

SOUTHWEST POWER POOL
SYSTEM PROTECTION AND CONTROL ADVISORY GROUP MEETING

November 7, 2023 1:00PM - 5:00PM (CPT)
November 8, 2023 8:00AM - 11:00PM (CPT)

Teleconference

SUMMARY OF MOTIONS AND ACTION ITEMS

MOTIONS:

- Ken Zellefrow (CUS) motioned to approve the *August 1-2, 2023 SPCAG Meeting Minutes*. Shawn Jacobs (OG&E) seconded the motion. The motion carried without opposition or abstention.
- Ken Zellefrow (CUS) motioned to approve the *October 10, 2023 SPCAG Meeting Minutes*. David Wheeler (SPS) seconded the motion. The motion carried without opposition or abstention.
- David Wheeler (SPS) motioned to approve the Thunderhead RAS retirement recommendation. Shawn Jacobs (OKGE) seconded the motion. The motion carried without opposition. Abstention by WAPA-UGP.

ACTION ITEMS:

- 170: Review and approve the SPP 2024 UFLS Design Assessment Scope in consideration of Light Load evaluation
- Eric Sullivan (SPP) will coordinate with Chris Angland (OPPD) and William on follow-up for SIR544 prioritization efforts
- An additional SPCAG ad-hoc meeting may be scheduled to provide an additional focus session on protection for SPP adoption of IEEE-2800
- Chris Angland (OPPD) and William Holden (SPP) to coordinate on drafting volunteers for Protection in Your Shop presentations

SYSTEM PROTECTION AND CONTROL ADVISORY GROUP MINUTES
11/7-8/2023

MINUTES

AGENDA ITEM 1 – ADMINISTRATIVE ITEMS

SPCAG Chair Chris Angland (OPPD) called the meeting to order at 1:00 PM on 11/7/2023. The meeting reconvened at 8:30 AM on 11/8/2023.

SPCAG Staff Secretary William Holden (SPP) took attendance and established a meeting quorum. A record of member attendance is an attachment to these minutes.

William Holden (SPP) read the SPP Antitrust Statement.

Chris Angland (OPPD) reviewed the agenda. Added discussion of protection in your shop. A record of the agenda is an attachment to these minutes.

Ken Zellefrow (CUS) motioned to approve the *August 1-2, 2023 SPCAG Meeting Minutes*. Shawn Jacobs (OKGE) seconded the motion. The motion carried without opposition or abstention.

Ken Zellefrow (CUS) motioned to approve the *October 10, 2023 SPCAG Meeting Minutes*. David Wheeler (SPS) seconded the motion. The motion carried without opposition or abstention.

AGENDA ITEM 2 – REMEDIAL ACTION SCHEMES

THUNDERHEAD

Tom Kay (Invenergy) provided an overview of the Thunderhead RAS retirement and requested the SPCAG recommendation to the SPP Reliability Coordinator. Steve Wadas (NPPD) commented that the MRO confirmed that the alternate mitigation with Direct Transfer Trip would not be subject to the NERC Standard PRC-012.

David Wheeler (SPS) motioned to recommend approval of the Thunderhead RAS retirement. Shawn Jacobs (OKGE) seconded the motion. The motion carried without opposition. Abstention by WAPA-UGP.

SYSTEM PROTECTION AND CONTROL ADVISORY GROUP MINUTES 11/7-8/2023

RAPID CITY

Philip Westby (BEPC) provided an update on the upcoming Rapid City RAS retirement that analysis performed by Schweitzer remains underway to be followed by further discussions with NPPD and WAPA.

JUDSON TEMPORARY RAS

Philip Westby (BEPC) informed the group to expect a Judson temporary RAS submission review at a subsequent meeting. The RAS is an additional operator tool to provide mitigation for SPP flowgate 5717 CHAWATCHAPAT which monitors Charlie Creek to Watford City 230 kV for contingency of Charlie Creek to Patent Gate 345 kV.

PROCESS DOCUMENT

William Holden (SPP) provided an update on the proposed revisions to the *Reliability Coordinator and Planning Coordinator NERC Reliability Standard PRC-012-2 Process Document for the Eastern Interconnection*. The SPP Reliability Coordinator will proceed with the document revisions and will send notice when posted.

AGENDA ITEM 3 – SPP SYSTEM PLANNING SHORT CIRCUIT MODEL

Chris Angland (OPPD) informed the group that no updates have been prepared. Agenda item retained for discussion opportunity.

Lynn Schroeder (Sunflower) reminded the group that the NERC whitepaper included a recommendation for published models in short circuit software format. Eric Sullivan (SPP) commented that SIR544 is not included in SPP's 2024 budget with prioritization on winter weather initiatives.

Members inquired into the initiative schedule. A SPCAG sub-group meeting with Lynn Schroeder (Sunflower), Zach Johnston (OPPD), and others invited was decided upon to update initiative language. Additionally, members were encouraged to communicate the importance of this initiative to their TWG representatives. Initiative prioritization at the TWG was anticipated to begin in January 2024 with materials due 12/21/2023 for meeting on 1/2/2024.

Eric Sullivan (SPP) will coordinate with Chris Angland (OPPD) and William on follow-up.

SYSTEM PROTECTION AND CONTROL ADVISORY GROUP MINUTES 11/7-8/2023

AGENDA ITEM 4 – IBR

Doug Bowman (SPP) presented on IEEE-2800 standard adoption and the IIRRG progress on the effort. Comments were requested for the gap analysis on protection Clause 9. Collaboration is ongoing with NERC and EPRI on RTO adoption of IEEE-2800 with each ISO/RTO entity pursuing similar implementation efforts and processes. External tutorial sessions are anticipated to be scheduled for late Spring 2024 to deliver a three-part training syllabus on IBR fundamentals.

An additional SPCAG ad-hoc meeting may be scheduled to provide an additional focus session on protection.

AGENDA ITEM 5 – SPP 2024 UFLS DESIGN ASSESSMENT SCOPE

Scott Jordan (SPP) presented on *SPP 2024 PRC-006-5 Under-Frequency Load Shed (UFLS) Design Assessment* scope document. Light load case was considered, concerns were identified with barriers to implementation.

Kevin Jones (SPS) expressed concerns with a sub-island within SPP footprint, summer peak is not adequate. Suggested that appropriate analysis would be performed using a spring shoulder season or light load high wind case with synchronous units offline resulting in only about 10% of the system inertia.

Jonathan Hayes (SPP) communicated that the powerflow model is currently available however UFLS data is not included and would require further model development. UFLS data request for additional case, plan change, reviews, and approvals would be required.

SPCAG approval was deferred until following an ad-hoc meeting tentatively scheduled for December 5, 2023. The scope of the meeting is to evaluate and approve budget impacts, vendor availability, case conditions compared with TPL sensitivity case, UFLS entity data request, and UFLS data request updates.

AGENDA ITEM 6 – SERIES COMPENSATION

David Plenert (Evergy) presented on an ongoing experience with evaluating system protection impacts from a proposed series capacitor along a generator lead.

SYSTEM PROTECTION AND CONTROL ADVISORY GROUP MINUTES 11/7-8/2023

AGENDA ITEM 7 – CIP-014 DELAYED REMOTE CLEARING

Steve Wadas (NPPD) led discussion with the group on concerns with clarity on scope of the NERC CIP-014 standard. Chris Angland (OPPD) commented on the purpose of CIP-014 being to bridge the gap between planning and protections.

AGENDA ITEM 8 – RELIABILITY GROUPS

NERC SPCWG

Lynn Schroeder (Sunflower) provided an update on the October 2023 NERC SPCWG meeting. PRC-024 IBR Whitepaper – being finalized for RSTC approval in late '23. Technical reference for Ethernet based P&C document is being populated and planned completion in '24. SPIDERWG provided feedback on PRC-006 SAR regarding tripping generation when expecting load and TPL-001 SAR footnote 13 redundancy in protection. Next meeting scheduled for December 14, 2023 as a WebEx, anticipating two face-to-face meetings next year. Noted accomplishment of 881-A position paper, PRC-023 IBR Whitepaper, *Determination of Practical Transmission Relaying Loadability Settings* has been posted at:

[https://www.nerc.com/comm/RSTC Reliability Guidelines/Order 881 881-A Position Paper%20Final.pdf](https://www.nerc.com/comm/RSTC%20Reliability%20Guidelines/Order%20881%20881-A%20Position%20Paper%20Final.pdf).

It was commented that PRC-023 includes an option of criteria 1 with 150% of highest seasonal rating which is an approximation for the next criteria 2 option for 115% of the 15-minute rating. Would not recommend specifying a (i.e. 115%) margin in SPP requirements due to associated variables (i.e. voltage magnitude and angle).

Steve Wadas (NPPD) & Greg Hill (NPPD), representative for MRO, commented that HEROS provided assurance on interpretation with reference to exemption in PRC-012-2 standard regarding RAS designation for Thunderhead. Inquired on sending a similar request for interpretation on relay settings. It was recommended that it would be good to include in the implementation process coordination between protection and AAR groups.

The group was reminded that a subset of facilities, generally 200 kV and above, are subject to NERC standard PRC-023 whereas additional facilities are subject to the AAR requirement from FERC Order 881.

SYSTEM PROTECTION AND CONTROL ADVISORY GROUP MINUTES 11/7-8/2023

NERC STANDARDS

Shannon Mickens (SPP) provided an overview of upcoming updates to NERC Standards. Project 2022-02 includes modifications to TPL-001 and MOD-032. FERC Order 881-A (PRC-023) as discussed in the whitepaper.

MRO PRS MEETING

Members in attendance provided an update on the September 2023 MRO PRS meeting.

Lynn Schroeder (Sunflower) commented on the Commissioning Lessons learned on relay contact and expressed interest in the presentation by Chris Colson (WAPA) on their Geomagnetic Disturbance (GMD) Project.

AGENDA ITEM 9 – PROTECTION IN YOUR SHOP

David Oswald (Liberty) deferred sharing Liberty's experiences with the MRO RAM Process Audit.

Chris Angland (OPPD) requested members to present on their PRC-027 program. Steve Wadas (NPPD) UFLS alarm in EMS is an example of learning from others and implementing process improvements. **Chris Angland (OPPD) and William Holden (SPP) to coordinate on drafting volunteers.**

AGENDA ITEM 10 – CLOSING ADMINISTRATIVE DUTIES

William Holden (SPP) reviewed new, open and closure pending action items.

Action Item 157 remained as Closure pending to evaluate NERC whitepaper on short circuit models integration into the MDAG process. Action item 162 remains marked as In Progress with SPP Planning Modeling staff to present requested topics during SPCAG discussion of Short Circuit Models and analysis. Action item 165 remains marked as Closure Pending to allow SIR544 prioritization to be agreeable to the SPCAG. Action item 166 remains marked as In Progress with SPCAG members invited to participate in the MDAG model process. Action item 167 remains marked as In Progress with SIR544 submitted for prioritization and consultation with SPP management. Action item 169 remains marked as Not Started for SPCAG members to be engaged in TWG and MDAG to appropriately prioritize SIR544. Action item 170 was added for SPCAG to review and approve the SPP 2024 UFLS Design Assessment Scope in consideration of Light Load evaluation A record of action items is an attachment to these minutes.

Chris Angland (OPPD) led a discussion on potential topics for upcoming meetings.

Antitrust: SPP strictly prohibits use of participation in SPP activities as a forum for engaging in practices or communications that violate the antitrust laws. Please avoid discussion of topics or behavior that would result in anti-competitive behavior, including but not limited to, agreements between or among competitors regarding prices, bid and offer practices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that might unreasonably restrain competition.

SYSTEM PROTECTION AND CONTROL ADVISORY GROUP MINUTES 11/7-8/2023

Spencer Riddle (WAPA) agreed to request Chris Colson (WAPA) present on their GMD Program.

Steve Wadas (NPPD) suggested FERC Order 881 implementation for seasonal ratings and discussion on how AARs are being determined such as PSLCAD or other tools and consulting groups. Chris Angland (OPPD) requested an SPP presentation on their implementation plan.

Additional topics mentioned included Enterprise data management and coordination as well as MPLS and fiber transformation from older technologies.

The 2024 meeting schedule and locations were discussed.

- February 13-14, 2024 (Teleconference)
- May 14-15, 2024 (In-person, Evergy facilities in Kansas City)
- August 13-14, 2024 (In-person)
- November 12-13, 2024 (Teleconference)

Chris Angland (OPPD) recessed the SPCAG at 4:34 PM on 11/7/2023 and adjourned the SPCAG at 10:47 AM on 11/8/2023.

Respectfully Submitted,

William Holden, System Protection and Control Advisory Group, Staff Secretary

**SYSTEM PROTECTION AND CONTROL ADVISORY GROUP MINUTES
11/7-8/2023**

SUMMARY OF ATTACHMENTS:

SPCAG 11/7-8/2023 Agenda (pg. 9-10)

SPCAG 11/7-8/2023 Member Attendance (pg. 11)

SPCAG Action Item Tracking (pg. 12-14)

SPCAG Approved *August 1-2, 2023 SPCAG Meeting Minutes*

SPCAG Approved *October 10, 2023 SPCAG Meeting Minutes*

SOUTHWEST POWER POOL, INC.

SYSTEM PROTECTION AND CONTROL ADVISORY GROUP MEETING

November 7, 2023 1:00PM - 5:00PM CPT
 November 8, 2023 8:00AM - 12:00PM CPT

Net Conference

AGENDA

1. Administrative Items:
 - a. Call to Order..... Chris Angland
 - b. AttendanceWilliam Holden
 - c. Antitrust Statement.....William Holden
 - d. Agenda Review Chris Angland
 - e. Review minutes of August 1-2, 2023 meeting (Approval)..... Chris Angland
 - f. Review minutes of October 10, 2023 meeting (Approval) Chris Angland
2. Remedial Action Schemes: https://spp.org/documents/62226/spp_prc-012-2_process_ei.pdf
 - a. Thunderhead RAS Retirement (Approval) Tom Kay
 - b. Rapid City RAS Retirement (Update) Philip Westby
 - c. Judson Temporary RAS (Update) Philip Westby
 - d. EI PRC-012-2 Process Document Revisions (Update)William Holden
3. SPP System Planning Short Circuit Model: [SIR544](#) (Update)Eric Sullivan
4. Inverter Based Resources (IBR):
 - a. SPP Adoption of IEEE-2800 (Update)Doug Bowman
5. SPP 2024 UFLS Design Assessment Scope (Approval) Scott Jordan
6. Series Compensation (Update)..... Everygy
7. CIP-014 delayed remote clearingSteve Wadas
8. Reliability Groups (Update):
 - a. [NERC SPCWG](#)..... Lynn Schroeder
 - FERC [Order 881](#) white paper and Impact to [PRC-023](#)
 - b. [NERC Standards](#).....Shannon Mickens
 - c. [MRO PRS](#) Jeff Beasley
9. Protection in your shop:
 - a. Discussion of future Chris Angland
 - b. MRO RAM Process Audit Experiences (Deferred).....David Oswald

10. Closing Administrative Duties:

- a. Review of New, Open and Closure Pending Actions.....William Holden
- b. Discuss upcoming meeting schedule, topics, and location Chris Angland
 - i. February 13-14, 2024 (Teleconference)
 - ii. May 14-15, 2024 (In-person)
 - iii. August 13-14, 2024 (In-person)
 - iv. November 12-13, 2024 (Teleconference)
- c. Adjourn meeting Chris Angland

SPCAG MEMBER ATTENDANCE:

Name	Company	Role	11/7/2023	11/8/2023
Chris Angland	Omaha Public Power District	Chair	✓	✓
David Oswald	Liberty Utilities	Vice Chair	Excused Absence	Excused Absence
John Anderson	Evergy, Inc	Member	✓	✓
Jeff Beasley	Grand River Dam Authority	Member	Excused Absence	Excused Absence
Matt Boersema	Western Farmers Electric Cooperative	Member		
Glenn Bryson	American Electric Power	Member		
Michael Fleck	ITC Great Plains	Member	✓	
Shawn Jacobs	Oklahoma Gas & Electric	Member	✓	✓
Spencer Riddle	Western Area Power Administration Upper Great Plains Region	Member	✓	✓
Lynn Schroeder	Sunflower Electric Power Corp	Member	✓	✓
Steve Wadas	Nebraska Public Power District	Member	✓	✓
David Wheeler	Xcel Energy	Member	✓	✓
Ken Zellefrow	City Utilities of Springfield MO	Member	✓	✓
William Holden	Southwest Power Pool	Staff Secretary	✓	✓

SPCAG ACTION ITEMS

Action Item	Origin Date	Action Item	Update Summary	Status	Owner	Date Closed
157	02/10/21	SPP Staff to reach out to SPCAG to determine interest in developing PSSE/ASPEN/CAPE Conversion Whitepaper.	<p>5/12/21: Trey to send list to Lynn, and resend the request for participation.</p> <p>8/11/21: There's a current NERC effort to develop a whitepaper, and the SPP action is on hold until that paper is developed.</p> <p>11/10/21: Closure pending review of NERC paper, Q2 2022.</p> <p>5/11/22: Closure pending review of NERC paper, Q2 2022.</p> <p>8/9/22: Closure pending review of NERC paper, Q4 2022.</p> <p>11/9/22: Closure pending discussion of need for additional whitepaper.</p> <p>2/7/23: Closure pending discussion of need for additional whitepaper.</p> <p>4/25/23: Closure pending evaluation of NERC paper incorporation into MDAG process</p> <p>11/8/23: Closure pending MDAG process validations being evaluated and updated to include NERC paper recommendations, Chris Angland will investigate further to achieve closure</p>	Closure pending	William Holden	
162	11/10/21	SPP Planning Modeling staff to present requested topics during SPCAG discussion of Short Circuit Models and analysis	<p>2/9/22: SPP solicited members for topics, survey being conducted for preferred fault model software with review of results at the May 22' meeting. Zach Sabey committed to provide updates on external Short Circuit data collection efforts.</p> <p>5/11/22: Eric Sullivan (SPP) shared MDAG survey results on short circuit model software and other preferences. The topic for discussion at the August meeting was selected to be update on short circuit build and any quality checks to be discussed.</p> <p>8/9/22: Erin Cathey (SPP) presented on the SPP Roadmap Process, Aspen presented on Short Circuit model conversion, and A/I #167 opened to submit an initiative request to improve the MDAG short circuit models for use with system protection and control</p> <p>11/9/22: Eric Sullivan (SPP) provided an update on the initiative and</p>	In progress	Zach Sabey	

Action Item	Origin Date	Action Item	Update Summary	Status	Owner	Date Closed
			<p>opportunity for feedback on the current short circuit model development. Lynn Schroeder (SECI) provided a summary of the NERC SPCWG Inter-Entity Short Circuit whitepaper. Nick Stueve (Evergy) demonstrated a short circuit model comparison tool</p> <p>2/7/23: SPCAG requested SPP Modeling Staff provide an overview at the April '23 meeting on the status of the initiative, MDAG Focus Group meetings, improvements steps, and data requests.</p> <p>4/25/23: SPP Modeling Staff deferred detailed update to the next meeting in August.</p> <p>11/8/23: Sub-group to form and update initiative language</p>			
165	05/11/22	SPCAG to explore SPP Roadmap for Short Circuit modeling program purchase.	<p>8/10/20: Process presented to the group, A/I #167 opened to submit an initiative request to improve the MDAG short circuit models for use with system protection and control</p> <p>11/9/22: Eric Sullivan (SPP) provided an update on the initiative</p> <p>2/7/23: no progress to report</p> <p>4/25/23: Closure pending SIR544 prioritization agreeable by SPCAG</p> <p>11/8/23: Closure pending SIR544 prioritization agreeable by SPCAG</p>	Closure pending	William Holden	
166	05/11/22	SPCAG to create sub-group for coordination with MDAG.	<p>8/10/22: SPCAG members have been attending MDAG Focus Group meetings</p> <p>11/9/22: Eric Sullivan (SPP) provided an update on opportunity for feedback on the current short circuit model development.</p> <p>2/7/23: no progress to report</p> <p>4/25/23: SPP Modeling staff invited SPCAG members to participate in MDAG model process</p> <p>11/8/23: Sub-group to form and update initiative language</p>	In progress	John Anderson	
167	08/09/22	Submit an initiative request to improve the MDAG short circuit models for use with system protection and control	<p>11/9/22: Eric Sullivan (SPP) provided an update on the initiative</p> <p>2/7/23: no progress to report</p> <p>4/25/23: SIR544 submitted, in-process for prioritization by working groups (e.g. TWG)</p>	In progress	William Holden	

Action Item	Origin Date	Action Item	Update Summary	Status	Owner	Date Closed
			8/1/23: Eric Sullivan (SPP) provided an update on the initiative. Will consult with SPP management then provide an update by email. 11/8/23: Sub-group to form and update initiative language			
169	04/25/23	SPCAG to be engaged in TWG and MDAG to appropriately prioritize SIR544	11/8/23: Sub-group to form and update initiative language	Not Started	William Holden	
170	11/8/23	Review and approve the SPP 2024 UFLS Design Assessment Scope in consideration of Light Load evaluation	11/8/23: ad-hoc meeting to evaluate and approve: budget impacts, vendor availability, case conditions compared with TPL sensitivity case, UFLS entity data request, and UFLS data request updates.	Not Started	William Holden	

**SOUTHWEST POWER POOL
SYSTEM PROTECTION AND CONTROL ADVISORY GROUP MEETING**

**August 1, 2023 1:00PM - 5:00PM (MPT)
August 2, 2023 8:00AM - 11:00PM (MPT)**

Xcel Offices, Denver, Colorado

SUMMARY OF MOTIONS AND ACTION ITEMS

MOTIONS:

- David Wheeler (SPS) motioned to approve the *April 25-26, 2023 SPCAG Meeting Minutes*. David Oswald (Liberty) seconded the motion. The motion carried without opposition or abstention.

ACTION ITEMS:

- No new items

SYSTEM PROTECTION AND CONTROL ADVISORY GROUP MINUTES
8/1-2/2023

MINUTES

AGENDA ITEM 1 – ADMINISTRATIVE ITEMS

SPCAG Chair Chris Angland (OPPD) called the meeting to order at 1:00 PM on 8/1/2023. The meeting reconvened at 8:00 AM on 8/2/2023.

SPCAG Staff Secretary William Holden (SPP) took attendance and established a meeting quorum. A record of member attendance is an attachment to these minutes.

William Holden (SPP) read the SPP Antitrust Statement.

Chris Angland (OPPD) reviewed the agenda. A record of the Agenda is an attachment to these minutes.

David Wheeler (SPS) motioned to approve the April 25-26, 2023 SPCAG Meeting Minutes. David Oswald (Liberty) seconded the motion. The motion carried without opposition or abstention.

AGENDA ITEM 2 – REMEDIAL ACTION SCHEMES

THUNDERHEAD

Tom Kay (Invenergy) provided an update that the Thunderhead RAS remains active. The retirement is anticipated to be advanced to Q1 2024 from the scheduled November 2024.

RAPID CITY

William Holden (SPP) provided an update on the upcoming Rapid City RAS Retirement. Relayed that Philip Westby (BEPC) communicated that analysis performed by Schweitzer remains underway to be followed by further discussions with NPPD and WAPA.

GGS

Steve Wadas (NPPD) provided an update that equipment modernization upgrades were completed.

SYSTEM PROTECTION AND CONTROL ADVISORY GROUP MINUTES 8/1-2/2023

PROCESS DOCUMENT

William Holden (SPP) provided an update on the previously presented and approved draft of proposed revisions to the *Reliability Coordinator and Planning Coordinator NERC Reliability Standard PRC-012-2 Process Document for the Eastern Interconnection*. The draft process document will be brought to the TWG, ORWG, & RCAG for additional recommendations prior to implementation.

AGENDA ITEM 3 – FERC ORDER 881

William Holden (SPP) provided an overview of FERC Order 881 and a status update on associated SPP activities.

Lynn Schroeder (Sunflower) presented on the NERC SPCWG position paper on FERC Order 881 particularly on impacts to NERC Standard PRC-023.

AGENDA ITEM 4 – SPP SYSTEM PLANNING SHORT CIRCUIT MODEL

Eric Sullivan (SPP) provided an update on the SPP initiative, SIR544 Short circuit modeling enhancement. Suggested that an operations group may be more appropriate for node-breaker model with sequence data. Members communicated that bus-branch representation is acceptable for system protection. However, software conversion issues remain as well as concerns with IBR modeling. Eric will take action to progress the initiative, consulting with Sunny Raheem & Eddie Watson, and then provide an update by email. Chris Angland (OPPD) to work with William Holden (SPP) to gain clarity and alignment for resolution.

AGENDA ITEM 5 – IBR

Scott Jordan (SPP) summarized the impact that IEEE 1547-2018 standard adoption would have on the reliability of the transmission system.

Doug Bowman (SPP) presented on IEEE 2800 standard adoption and the IIRRG progress on the effort. Gap analysis will be presented to the November SPCAG meeting to request comments. Tutorial session may be scheduled in the fall.

SYSTEM PROTECTION AND CONTROL ADVISORY GROUP MINUTES 8/1-2/2023

AGENDA ITEM 6 – RELIABILITY GROUPS

NERC SPCWG

Lynn Schroeder (Sunflower) provided an update on the June 2023 NERC SPCWG meeting including: PRC-027 revision for fault current baseline and 15% margin for requiring coordination study; FERC 881 discussed above; PRC-024 whitepaper developed, requesting approval at next meeting, good technical examples for IBR facilities; Maintenance for Ethernet P&C, how it maps into PRC standards and new protection system definition; *Determination of Practical Transmission Relaying Loadability Settings* may also apply to FERC Order 881 AARs; and Ongoing discussions on document library.

NERC STANDARDS

Shannon Mickens (SPP) provided an overview of upcoming updates to NERC Standards including: IRPTF transition to the IRPS; MOD-026-2 generator model verification considering IBRs; MOD-026 and MOD-027 to be combined and include Transmission Planner and Planning Coordinator coordination; EMT models requirements; MOD-032-1 phase 1 and TPL-001-5.1 phase 2; Created new DER definition; Dual applicability to Planning Coordinator and Planning Authority; and Distribution Provider replacing Load-Serving Entity.

MRO PRS MEETING

Jeff Beasley (GRDA) provided an update on the June 2023 MRO PRS meeting, summarized the misoperations metrics, and outlined lesson's learned presented by Xcel.

AGENDA ITEM 7 – PROTECTION IN YOUR SHOP

Troy Bloyd (GRDA) provided a demonstration of the GRDA PRC-004 PowerBase Integration Process integration with iTOA.

David Oswald (Liberty) deferred sharing Liberty's experiences with the MRO RAM Process Audit.

Michael Fleck (ITC) presented on Traveling Wave Relays for determining directionality of fault currents as a third scheme. Potential future application for increased periods of high IBR penetration with limitations.

AGENDA ITEM 8 – CLOSING ADMINISTRATIVE DUTIES

William Holden (SPP) reviewed new, open and closure pending action items.

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SYSTEM PROTECTION AND CONTROL ADVISORY GROUP MINUTES 8/1-2/2023

Action Item 157 remained as Closure pending to evaluate NERC whitepaper on short circuit models integration into the MDAG process. Action item 162 remains marked as In Progress with SPP Planning Modeling staff to present requested topics during SPCAG discussion of Short Circuit Models and analysis. Action item 165 was adjusted to Closure Pending to allow SIR544 prioritization to be agreeable to the SPCAG. Action item 166 remains marked as In Progress with SPCAG members invited to participate in the MDAG model process. Action item 167 remains marked as In Progress with SIR544 submitted for prioritization and consultation with SPP management. Action item 169 remains marked as Not Started for SPCAG members to be engaged in TWG and MDAG to appropriately prioritize SIR544. A record of action items is an attachment to these minutes.

Chris Angland (OPPD) led a discussion on potential topics for the November 7th – 8th, 2023 SPCAG meeting, including:

- Short Circuit Models (standing agenda item): update on initiative and MDAG Focus Group meetings
- IBR as a new standing topic
- MRO RAM Process Audit Experiences
- CIP-014 must haves (Steve Wadas), NATF survey, video presentation

The remaining 2023 meeting schedule was discussed.

- November 7-8, 2023 (WebEx)

Chris Angland (OPPD) recessed the SPCAG at 4:16 PM on 8/1/2023 and adjourned the SPCAG at 11:22 AM on 8/2/2023.

Respectfully Submitted,

William Holden, System Protection and Control Advisory Group, Staff Secretary

SYSTEM PROTECTION AND CONTROL ADVISORY GROUP MINUTES
8/1-2/2023

SUMMARY OF ATTACHMENTS:

SPCAG 8/1-2/2023 Agenda (pg. 7-8)

SPCAG 8/1-2/2023 Member Attendance (pg. 9)

SPCAG Action Item Tracking (pg. 10-11)

SOUTHWEST POWER POOL, INC.

SYSTEM PROTECTION AND CONTROL ADVISORY GROUP MEETING

August 1, 2023 1:00PM - 4:00PM MDT
 August 2, 2023 8:00AM - 11:00AM MDT

Xcel Offices, Denver, Colorado

AGENDA

1. Administrative Items:
 - a. Call to Order..... Chris Angland
 - b. AttendanceWilliam Holden
 - c. Antitrust Statement.....William Holden
 - d. Agenda Review Chris Angland
 - e. Review minutes of April 25-26, 2023 meeting (Approval)..... Chris Angland
2. Remedial Action Schemes: https://spp.org/documents/62226/spp_prc-012-2_process_ei.pdf
 - a. Thunderhead RAS (Update)Arash Ghodsian
 - b. Rapid City RAS Retirement (Update)William Holden
 - c. NPPD GGS RAS (Update).....Steve Wadas
 - d. EI PRC-012-2 Process Document Revisions (Update)William Holden
3. FERC [Order 881](#) (Update):
 - a. [AARITF](#) & SPP Implementation.....William Holden
 - b. Impact to [PRC-023](#)..... Lynn Schroeder
4. SPP System Planning Short Circuit Model: [SIR544](#) (Update)Eric Sullivan
5. Inverter Based Resources (IBR):
 - a. SPP Adoption of IEEE-1547 (2018+) Scott Jordan
 - b. SPP Adoption of IEEE-2800Doug Bowman
6. Reliability Groups (Update):
 - a. [NERC SPCWG](#)..... Lynn Schroeder
 - b. [NERC Standards](#).....Shannon Mickens
 - c. [MRO PRS](#) Jeff Beasley/Lynn Schroeder
7. Protection in your shop:
 - a. PRC-004 PowerBase Integration Process..... Troy Bloyd
 - b. MRO RAM Process Audit Experiences.....David Oswald
 - c. Traveling Wave Relays..... Michael Fleck

8. Closing Administrative Duties:

- a. Review of New, Open and Closure Pending Actions.....William Holden
- b. Discuss upcoming meeting topics and location Chris Angland
 - i. November 7-8, 2023 (WebEx)
 - ii. 2024 Calendar
- c. Adjourn meeting Chris Angland

SPCAG MEMBER ATTENDANCE:

Name	Company	Role	8/1/2023	8/2/2023
Chris Angland	Omaha Public Power District	Chair	✓	✓
David Oswald	Liberty Utilities	Vice Chair	✓	✓
John Anderson	Evergy, Inc	Member	✓	✓
Jeff Beasley	Grand River Dam Authority	Member	✓	✓
Matt Boersema	Western Farmers Electric Cooperative	Member	✓	✓
Glenn Bryson	American Electric Power	Member	✓	✓
Michael Fleck	ITC Great Plains	Member	✓	✓
Shawn Jacobs	Oklahoma Gas & Electric	Member	✓	✓
Spencer Riddle	Western Area Power Administration Upper Great Plains Region	Member	✓	✓
Lynn Schroeder	Sunflower Electric Power Corp	Member	✓	✓
Steve Wadas	Nebraska Public Power District	Member	✓	✓
David Wheeler	Xcel Energy	Member	✓	✓
Ken Zellefrow	City Utilities of Springfield MO	Member	✓	✓
William Holden	Southwest Power Pool	Staff Secretary	✓	✓

SPCAG ACTION ITEMS

Action Item	Origin Date	Action Item	Update Summary	Status	Owner	Date Closed
157	02/10/21	SPP Staff to reach out to SPCAG to determine interest in developing PSSE/ASPEN/CAPE Conversion Whitepaper.	<p>5/12/21: Trey to send list to Lynn, and resend the request for participation.</p> <p>8/11/21: There's a current NERC effort to develop a whitepaper, and the SPP action is on hold until that paper is developed.</p> <p>11/10/21: Closure pending review of NERC paper, Q2 2022.</p> <p>5/11/22: Closure pending review of NERC paper, Q2 2022.</p> <p>8/9/22: Closure pending review of NERC paper, Q4 2022.</p> <p>11/9/22: Closure pending discussion of need for additional whitepaper.</p> <p>2/7/23: Closure pending discussion of need for additional whitepaper.</p> <p>4/25/23: Closure pending evaluation of NERC paper incorporation into MDAG process</p>	Closure pending	William Holden	
162	11/10/21	SPP Planning Modeling staff to present requested topics during SPCAG discussion of Short Circuit Models and analysis	<p>2/9/22: SPP solicited members for topics, survey being conducted for preferred fault model software with review of results at the May 22' meeting. Zach Sabey committed to provide updates on external Short Circuit data collection efforts.</p> <p>5/11/22: Eric Sullivan (SPP) shared MDAG survey results on short circuit model software and other preferences. The topic for discussion at the August meeting was selected to be update on short circuit build and any quality checks to be discussed.</p> <p>8/9/22: Erin Cathey (SPP) presented on the SPP Roadmap Process, Aspen presented on Short Circuit model conversion, and A/I #167 opened to submit an initiative request to improve the MDAG short circuit models for use with system protection and control</p> <p>11/9/22: Eric Sullivan (SPP) provided an update on the initiative and opportunity for feedback on the current short circuit model development. Lynn Schroeder (SECI) provided a summary of the NERC SPCWG Inter-Entity Short Circuit whitepaper. Nick Stueve (Evergy) demonstrated a short</p>	In progress	Zach Sabey	

Action Item	Origin Date	Action Item	Update Summary	Status	Owner	Date Closed
			<p>circuit model comparison tool</p> <p>2/7/23: SPCAG requested SPP Modeling Staff provide an overview at the April '23 meeting on the status of the initiative, MDAG Focus Group meetings, improvements steps, and data requests.</p> <p>4/25/23: SPP Modeling Staff deferred detailed update to the next meeting in August.</p>			
165	05/11/22	SPCAG to explore SPP Roadmap for Short Circuit modeling program purchase.	<p>8/10/20: Process presented to the group, A/I #167 opened to submit an initiative request to improve the MDAG short circuit models for use with system protection and control</p> <p>11/9/22: Eric Sullivan (SPP) provided an update on the initiative</p> <p>2/7/23: no progress to report</p> <p>4/25/23: Closure pending SIR544 prioritization agreeable by SPCAG</p>	Closure pending	William Holden	
166	05/11/22	SPCAG to create sub-group for coordination with MDAG.	<p>8/10/22: SPCAG members have been attending MDAG Focus Group meetings</p> <p>11/9/22: Eric Sullivan (SPP) provided an update on opportunity for feedback on the current short circuit model development.</p> <p>2/7/23: no progress to report</p> <p>4/25/23: SPP Modeling staff invited SPCAG members to participate in MDAG model process</p>	In progress	John Anderson	
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**SOUTHWEST POWER POOL
SYSTEM PROTECTION AND CONTROL ADVISORY GROUP MEETING**

October 10, 2023 11:00PM - 12:00PM (CPT)

Teleconference

SUMMARY OF MOTIONS AND ACTION ITEMS

MOTIONS:

- None

ACTION ITEMS:

- No new items

MINUTES

AGENDA ITEM 1 – ADMINISTRATIVE ITEMS

SPCAG Chair Chris England (OPPD) called the meeting to order at 11:05 AM on 10/10/2023.

SPCAG Staff Secretary William Holden (SPP) took attendance and established a meeting quorum. A record of member attendance is an attachment to these minutes.

William Holden (SPP) read the SPP Antitrust Statement.

William Holden (SPP) verbally summarized the agenda. A record of the updated Agenda is an attachment to these minutes.

AGENDA ITEM 1 – SPP 2024 PRC-006-5 UFLS DESIGN ASSESSMENT STUDY SCOPE

Scott Jordan (SPP) presented the *SPP 2024 PRC-006-5 Under-Frequency Load Shed Design Assessment* scope document. A summary will be sent by email following the meeting and approval will be requested at the November meeting.

SYSTEM PROTECTION AND CONTROL ADVISORY GROUP MINUTES

10/10/2023

AGENDA ITEM 2 – REMEDIAL ACTION SCHEMES

PROCESS DOCUMENT

William Holden (SPP) provided an update on the proposed revisions to the *Reliability Coordinator and Planning Coordinator NERC Reliability Standard PRC-012-2 Process Document for the Eastern Interconnection*. The recommendation from other stakeholder groups included an amendment to adjust the order of reviews with the TWG as the initial group. No concerns were expressed regarding this adjustment. The SPP Reliability Coordinator will proceed with the document revisions and will send notice when posted.

AGENDA ITEM 3 – CLOSING ADMINISTRATIVE DUTIES

SPCAG Chair Chris England (OPPD) adjourned the SPCAG at 11:37 AM on 10/10/2023.

Respectfully Submitted,

William Holden, System Protection and Control Advisory Group, Staff Secretary

SYSTEM PROTECTION AND CONTROL ADVISORY GROUP MINUTES
10/10/2023

SUMMARY OF ATTACHMENTS:

SPCAG 10/10/2023 Agenda (pg. 4)

SPCAG 10/10/2023 Member Attendance (pg. 5)

SPCAG Action Item Tracking (pg. 6-7)



SOUTHWEST POWER POOL, INC.

SYSTEM PROTECTION AND CONTROL ADVISORY GROUP MEETING

October 10, 2023 11:00AM - 12:00PM CDT

Teleconference

AGENDA

- 1. Administrative Items:
 - a. Call to Order..... Chris Angland
 - b. AttendanceWilliam Holden
 - c. Antitrust Statement.....William Holden
 - d. Agenda ReviewWilliam Holden
- 2. SPP 2024 PRC-006-5 UFLS Design Assessment Study Scope (Discussion) Scott Jordan
- 3. Remedial Action Schemes: https://spp.org/documents/62226/spp_prc-012-2_process_ei.pdf
 - a. EI PRC-012-2 Process Document Revisions (Update)William Holden
- 4. Closing Administrative Duties:
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Shawn Jacobs	Oklahoma Gas & Electric	Member	✓
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