejan Sobajic
 - c. Hybrid-based approach
 - i. ROSE application – Marianna Vaiman, V&R Energy
 - ii. ROSE deployment at WECC RC – Zea Flores, WECC RC
 - d. VIP / RPM application development and demonstration – Damir Novosel and Dino Lelic, Quanta Technology
 - e. Measurement-based voltage stability application: methodology and initial experience – Joe Chow, RPI
 - f. Voltage Stability Monitor – Mani Venkatasubramanian, WSU
 - g. SVD methods for detecting voltage instability – Chris DeMarco, University of Wisconsin
 - h. RTDMS: what is available and what is in the development pipeline – Bharat Bhargava
 - i. Alstom Grid Products: what is available and what is in the development pipeline – Manu Parashar
 - j. WECC TOP plans to deploy synchro-phasor based voltage stability applications – round table CISO, BPA, PG&E, SCE, IPC, NVE, SRP
 - k. Next steps – maturity model and coordination – all

LUNCH

- XII. TECHNICAL DRILL-DOWN – Phase Angle Alarming Session #1
 - a. Using phase angles to indicate power system stress – Bob Cummings, NERC
 - b. BPA experience with phase angle alarming post 1996 outages – Dmitry Kosterev
 - c. BPA assessment of what phase angle alarming can be used for – Ryan Quint
 - d. Multi-dimensional nomogram – Yuri Makarov, Pavel Etignov, PNNL
 - e. WECC RC phase angle alarming project – Zea Flores
 - f. Phase angle alarming – Manu Parashar and Ian Donson
 - g. Phase angle baselining analysis – Bharat Bhargava, EPG
 - h. Using phase angles for Assessing the Risk of Cascading Outages – Marianna Vaiman, V&R Energy
 - i. WECC TOP plans to deploy synchro-phasor based voltage stability applications – round table CISO, BPA, PG&E, SCE, IPC, NVE, SRP
 - j. Discussion of next steps

- XIII. TECHNICAL DRILL-DOWN - Demonstration of tools for oscillation detection Session #2
 - Presenters are asked to demonstrate how their methods work on test data sets, also provide answers to the application deployment questions

- a. Demonstration of oscillation detection and spectrum analysis applications – Dan Trudnowski, MTU
 - b. Setting FFT calculation engine for oscillation detection – Chuck Wells, OSI Soft
 - c. Demonstration of RTDMS Oscillation Monitoring application – Bharat Bhargava, EPG
 - d. Demonstration of Alstom Grid Oscillation Monitoring Application – Manu Parashar, Alstom Grid
 - e. Displaying oscillation information to dispatchers – round table discussion
- XIV. Synchro-phasor Application Approval Process
- XV. Operating procedures to address low damping conditions – Dmitry Kosterev and Donald Davies
- a. Study Report of Inter-area oscillation risks
 - b. Discussion of operating procedures
- XVI. Training Materials for Operators – all

DATA MANAGEMENT (January 17)

- XVII. NASPI Update – Alison Silverstein
- XVIII. PMU Placement Guidelines
- a. NERC NASPI PMU Placement Guidelines – Alison Silverstein
 - b. PMU Placement Research – Joe Chow, RPI
 - c. PMUs for governor response path analysis – Dmitry Kosterev
 - d. PMUs for SPS performance monitoring- Dmitry Kosterev
 - e. **PMU Placement Guidelines – APPROVAL ITEM**
- XIX. COMTRADE for post-event analysis data exchange – Dan Brancaccio
- XX. TECHNICAL DRILL DOWN – Synchro-phasor Data Validation
- a. Need for data validation and conditioning – Alison Silverstein, Dmitry Kosterev
 - b. DOE DERTC Project on Synchro-phasor Data Validation – Dejan Sobajic
 - c. EPG Presentation on Technical Approaches for Data Validation and Signal Conditioning – Ken Martin, EPG
 - d. Jim Thorp
 - e. Data quality requirements and Signal conditioning approaches used by Modal Analysis applications – Dan Trudnowski, Ning Zhou
 - f. Discussion

- XXI. Synchro-phasor Handbook (assign sections):
 - a. Technology overview
 - b. Value and what applications are needed to unlock the value
 - c. Applications
 - d. Infrastructure, security
 - e. Costs – deployment and on-going O&M

XXII. Adjourn

Next Meetings:

Salt Lake City, UT
Salt Lake City, UT

WECC Policy Statement:

Antitrust Policy

Date: 10/23/2009

Introduction

It is WECC's policy and practice to comply with antitrust laws and avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct that violates, or that might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition. Furthermore, under section 3(c) of the Delegation Agreement, WECC must adhere to and require that all participants in WECC activities follow and comply with the NERC Anti-Trust Compliance Guidelines (attached as Appendix A), as amended from time to time. It is the responsibility of every WECC participant and employee who may in any way affect WECC's compliance with the antitrust laws to carry out this commitment.

The antitrust laws and the cases interpreting them do not clearly define all antitrust violations. Most violations are decided based on specific facts of the situation. Notwithstanding this vagueness in the law, certain activities are clearly prohibited. **All WECC participants and staff must refrain from the prohibited activities in all WECC activities and meetings and in other WECC-related communications with WECC members.** There may be other actions which could violate the antitrust laws which are not expressly dealt with herein.

Any WECC participant or employee who is uncertain about the legal ramifications of a particular course of conduct or who has doubts or concerns about whether WECC's antitrust compliance policy is implicated in any situation should consult WECC's General Counsel immediately.

Purpose

The purpose of this policy is to provide guidance to WECC participants and staff regarding potential antitrust problems and to set forth policies to be followed with respect to activities that may involve antitrust considerations.

Document Owner

The owner of this document is the General Counsel.

The document owner is responsible for:

- Identifying the governance requirements for approval of the policy.
- Directing review and revision of the policy to be accurate and compliant with applicable regulatory, legal, and business requirements, and in accordance with the policy's review cycle.
- Designating WECC staff as Subject Matter Experts for the development, revision and review of the policy.
- Ensuring this document is reviewed and approved in accordance with its review cycle.
- Performing initial review and approval of the policy and its revisions.

- Submitting the policy and its revisions for approval.
- Distributing the approved document to the appropriate staff, corporate library, and any other applicable locations for reference.

Scope

This policy applies to WECC participants, including its Board of Directors, and WECC staff as it pertains to WECC activities and meetings and any other WECC-related communications with WECC participants or WECC staff.

Responsibilities

Chairman of the Board

- Communicate this policy to WECC participants

Chief Executive Officer

- Communicate this policy to WECC staff

General Counsel

- Participate in meetings and/or review meeting minutes and other communications for compliance with this policy.

Should any WECC employee, contractor, or other individual deviate from this policy, that individual is responsible for notifying his or her supervisor of the deviation. The individual is responsible for documenting a description of the deviation and the reason(s) for it. The supervisor may contact the WECC Legal department regarding the issue. Individuals who are concerned with reporting the deviation to a supervisor may utilize the WECC Conflict of Interest and Ethical Issue Reporting Hotline.

Definitions and Acronyms

Term or Acronym	Definition

Policy

2.1 GENERAL POLICY

Decisions and actions by WECC should only be undertaken for the purpose of promoting and maintaining the reliability and adequacy of the bulk power system within the Western Interconnection. All discussions in WECC meetings and other communications should be within the scope of the mandate for or assignment to the particular WECC committee or subgroup, as well as within the scope of the published agenda for the meeting. No decisions should be made nor any actions taken in WECC activities for the purpose of giving an industry participant or group of participants a competitive advantage over other participants.

2.2 PROHIBITED ACTIVITIES

WECC members and staff must refrain from the following when acting in their capacity as WECC members and staff (i.e., during WECC meetings, conference calls, WECC-related communications, informal discussions at WECC events, informal communications with WECC staff, etc):

- Discussions involving pricing information, especially margin (profit) and members' expectations as to their future prices or internal costs.
- A member discussing its marketing strategies.
- Discussions regarding how customers and geographical areas are to be divided among competitors.
- Discussions to exclude competitors from markets.
- Discussions concerning boycotting or group refusals to deal with competitors, vendors or suppliers.

2.3 ACTIVITIES WHICH ARE PERMITTED

WECC members may discuss and approve:

- Reliability matters, including operation and planning matters such as developing and establishing regional reliability standards, reliability criteria, operating procedures, operating transfer capabilities, and plans for new facilities. Matters relating to the impact of reliability standards for the bulk power system on electricity markets, and the impact of electricity market operations on the reliability of the bulk power system.
- Proposed filings or other communications with state or federal regulatory authorities or other governmental entities.
- Matters relating to the internal governance, management and operation of WECC, such as nominations for vacant committee positions, budgeting and assessments, and employment matters; and procedural matters such as planning and scheduling meetings.

From time to time decisions or actions of WECC (including those of its Board of Directors, committees and subgroups) may have a negative impact on particular entities and thus in that sense adversely impact competition. Decisions and actions by WECC (including its Board of Directors, committees and subgroups) should only be undertaken for the purpose of promoting and maintaining the reliability and adequacy of the bulk

power system in the Western Interconnection. If you do not have a legitimate business purpose for discussing a matter that is consistent with this objective, members and staff must refrain from discussing the matter during WECC meetings and in other WECC-related communications.

No decisions should be made nor any actions taken in WECC activities for the purpose of giving an industry participant or group of participants a competitive advantage over other participants. In particular, decisions with respect to setting, revising, or assessing compliance with approved reliability standards should not be influenced by anti-competitive motivations.

Any other matters that do not clearly fall within these guidelines should be reviewed with WECC's General Counsel before being discussed.