

**Southwest Power Pool, Inc.
OPERATING RELIABILITY WORKING GROUP**

Face to Face

Grand Island, Neb

Day 1 - June 03, 2015 8:30 - 5:00 p.m. (CST)

Day 2 - June 04, 2015 8:15 - 12:00 p.m. (CST)

• A c t i o n I t e m s •

1. **ACTION ITEM:** The ORWG would like SPP to monitor the success of RR81 and ensure the membership is aware that this is a step to fix the discrepancy between forward Unit Commitment studies and real-time Security Constrained Economic Dispatch solutions. There may be future Revisions to help further address.
2. **ACTION ITEM:** ORWG would like SPP to reach out to Xcel and others to help address specific issues. A possible carve out may be needed as a future Revision Request.
3. **ACTION ITEM:** ORWG would like SPP to return with an evaluation of the primary and backup ICCP systems, and determine if any failure points exist, and provide any recommendations if necessary.
4. **ACTION ITEM:** Will Tootle to provide ORWG members individual raw data for the planned outage metric.
5. **ACTION ITEM:** Create a new chart to show the regulation score + system deployed regulation to see what falls short on aggregate of the 75% target. In addition to the chart create a single value for deployed vs dispatched regulation.
6. **ACTION ITEM:** Neil Robertson (SPP) will work with SPP IT to include CROW API functionality for all new CROW equipment (reactors, capacitors, breakers, switches, SPSs, and AVRs). Neil Robertson (SPP) will coordinate the suggested CROW changes with GOPs and other applicable entities to determine an appropriate effective dates for each type of new equipment. Neil Robertson (SPP) will present draft specifications on modeling switching equipment in CROW at a future ORWG meeting.
7. **ACTION ITEM:** SPP to research the impacts with all MISO coordinated flowgates, and attempt to determine if additional RCF test are needed.

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• M I N U T E S •

Agenda Item 1 – Administrative Items/Review Agenda

Casey Cathey (SPP) opened the meeting at 8:30 am.

Questions about adding RR 58 to the agenda, Casey Cathey (SPP) stated that RR 58 is still in the comment period and will likely be on the agenda during the July 7, 2015 ORWG meeting.

Ron Gunderson (NPPD) requested an agenda addition for discussion on com 2 – 4.

Agenda Item 2 – Approve Previous Minutes

Casey Cathey (SPP) asked the ORWG if they were prepared to approve the meeting minutes for May 7, 2015.

John Stephens (SPRM) moved to approve the minutes from May 7, 2015. Todd Gosnell (OPPD) seconded the motion. The motion passed unanimously.

Agenda Item 3 – Revision Request Consent Agenda

Casey Cathey (SPP) discussed RR84 Retirement of Business Practice 7050. ORWG members determined RR84 has no reliability impact.

Paul Lampe (INDN) moved to approve RR84 as no reliability impact. Darrel Yohnk (ITC) seconded the motion. The motion passed unanimously.

Agenda Item 4 – RR 81 Control Status Notification

Erin Cathey (SPP) reviewed revision request 81 control status notification, which will provide clarity for the use of manual control status. Erin stated that it is not clear when manual control status should be used or that manual control status is included for the SCADA input to RTBM. Erin Cathey (SPP) stated that RR 81 will provide more detail to better delineate when each control status should be used and RR 81 will clarify that the control status is included in SCADA as an input for RTBM. Erin also discussed the posted comments from Xcel Energy about the potential impacts to the Black Hawk units for how they are dispatched and their current use of control mode 3. Raleigh Mohr (SPP) discussed section D, and Casey Cathey (SPP) explained the use of C Mode 3 while giving examples of forward looking studies not considering control modes. Casey stated that operators are expecting MW's in real time, but they are experiencing the MW's locked up due to market participants being in a C Mode 3. John Stevens (SPRM) stated he believes this a potential reliability issue regardless of ORWGs direction. Raleigh Mohr (SPP) stated that while being in the correct control mode may be considered an issue due to locked up MW's, he doesn't believe we should force market participants to change their offers. Ron Gunderson (NPPD) stated he is concerned that multiple revision request are being developed for the same section of the

same document ORWG is trying to review. Ron stated he would like for SPP to combine the red line into a single document, before being presented to the ORWG.

John Stephens (SPRM) moved to approve RR 81 Control Status Notification as an enhancement to reliability. Paul Lampe (INDN) seconded the motion.

Todd Gosnell (OPPD) Abstained

“OPPD uses CMOD3 in the following situations.

- **We take units off AGC and manually ramp the units into their upper limits in order to take advantage of higher prices. This realistically improves reliability and economic dispatch for all members by providing cheap coal to serve higher system loads that SPP would not have accessed. SPP did not utilize these additional MWS during the Polar Vortex on March 3rd, 2014, but instead called upon high priced peaking units. They later reported there were only 7 units available to start that were not already online or in an outage state. This could be considered a huge reliability issue.**
- **We take units off AGC and manually ramp the units into their lower limits when loads and prices are low and SPP has Min Generation issues.**
- **When RT prices are volatile, SPP’s signals can cause units to osculate which causes boiler swings. Placing our units in Manual increases unit reliability and is a financial hedge for RT price volatility.”**

Kyle McMenamin (Xcel) Opposed

“SPS does not support this RR due to lack of a proper way to include the manual status units that are not able to run in any other status than manual due to the unique nature of these units and how their heat output is used by a customer. The 8 proposed options under manual, status 3, in this RR do not accurately describe the true status of the units. There needs to be an exception for units that have to run in a manual status at all times. To support this RR as written has the potential to adversely impact a customer that uses the heat output of the units for additional purposes.”

The motion passed.

Comments with the approval:

ACTION ITEM: The ORWG would like SPP to monitor the success of RR81 and ensure the membership is aware that this is a step to fix the discrepancy between forward Unit Commitment studies and real-time Security Constrained Economic Dispatch solutions. There may be future Revisions to help further address.

ACTION ITEM: ORWG would like SPP to reach out to Xcel and others to help address specific issues. A possible carve out may be needed as a future Revision Request.

Agenda Item 5 – RR 94 Removal of XML as backup

Erin Cathey (SPP) presented the language changes to the market protocols for RR 94. Erin stated that SPP has an active ICCP environment that provides secure backup capabilities for the receipt of resource dispatch instructions. The requirement for market participants to have additional backup capabilities via XML is unnecessary. Paul Lampe (INDN) asked if ICCP goes down then how would XML instructions be handled. Casey Cathey (SPP) explained inbound vs outbound data submissions. Casey stated if inbound ICCP data is good quality then the XML data would be good quality, but if SPP is receiving bad quality ICCP then the XML provided from SPP would be bad quality.

ACTION ITEM: ORWG would like SPP to return with an evaluation of the primary and backup ICCP systems, and determine if any failure points exist, and provide any recommendations if necessary.

David Pham (EDE) moved to approve RR 94 Removal of XML as a Backup.

John Stephens (SPRM) seconded the motion.

The motion passed unanimously.

Agenda Item 6 – Outage Metrics Update

Will Tootle (SPP) presented changes made to the outage metric. Will stated he made adjustments to the outage metric to include outages that had a lead time greater than 45-75 days, and they were compared against the total number of outages with a five day duration or longer per company to a percentage of outages that would be used in the TCR process compared to outages actually taken. Forced and Emergency outages along with outages having a duration of less than 5 days were excluded. Will Tootle (SPP) stated that about 20% of all outages have a duration of 5 days or longer. John Stephens (SPRM) requested a more detailed discussion around the metrics associated with (SPRM). Will gave an explanation of the logic calculations and timing requirements for the outages with respect to the TCR market.

ACTION ITEM: Will Tootle to provide ORWG members individual raw data for the planned outage metric.

Agenda Item 7 – Regulation Performance

Casey Cathey (SPP) presented the regulation up and down performance as provided in the meeting material. Casey stated since ORWG began monitoring this performance data SPP has experienced an increase in performance. Casey explained the scores and average scores, and how they are performing. Resources that received deployment instructions for a minimum of 2,250 4-second intervals were included in each Regulation product. This percentage roughly correlates to a 5 minute period in 1 day. Regulation response calculation expects resources to simultaneously drive towards their expected energy and expected CR set points. Casey also stated that he believes we should maintain a compliance target of 75%.

ACTION ITEM: Create a new chart to show the regulation score + system deployed regulation to see what falls short on aggregate of the 75% target. In addition to the chart create a single value for deployed vs dispatched regulation.

Agenda Item 8 – RR 97 Improved Notifications for Telemetry & Control Status

Neil Robertson (SPP) presented and discussed RR97. RR97 proposes changes to SPP Criteria Appendix 7 requirements for reporting telemetry and control status. The current requirement language covers a broad range of equipment and events. SPP feels that outages of the ICCP links used to communicate Operating Reserve set point instructions should have more strict reporting requirements. Multiple ORWG representatives expressed concerns that RR97 as written would place an undue burden on members by requiring the reporting of all outages, even those of a very short duration. ORWG members pointed out current and pending changes to NERC standards language for the notification timing requirements. Neil Robertson (SPP) stated that considering the comments submitted and additional information that came to light during the discussion, significant changes to RR97 would be

appropriate. Neil Robertson (SPP) offered to modify RR97 and bring back to the ORWG for discussion on day two of the meeting.

*Changes to RR97 were not discussed further by the ORWG on day two of the meeting due to time constraints. RR97 will be discussed further at a future ORWG meeting.

Agenda Item 9 – RR 98 Expanding the use of SPP CROW

Neil Robertson (SPP) gave an overview of RR 98. The revision request will make modifications to SPP Criteria Appendix 7 and add additional language and SPP Criteria Appendix 12. The language additions and modifications will define how SPP's CROW Outage Scheduler will be used to submit the status information of reactors, capacitors, breakers, switches, special protection systems, and automatic voltage regulators. Greg McAuley (OKGE) asked about the applicability of including the TO and BA. Greg asked if the language should just include the GO. The ORWG agreed that AVR outage submissions to CROW should fall under the GOPs responsibility, but the GOP should also communicate the outages to the TOP. Ron Gunderson (NPPD) asked if the revision request will be routed to other working groups, and Neil stated the RR will go to the RCWG and TWG. Neil Robertson (SPP) noted the effective date of September 1, 2015 may be aggressive, and Terry Gates (AEP) agreed. Ron Gunderson (NPPD) stated that it may be best to define a road map to our end goals for switching equipment.

ACTION ITEM: Neil Robertson (SPP) will work with SPP IT to include CROW API functionality for all new CROW equipment (reactors, capacitors, breakers, switches, SPSs, and AVRs). Neil Robertson (SPP) will coordinate the suggested CROW changes with GOPs and other applicable entities to determine an appropriate effective dates for each type of new equipment. Neil Robertson (SPP) will present draft specifications on modeling switching equipment in CROW at a future ORWG meeting.

Agenda Item 10 – March 6th Operating Day event

Casey Cathey (SPP) presented on the high SPP seams congestion and MISO north to south flows. Casey explained why MISO entered conservative operations, and discussed the flowgates that presented issues to real time operations. Casey said the event occurred shortly after 0600 on 3/6/2015, and the MISO RC and SPP RC were in communication to resolve the issue. The MISO RC notified the SPP RC that MISO would be exceeding the 2000 MW limit until after the 0900 peak. MISO south generation peaked around 24,000 MWs, but the load increased over 27,000 MWs. This caused a heavy north to south loading on the system and caused M2M to be implemented for three flowgates. Mike Wech (SPA) asked what's going to be done about this issue, and Casey Cathey (SPP) stated that SPP and MISO will increase communications and work on future enhancements. Mike Wech (SPA) stated that he would like to participate in the discussions between SPP and MISO.

ACTION ITEM: SPP to research the impacts with all MISO coordinated flowgates, and attempt to determine if additional RCF test are needed.

Agenda Item 11 – April 17th Operating Day event

Neil Robertson (SPP) presented the April 16th and 17th event related to wind generation reduction. Neil explained the charts provided in the meeting materials. Neil discussed the SPP ACE and how regulation was deployed. During the event Neil stated that wind decreased by 1000 MWs between 0600 and 0700

on April 16, 2015 and 1400 MWs on April 17, 2015 between 0620 and 0705. He also explained that a significant NSI change occurred around 0700 and SPP issued an OEC for 650 MWs.

Agenda Item 12 – Reserve Sharing Group obligation notification

Neil Robertson (SPP) gave a brief update on the new RSG numbers for 2015 vs 2014. BA FO 2014 – Balancing Authority Firm Obligation from 2014 Summer Peak.

BA	BA FO 2014	2015%	2014%
AECI	3650	7.17%	6.58
SPA	1490	2.93%	3.18
SPP	41207	80.92%	82.69
WAPA	4574	8.98%	7.55
<u>TOTAL</u>	<u>50921</u>	-	-

Agenda Item 13 – Integrated System Special Protection Schemes overview

Neil Robertson (SPP) presented to the ORWG the new special protection schemes located in WAPA and BASIN. The Miles city converter station SPS located in WAPA has 18 predefined contingencies, and has an automatic ramping down function for the DC tie for the predefined contingencies. Neil stated that controller instability could occur with thermal overloads. The East Montana Generator Dropping Scheme located in WAPA will limit Fort Peck generation outlets, and risk overloads on the Fort Peck 230/115 kV transformer. Neil stated that the Fort Peck will be dropped to reduce station output to protect the transformer. The Garrison Dropping Scheme located in WAPA will also limit generator outlets due to thermal overloads on the Garrison 230kV outlets. Neil said this scheme is primarily used when 1/3 of the Garrison 230kV outlets are out of service. The scheme will reduce total station generation at the Garrison facility.

Agenda Item 14 – Reserve Post Deployment Constraint Overview

Neil Robertson (SPP) gave a presentation on a new approach to accessing operating reserve deliverability. Neil stated for the current reserve zone process the analysis is performed prior to 0700 day ahead, and manual OR capacity adjustments are made in real-time by operational personnel not systematically. Neil suggested that reserve zones are not good at fixing discrete issues by committing or de-committing specific units. Neil described the proposed reserve post-deployment constraint process as a new way to access OR deliverability. OR deliverability will be accessed by three methods on each reserve post-deployment constraint as defined in the meeting material. Greg McAuley (OKGE) was concerned that the logic would plan to violate NERC reliability standards on SOLs. Neil explained the calculations as being focused on N-2 and not violating an N-1 SOL. SPP staff will continue discussion on NERC standards compliance of the concept with SPP RE staff. The ORWG requested an expanded description of the concept including calculation examples at a future meeting.

Agenda Item 15 – Discuss mis-operations report

Thomas Teafatiller (SPP RE) Thomas start the SPP RE is already tracking mis-operations, and the SPP RE will provide a mis-operation report at a future ORWG meeting.

Agenda Item 16 – New flowgates from TWG

Will Tootle (SPP) stated that six new flowgates will be added due to the Integrated Systems joining SPP. Five temporary flowgates will become permanent flowgates, twenty flowgates will be removed, and twenty four flowgates will be new additions. The new flowgate list will be posted to OASIS on July 1, 2015.

John Stephens (SPRM) moved to approve the revised flowgate list.

Paul Lampe (INDN) seconded the motion.

The motion passed unanimously.

Agenda Item 17 – GECTF update

Jodi Woods (SPP) presented updates from the GECTF, Jodi discussed the tariff changes to adjust the DA market and RUC timelines. Jodi provided a straw man timeline proposal, and gave timeline comparisons between SPP and other RTOs and ISOs. Jodi stated making adjustments will allow better coordination between gas and electric markets, which will also allow generators to procure gas supply and transportation capacity. Ron Gunderson (NPPD) asked what kind of impacts will moving the market timeline have on forecast in particular to wind forecast. Jodi stated that discussions around this topic have been discussed and they are following the direction from FERC.

Agenda Item 18 – Congestion Hedging Examples

Ty Mitchell (SPP) presented an example of how outages impact the TCR market. Ty discussed underfunding, limit expansion, and how outages are a primary impact to the TCR market. Ty also discussed with the ORWG the TCR inclusion process and the comparisons between other markets.

Agenda Item 19 – Outage assumptions in FTR/CRR/TCR

Seth Cochran (DC Energy) gave a presentation about advance notifications of planned outage submissions. Seth stated that advance notification of planned outage submissions is an important element for a well-functioning CRR market. Seth stated that many outages in SPP are not considered in the CRR model build process due to the timing of the outage submission. Seth noted that when comparing PJM to SPP the overall performance of the outage submissions timing was much better in PJM. The group discussed how the metric was calculated and the inputs. The group also discussed the rules used in PJM and SPP. Seth stated that 50% of SPP outages are reported with less than 13 days' notice vs PJM's 41 day median. John Stephens (SPRM) asked what kV levels are included in the chart and slide 5, and Seth stated 69kV and above.

Agenda Item 20 – RR96 Transmission Outage timing requirements notification

Will Tootle (SPP) presented the RR96 transmission outage timing requirements notification changes to ORWG. The criteria should be updated to reflect current practices and to ensure compliance with IRO-017. The criteria proposal is also updated to increase the notification requirement of an outage while remaining a planned outage. Will stated that Neil Robertson (SPP) sent a survey to gather the philosophical approaches between the SPP members on how outage submittals are handles. Will stated he would like to align the philosophy into a SPP philosophy. Will stated that having outages submitted with a longer lead time will benefit outage coordination, and TCRs vs waiting a week before the outage begins to submit a CROW outage. Will explained the Appendix 12 MTE timing requirements and the added language to help comply with IRO-017. Will also said if members would like to view neighboring

outages to send him a request, CROW has the ability to set permission levels. Ron Gunderson (NPPD) raised concerns with the proposed lead time language. Greg McAuley (OKGE) stated concerns with transmission outages having months of lead time required, but generators only have a 2 day notice. Greg stated if we are looking for a level playing field then the language needs to be revised. Ron Gunderson (NPPD) would also like for the RR to include language for both generators and transmission. Greg McAuley (OKGE) mentioned that consideration needs to be made for mutual assistance during storm situations. Greg stated that he doesn't feel that TCR underfunding considers outage schedule rearrangements, but is driving changes to our current coordination methodology that has been in place for years.

The ORWG provided the following comments for consideration:

- Generator outage lead times should be considered within the RR.
- Enforcement philosophy of outage approvals should be revisited.
- What is the significance with outages less than five days?
- Outage categories should be revisited with 'impact' as consideration
 - Impact may be redispatch is required
 - Impact may be unit commitment required
 - Post-Contingent switching to facilitate an outage is not 'impactful'

Agenda Item 21 – New SPP Website

Alice Wright (SPP) presented the new SPP website and discussed the new architecture. Alice stated the site will have new search capability, aesthetics, and device compatibility. Alice also mentioned SPP will clean up the website content and archive any superseded or irrelevant documents. Alice provided a demonstration of the new site in development and showed the ORWG some of the features she discussed in her presentation. Ron Gunderson (NPPD) asked if there are any plans to update the contour map, and Alice stated the new map will have hover capability. Ron further clarified that MISO has the ability to hover over different locations to obtain pricing information, and would like SPP to investigate the possibility of acquiring a similar ability. Greg Speidel (WAPA) asked what the current go live date was. Alice stated on 10/31/2015 SPP will cut over to the new website. Casey Cathey (SPP) asked if there will be a pilot or will the site just cut over. Alice stated that there will not be any pilots the site will just cut over on 10/31/2015. Both Greg Speidel (WAPA) and Ron Gunderson (NPPD) recommended giving members at least 2 to 4 weeks prior to go live for member registration.

Agenda Item 22 – ORWG Action Item Review

Jason Tanner (SPP) reviewed the previous action items, and stated he would like to add action item 36 to the agenda for the July ORWG meeting.

Agenda Item 23 – Other Items

RR58 Generator testing

- RR 58 is still in the comment period and will likely be on the agenda during the July 7, 2015 ORWG meeting

COM-002-4 and potential protocols to be established; operating instructions.

- Tabled until a future ORWG meeting

COM-001-2 effective October 1st, 2015. Interpersonal communication.

- Tabled until a future ORWG meeting

TOP-004-2 R3

- Tabled until the July ORWG meeting.

Agenda Item 24 – Meeting Schedule

- a. 7/7/2015 WebEx (Tues) 0830-1200
- b. 8/6/2015 WebEx (Thurs) 0930-1200
- c. 9/2-3/2015 Face-to-Face (Little Rock)
- d. 10/8/2015 WebEx (Thurs) 0930-1200
- e. 11/5/2015 WebEx (Thurs) 0930-1200
- f. 12/3/2015 WebEx (Thurs) 0930-1200

Agenda Item 25 – Summary of Action Items

See Page 1 Action Item list.

Agenda Item 26 – Adjourn

Casey Cathey (SPP) adjourned the ORWG at 12:04 PM.

Respectfully Submitted,

Casey Cathey
Secretary



Operating Reliability Working Group

Meeting Attendance: 6/03/2015 - 6/04/2015

M=Member, G=Guest, S=SPP Staff, P= Proxy

Day 1	Day 2		Name	Status	Company
X		1	Allan George	M	Sunflower Electric Power
X	X	2	Darrel Yohnk	M	ITC Great Plains
X		3	David Pham	M	Empire District
X	X	4	Greg McAuley	M	Oklahoma Gas & Electric
X		5	Jim useldinger	M	Kansas City Power & Light
X	X	6	John Stephens	M	City Utilities of Springfield Missouri
X	X	7	Kyle McMenamin	M	Xcel Energy
X		8	Mike Wech	M	Southwestern Power Administration
X	X	9	Paul Lampe	M	City of Independence
X	X	10	Ron Gunderson	M	Nebraska Public Power District
X	X	11	Steve Haun	M	Lincoln Electric System
X	X	12	Walter (Todd) Gosnell	M	Omaha Public Power District
X		13	Jay Patel	P	Kansas City Power & Light
X	X	14	Jerry McVey	P	Sunflower Electric Power
X	X	15	Mike Anderson	P	American Electric Power
	X	16	Amber Metzker	G	Xcel Energy
X		17	Ben Hammer	G	Western Area Power Administration
X	X	18	Brandon Levander	G	Nebraska Public Power District
X		19	Bryn Wilson	G	Oklahoma Gas & Electric
	X	20	Bryn Wilson	G	Oklahoma Gas & Electric
X	X	21	Craig Speidel	G	Western Area Power Administration
X		22	Dirk Ludwig	G	Nebraska Public Power District
	X	23	Eric Hatter	G	American Electric Power
X		24	Gary Plummer	G	City of Independence, Missouri
X	X	25	Jake Burger	G	Nebraska Public Power District
X		26	James Lewis	G	Noble Power
X		27	Jeff Wells	G	Grand River Dam Authority
X		28	Jeremy Severson	G	Basin Electric Power Cooperative
	X	29	jim jacoby	G	American Electric Power
X		30	John Boshears	G	City Utilities of Springfield
X		31	Kevin Foflygen	G	City Utilities of Springfield
X		32	Lori Frisk-Thompson	G	Oak Bridge Business Solutions
X	X	33	Mark Eastwood	G	City Utilities of Springfield Missouri
X		34	matthew stoltz	G	Basin Electric Power Cooperative
X		35	Mike Grimes	G	EDP Renewables North America LLC
X		36	Neal Faltys	G	Omaha Public Power District
X		37	Robert Hirschak	G	Cleco
	X	38	seth cochran	G	DC Energy
X		39	Steve Gaw	G	Wind Capital Group



Operating Reliability Working Group

Meeting Attendance: 6/03/2015 - 6/04/2015

M=Member, G=Guest, S=SPP Staff, P= Proxy

Day 1	Day 2		Name	Status	Company
X		40	Terry Gates	G	American Electric Power
X		41	Tom Mayhan	G	Omaha Public Power District
X		42	alice wright	S	Southwest Power Pool
X	X	43	Casey Cathey	S	Southwest Power Pool
X		44	Champy Gahagan	S	Southwest Power Pool
X	X	45	Jason Tanner	S	Southwest Power Pool
X		46	Jerry Stone	S	Southwest Power Pool
	X	47	Jodi Woods	S	Southwest Power Pool
X		48	Joe Byers	S	Southwest Power Pool
X		49	Micha Bailey	S	Southwest Power Pool
X		50	Moses Rotich	S	Southwest Power Pool
X	X	51	Neil Robertson	S	Southwest Power Pool
X		52	Raleigh Mohr	S	Southwest Power Pool
X		53	Ricky Finkbeiner	S	Southwest Power Pool
X	X	54	Thomas Teafatiller RE	S	Southwest Power Pool RE
X	X	55	Ty Mitchell	S	Southwest Power Pool
X	X	56	Will Tootle	S	Southwest Power Pool