

1. **Welcome, Call to Order**

Bill Middaugh, Protection and Control Subcommittee (PCS) Chair, called the meeting to order at 8:00 a.m. MT on December 7, 2023. A quorum was present to conduct business. A list of attendees is attached as Exhibit A.

2. **Review WECC Antitrust Policy**

James Hanson, Operations Analysis, read aloud the WECC Antitrust Policy statement. The meeting agenda included a link to the posted policy.

3. **Approve Agenda**

Natalie Carter, Administrative Coordinator, introduced the proposed meeting agenda.

On a motion by Gene Henneberg, the PCS approved the agenda.

4. **Review and Approve Previous Meeting Minutes**

N. Carter introduced the minutes from the meeting on September 7–8, 2023.

On a motion by Gene Henneberg, the PCS approved the minutes from September 7–8, 2023.

5. **Review Previous Action Items**

N. Carter reviewed action items carried over from the PCS meeting on September 7–8, 2023.

Action items that are not closed and will be carried forward can be found [here](#).

6. **Standing Committee Updates**

Report of Event and Performance Analysis Subcommittee

C. Holland discussed the nine brief reports that were submitted to WECC. C. Holland noted that the inverter-base resource situation in the United States is receiving a lot of attention by the industry.

Report of the Remedial Action Scheme Reliability Subcommittee—Gene Henneberg

G. Henneberg reported that a normal amount of schemes were reviewed. The SunZia Project was discussed, and G. Henneberg also covered FERC Order 881.

Report of the IEEE Power System Relaying Committee (IEEE PSRC)

G. Henneberg reported on the IEEE PSRC. About 40% to 50% of the work done is IEEE standards related. There are between 90 and 100 working groups. The main work is standards and process reports. For more information, go to [PSRC - IEEE PES \(pes-psrc.org\)](https://pes-psrc.org).

Report of the MIDAS Work Group DRI

B. Middaugh and J. Hanson reported on the MIDAS Work Group DRI. There were minor changes proposed to Section 1600. The impact score for misoperations is included in the State of Reliability report.

Report of the System Protection and Control Working Group (SPCWG)

B. Middaugh and David Beach, Portland General Electric Company, reported on the SPCWG. The continuing discussion of FERC Order 881 dominated the October 2023 meeting. There was a presentation on digital secondaries and much discussion on how things should be handled. The 61850 was discussed.

Report of the Short Circuit Modeling Work Group (SCMWG)

D. Beach shared there was nothing to report from SCMWG. This work group has not met since the last PCS meeting.

7. ERO Protection System Conference Debrief

J. Hanson discussed the Misoperations Reduction Conference held in Atlanta, Georgia, on October 25–26, 2023. The presenters spoke about data that NERC is seeing on a national level and about commission testing. They also discussed automated setting calculators for PRC-0027. Using contractors and dealing with incorrect settings were topics covered at the conference. The hope is to make this an annual conference.

8. Annual Misoperation Report: Moving Forward

J. Hanson covered the changes that have been made, or could be made, since the beginning of the misoperation report and asked for thoughts and recommendations from the group. Assignments for the 2024 report will be made in March.

9. Relay Replacement Philosophies

Participants contributed their philosophies about relay replacements at their entities. The use of digital fault recorders, PRCs, differentials, and manufacturers was discussed.

10. Transmission Line Impedance Testing

Bryan Diemer, Sacramento Municipal Utility District (SMUD), presented on:



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- Concerns about the ability of distance protection to sense a remote bus 115-kV ground fault through underground cables,
- Modeling overhead transmission line impedance and impedance tests in action,
- A comparison of cable test results with a ground fault,
- A comparison of overhead like actual test results with traditional modeling results, and
- Modifications to traditional modeling.

The presentation is posted on the [WECC website](#).

11. PRC-027 Discussion

Curtis Crews, Senior Technical Advisor, presented and discussed the history, audit approach, and the frequent questions of the PRC-027.

The presentation is posted on the [WECC website](#).

12. FERC Order 881: What Approaches are Being Taken?

The PCS discussed how seasonal, capital, and ambient rating comparisons were being used and how PRC-023 pertains to FERC Order 881. This order becomes effective July 12, 2025.

13. Commissioning: What is Your Involvement?

The committee members considered the following question: “What is your responsibility and what does involvement look like within your protection group?” Discussion followed.

14. Public Comment

No comments were made.

15. Review New Action Items

- Work on the off-site justification for the June 6–7, 2024, meeting that will be at the BPA facilities in Vancouver.
 - Assigned To: James Hanson
 - Due Date: March 7, 2024
- Send out an email to ask members what misoperation categories they would like to work on for the annual report.
 - Assigned To: James Hanson
 - Due Date: March 7, 2024
- Find out the requirements for in-person meetings and report to the group.
 - Assigned To: James Hanson



- Due Date: March 7, 2024

16. Upcoming Meetings

March 7–8, 2024..... Salt Lake City, Utah

June 6–7, 2024..... Vancouver

17. Adjourn

B. Middaugh adjourned the meeting without objection at 4:55 p.m.



Exhibit A: Attendance List

Members in Attendance

David Beach.....Portland General Electric Company
 Dean BenderBonneville Power Administration—Transmission
 Alejandro Castro..... El Paso Electric Company
 Orion Chan British Columbia Hydro and Power Authority
 Bryan Diemer Sacramento Municipal Utility District
 Jason Hall..... Puget Sound Energy, Inc.
 Gene Henneberg NV Energy
 Donald Loftis..... Colorado Springs Utilities
 Pamela MendozaPublic Service Company of Colorado (Xcel Energy)
 Bill Middaugh Tri-State Generation and Transmission—Reliability
 Josh Moyers Western Area Power Administration
 Rafael Pineda..... Pacific Gas and Electric Company
 Nick Podany U.S. Bureau of Reclamation
 Curtis Sanden..... Southern California Edison Company
 Harjinder SidhuAltaLink Management Ltd.
 Stephen SmithSalt River Project

Members not in Attendance

Alejandro Castro..... El Paso Electric Company
 Xing Chen British Columbia Hydro and Power Authority
 Kevin Damron.....Avista Corporation
 David Heffernan PacifiCorp
 Mehrdad Majidi San Diego Gas and Electric
 Sanjay Mehta Los Angeles Department of Water and Power
 Claire PattiPortland General Electric Company
 Luis Perez PacifiCorp
 Jeff Sams.....Salt River Project



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Tyler SmithIdaho Power Company
Patrick Sorrells Sacramento Municipal Utility District
Jonathan Trejo El Paso Electric Company
Stephen VanderZandeAlberta Electric System Operator

Others in Attendance

Bashir AbdulleColorado Springs Utilities
Maya Brimhall.....WECC
Natalie Carter.....WECC
Curtis Crews.....WECC
Dave GroverWECC
James Hanson.....WECC
Curtis HollandWECC
Eliana IbarraImperial Irrigation District
Tim LougheedColorado Springs Utilities
Bert Peters.....WECC
Melissa VillaImperial Irrigation District

