

Southwest Power Pool, Inc.
Model Development Working Group
Conference Call
April 5th: 10:30 A.M. – 12:00 P.M. (CDT)

• M I N U T E S •

Agenda Item 1 – Administrative Items:

– Agenda Item 1a – Call to Order:

The meeting was called to order at approximately 10:33 a.m and the SPP Antitrust statement was read to the group.

– Agenda Item 1b,c – Attendance and Proxies:

The following MDWG members and guests attended.

MDWG Members present:

MDWG Member	Present	Proxy	Present	Company
Nate Morris	YES			Empire District Electric Company
Derek Brown	YES			Westar Energy
Dustin Betz	NO	Jason Hofer	NO	Nebraska Public Power District
John Boshears	YES			City Utilities of Springfield
Jerad Ethridge	YES			Oklahoma Gas & Electric
Joe Fultz	YES			Grand River Dam Authority
Wayne Haidle	YES			Basin Electric Power Cooperative
Holli Krizek	YES			Western Area Power Administration
Reené Miranda	YES			Southwestern Public Service
Alex Mucha	YES			Oklahoma Municipal Power Authority
Gimod Olapurayil	YES			ITC Great Plains
Scott Schichtl	NO			Arkansas Electric Cooperative Company
Jason Shook	YES			GDS Associates
Liam Stringham	YES			Sunflower Electric Power Corporation
Sunny Raheem	YES			Southwest Power Pool, Inc.

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Additional Guests present:

Guests	Company
Martin Green	American Electric Power
Jeremy Severson	Basin Electric Power Cooperative
Ellis Lutz	Associated Electric Coop
Jeff Crites, Jerry Bradshaw	City Utilities of Springfield
Jordan Lamb	East River Electric
Mark Reinart	Golden Spread Electric Coop
Dona Parks	Grand River Dam Authority
Charles Shue	ITC Great Plains
Marc Moor, Ryan Baysinger, Lafayette Gatewood IV, Tien Le	Kansas City Power & Light
Alan Burbach	Lincoln Electric System
Sam Zewdie	Midwest Reliability Organization
John Weber	Missouri River Energy Services
Armin Sehic, Bruce Doll	Municipal Energy Agency of Nebraska
Daryl Huslig, Hermes Arevalo, James Thomas	Oklahoma Gas & Electric Company
John Mayhan, Tom Mayhan	Omaha Public Power District
Dave Sargent, Scott Mijin	Southwest Power Administration
Eddie Watson, Anthony Cook, Michael Odom, Zack Bearden, Mitch Jackson, Moe Shahriar, Theva Chanthaseny	Southwest Power Pool, Inc.
Aravind Chellappa, Frank Favela	Southwestern Public Service
Liam Stringham, Tanner New	Sunflower Electric Power Cooperative
Christopher Gilden	Tri-State Generation and Transmission
Jeremy Harris	Westar Energy
Chris Colson, Garrick Nelson, Josie Daggett	Western Area Power Administration
Shaun Golden	Western Farmers Electric Coop

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– Agenda Item 1d – Agenda Review (Action Item):

Nate Morris asked the group if they had any modifications to the agenda or issues with the posted material.

Reené Miranda requested adding an agenda discussion item for additional short circuit checks. Reené explained the need for a screening fault analysis to ensure short circuit models are in correct working order. Zack Bearden added to the discussion about adding another check for type 4 bus codes. Nate and the group recommended adding Short Circuit Model Validation Checklist as item 6.d. to the meeting agenda.

After discussion, Nate opened the floor to entertain a motion.

Motion: Derek Brown moves to approve the agenda as edited during the meeting (Attachment 1 - 1d. MDWG Meeting Agenda 20180405_Redline.docx). Alex Mucha seconded the motion. The motion passed unanimously.

– Agenda Item 1e(i) – March 1st, 2018 Meeting Minutes Review (Action Item):

Nate Morris asked the group if they had any modifications to the agenda or issues with the posted material. The group identified a few typos in the March 1st meeting minutes and request to correct them. Sunny Raheem corrected the typos in redline format and presented the changes to the group.

After discussion, Nate opened the floor to entertain a motion.

Motion: Jerad Ethridge moves to approve to the meeting minutes as edited (Attachment 2 - 1ei. MDWG Minutes March 1, 2018_04052018_Redline.docx). Jason Shook seconded the motion. The motion passed unanimously.

– Agenda Item 1e(ii) – March 9th, 2018 Meeting Minutes Review (Action Item):

Nate Morris asked the group if they had any modifications to the agenda or issues with the posted material. The group identified a few typos in the March 9th meeting minutes and requested to correct them. Sunny Raheem corrected the typos in redline format and presented the changes to the group.

After discussion, Nate opened the floor to entertain a motion.

Motion: Jason Shook moves to approve to the meeting minutes as edited (Attachment 3 - 1eii. MDWG Minutes March 9, 2018_04052018_Redline.docx). Derek Brown seconded the motion. The motion passed unanimously.

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Agenda Item 2 – 2018 MDWG Dynamics Model Build Update:

Moe Shahriar provided the group an update for the 2018 MDWG dynamics model build. Moe mentioned SPP Staff is currently working on the master dynamic (dyr) file. Moe stated that he has accepted a position external to SPP and request data submitters to continue contacting Michael Odom for dynamic model information.

Derek Brown and group questioned the transition and timing for submitting updates particularly for MOD 26 & 27 testing. Eddie Watson mentioned SPP staff is working on a transition plan for Moe's responsibilities currently and will update the group at the next MDWG meeting.

Nate Morris and the group thanked Moe for his time, support, and flexibility. The group stated that Moe worked well with the members. Eddie Watson communicated his support for Moe and farewell.

Agenda Item 3 – MDWG Manual Task Force Update (Action Item):

Michael Odom led the group in the MDWG Manual Task Force Update discussion. Michael presented the manual subsections A, B, and C. Chris Colson mentioned the language was previously presented in the fall of 2017. However, some edits were made since the last time the language was presented. The group reviewed the proposed redline language and provided feedback. The feedback and discussion included updating applicable references to "Good Utility Practice", developing an understanding and updating consistent language for BES, Non-BES, and Tariff facilities, agreeing upon accurate references to MOD 032 Data Submitter/Owner, and vetting OATT references. Sunny Raheem updated the redline language in the manual based on discussion and agreement amongst members during the meeting (**Attachment 4 - 3. SPP MDWG Model Development Procedure Manual Accountability Language_04052018_Redline.docx**).

After a lengthy discussion, Nate Morris requested to table the discussion for the next future meeting. Nate reminded the group of the remaining agenda items and meeting time left.

The group mentioned they would like a reference to the modeling contacts.

AL: SPP Staff to send link to modeling contacts and meeting times. The modeling contacts are posted on [GlobalScape](#) at the following directory: **Modeling (CEII, RSD)→MDWG Powerflow→SPP Modeling Contacts**

Agenda Item 4 – Untimely Submission Survey Review:

Michael Odom presented the Untimely Submission Survey Presentation. Michael presented the high-level purpose and scope for the survey. Eddie Watson and Sunny Raheem mentioned the benefits of SPP Staff understanding the results of the survey to assistance in continual improvement and model build coordination to the group.

AL: SPP Staff to send out Untimely Submission Survey to data submitters. Completed 4/10/2018.

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Agenda Item 5 – Preliminary 2019 MDWG Power flow/Short Circuit Model Build Schedule Update:

Sunny Raheem updated the group about the status of the 2019 MDWG/Short Circuit Model Build Schedule. Sunny mentioned SPP Staff has a preliminary schedule developed that is currently under review by SPP management for internal approval. Nate Morris requested a preview of the preliminary schedule if time allows during the Engineering Data Submission Tool (EDST) large group testing on April 25th. Nate also voiced his encouragement for data submitters to attend the EDST large group testing meeting on April 25th.

AL: SPP Staff to send out preliminary schedule

Agenda Item 6 – Misc.:

– Agenda Item 6a – Siemens Aha Ideas:

Sunny Raheem briefly mentioned the purposed of Siemens Aha Ideas and the benefits. Sunny mentioned the Siemens Aha Ideas are typically driving by quantity of votes.

– Agenda Item 6b – 2018 Series ITP to MMWG Conversion Update:

Sunny Raheem mentioned Moses Rotich is leading ITP to MMWG conversion effort. Sunny mentioned Moses has started working internally to follow up on feedback for the conversion effort with SPP planning staff and SPP Legal. SPP Legal mentioned concerns about implementing dispatch from ITP to MDWG models and if it is classified as resource specific information. The dispatch concern requires further information and investigation on how it would relate to the SPP Non-Disclosure Agreements (NDA).

Nate Morris asked when SPP Legal would have their recommendation on the legal concerns pertaining to the ITP to MMWG conversion. Anthony Cook mentioned it would be unlikely it would be before the 2019 MDWG model build starts. Nate requested SPP Staff come with a recommendation to the May Face-To-Face meeting for the conversion efforts. Anthony recommended the group to plan for business as usual for dispatching because of the short lead-time until the 2019 MWDG model build starts.

– Agenda Item 6c – 2019 MDWG Models dispatched by SPP Update:

The group acknowledged similar concerns for the 2019 MDWG Models dispatched by SPP as Agenda Item 6b. The group asked staff to find out all pros and cons for using 2019 MDWG models dispatched by SPP Staff.

– Agenda Item 6d – Short Circuit Model Validation Checklist

Nate Morris asked Reené Miranda to help lead the discussion for Short Circuit Model Validation Checklist based on concerns raised during the agenda review earlier in the meeting. Reené described the short circuit model approval. Reené mentioned SPS's experience this year when running a fault with the short circuit models. Reené recommended the group might consider adding a screening fault analysis prior to approving the models as final. The screening fault analysis could include a balanced three phase and/or single phase to ground fault.

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AL: SPP Staff to look at possibility of running a screening fault for short circuit models.

Agenda Item 7 – Administrative Items:

- Agenda Item 7a – Summary of Action Items:

AL: Send link to modeling contacts.

AL: Send out Untimely Submission Survey.

AL: Explore schedule possibilities for the fault run short circuit.

AL: Send out preliminary schedule

AL: Send out draft agenda for May face-to-face meeting.

- Agenda Item 7b – Future Meetings:

Nate Morris asked Sunny Raheem to provide a recap of the upcoming future meetings. Sunny went over the future meetings schedules for the next few months including the EDST large group testing meeting. Sunny described how May 9-10th was selected as the face-to-face meeting dates based on member availability results from the Doodle poll. The group was asked to verify they are certain they would like to meet the week before TWG. Majority of the group confirmed May 9-10 was acceptable for their schedules.

Chris Colson mentioned the May draft agenda has not been release to non-voting group members. Sunny Raheem stated he would take that action item and provide the draft may meeting agenda.

AL: SPP Staff send out draft May agenda. The draft May agenda is posted with the April 5th meeting minutes (Attachment 5 - 1e. MDWG Meeting Agenda 2018050910.docx)

- Agenda Item 7c – Adjourn Meeting:

With no further discussion, Nate solicited a motion to adjourn the meeting.

Motion: Jason Shook motioned to adjourn the meeting. Jerad Ethridge seconded it. The motion passed unanimously.

The meeting was adjourned at 12:10pm.

Respectfully submitted,
Sunny Raheem
SPP Staff Secretary

Southwest Power Pool, Inc.
MODEL DEVELOPMENT WORKING GROUP

April 5, 2018
 Net Conference

• **A G E N D A** •

10:30 am – 12:00 pm CST

1. Administrative Items Nate Morris
 - a. Call to Order
 - b. Attendance
 - c. Proxies
 - d. Agenda Review (**Action Item**)
 - i. Acknowledgement of discuss meeting materials
 - e. Previous Meeting Minutes
 - i. March 1st, 2018 (**Action Item**)
 - ii. March 9th, 2018 (**Action Item**)

2. 2018 MDWG Dynamics Model Build Update Moe Shahriar
3. MDWG Manual Task Force Update (**Action Item**) Michael Odum
4. Untimely Submission Survey Review Sunny Raheem/ Michael Odum
5. Preliminary 2019 MDWG Powerflow/Short Circuit Model Build Schedule Update SPP Staff
6. Misc. SPP Staff
 - a. Siemens Aha Ideas: https://pss.ideas.aha.io/portal_session/new
 - b. 2018 Series ITP to MMWG Conversion Update
 - c. 2019 MDWG Models dispatched by SPP Update
 - d. [Short Circuit Model Validation Checklist](#)

7. Administrative Items Nate Morris
 - a. Summary of Action Items
 - b. Future Meetings
 - i. April 25th Engineering Data Submission Tool (EDST) Large Group Testing (1:00 – 5:00pm)
 - ii. May Meeting: May 9th (all day) – May 10th (morning) Face-to-Face, Denver, CO
 - c. Adjourn

Southwest Power Pool, Inc.
Model Development Working Group
Conference Call
March 1: 10:30 A.M. – 12:00 P.M. (CST)

• M I N U T E S •

Agenda Item 1 – Administrative Items:

– Agenda Item 1a – Call to Order:

The meeting was called to order at approximately 10:32 a.m.

– Agenda Item 1b.c – Attendance and Proxies:

The following MDWG members and guests were in attendance.

MDWG Members present:

MDWG Member	Present	Proxy	Present	Company
Nate Morris	YES			Empire District Electric Company
Derek Brown	YES			Westar Energy
Dustin Betz	YES			Nebraska Public Power District
John Boshears	YES			City Utilities of Springfield
Jerad Ethridge	YES			Oklahoma Gas & Electric
Joe Fultz	YES			Grand River Dam Authority
Wayne Haidle	YES			Basin Electric Power Cooperative
Holli Krizek	YES			Western Area Power Administration
Reené Miranda	YES			Southwestern Public Service
Alex Mucha	YES			Oklahoma Municipal Power Authority
Gimod Olapurayil	YES			ITC Great Plains
Scott Schichtl	YES			Arkansas Electric Cooperative Company
Jason Shook	YES			GDS Associates
Liam Stringham	YES			Sunflower Electric Power Corporation
Sunny Raheem	YES			Southwest Power Pool, Inc.

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Additional Guests present:

Guests	Company
Martin Green	American Electric Power
Ellis Lutz	Associated Electric Coop
Jeremy Severson	Basin Electric Power Cooperative
Jordan Lamb	East River Electric
Mark Reinart	Golden Spread Electric Coop
Dona Parks, Diego Toledo	Grand River Dam Authority
Daniel Benedict	Independence Power & Light
Charles Shue	ITC Great Plains
Ryan Baysinger, Lafayette Gatewood IV, Marc Moor	Kansas City Power & Light
James Ging	Kansas Power Pool
Alan Burbach	Lincoln Electric System
Ahsan UI Hasnine	Lubbock Power & Light
Nathan McNeil	Midwest Energy
Sam Zewdie	Midwest Reliability Organization
John Weber, Andy Berg	Missouri River Energy Services
Bruce Doll, Armin Sehic	Municipal Energy Agency of Nebraska
Eric Rodriguez	NextEra Energy Resources
Jarrold Wolford	Northeast Texas Electric Cooperative
John Mayhan	Omaha Public Power District
Scott Mijin, Dave Sargent	Southwest Power Administration
Eddie Watson, Anthony Cook, Moses Rotich, Michael Odom, Zack Bearden, Mitch Jackson, Moe Shahriar, Theva Chanthaseny	Southwest Power Pool, Inc.
Aravind Chellappa, Frank Favela, John Vera	Southwestern Public Service
Chris Gilden	Tri-State Generation and Transmission
Jeremy Harris	Westar Energy
Chris Colson, Josie Daggett, Garrick Nelson	Western Area Power Administration
Shaun Golden, Joe Williams	Western Farmers Electric Coop

– Agenda Item 1d – Agenda Review:

Nate Morris asked the group if they had any modifications to the agenda or issues with the posted material. No one stated any issues with agenda.

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Motion: Jerad Ethridge made the motion to approve the agenda as posted (Attachment 1 - MDWG Meeting Agenda 20180301.docx). Gimod Olapurayil seconded the motion. During the discussion of the motion, Anthony Cook presented a recommended edited agenda for adoption for the meeting. Following the motion discussion, the vote to approve the posted agenda failed unanimously.

Motion: Jason Shook made the motion to adopted the edited agenda as presented (Attachment 2 - MDWG Meeting Agenda 20180301_redlined.docx). Dustin Betz seconded the motion. The motion passed unanimously.

– Agenda Item 1e – Previous Meeting Minutes:

The group was asked if there were any proposed edits to the January 23-24, 2017 meeting minutes. Several members voiced acceptance with the minutes. No one stated any issues with the minutes.

Motion: Jason Shook motioned to approve the January 23-24, 2017 meeting minutes as presented. Dustin Betz seconded the motion. The motion passed unanimously. (Attachment 3 - 1e. MDWG Minutes January 23-24, 2018.docx)

Agenda Item 2 – 2018 Series Status:

– Agenda Item 2a (i) – MDWG Power Flow (Approval Item):

Staff was asked to start the discussion for the Power Flow models. Moses Rotich started the Power Flow discussion by thanking the group for participation. Moses then proceeded to review the pre-final and post final DocuCheck errors.

- The review included wind machine voltage errors, branch overloads, and branch rating errors.
- Moses briefly explained the acceptance process for exceptions.
- Moses explained that additional follow with each associated entity is still required for action and correction plans for the DocuCheck errors presented.

Following the DocuCheck error discussion, Moses presented discussion for constraints resulted from last minute data submission.

- Nate Morris asked would like to share the data submitters' perspective for submission concerns, issues and struggles related to late minute submissions.
 - The group discussed concerns pertaining to the struggle for resources submitting transactions data and expected results differing from local environments to outputs from MOD. Moses explained the complexities of collected data from various entities meshing it to the expected results.
 - Concerns for BLG profile data issues were ~~was~~ expressed. It was noted that Moses was able to help resolve the issue.
 - Nate proposed discussion around MOD training or additional user guide information for help with next year's model build. Participates acknowledged MOD training would be helpful. It was mentioned that data submitters that went from being a none PSSE data submitter to a PSSE data submitter would benefit from additional training.
 - Participates expressed concerns for shorter timeframes for later stage passes, review of accurate pass to merge data with MMWG, and code change resulting in increased voltage errors between late stage passes.

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- Nate requested an additional offline conversation to better understand the situation and concerns in more detail. Eddie Watson volunteered to participate on the call for SPP representation.
- SPP Staff suggested developing a survey to better understand road blocks for late submission concerns.

Following the late submission discussion, the group discussed the utilization of the power flow MDWG models.

- Moses explained the NERC standards are evaluated on these models. Flowgate assessment uses these models. TPL studies will start using the ITP in 2019. This year TPL will continue to use the MDWG. Jeremy Severson presented concerns about neighboring generation. Jeremy said there is usually another step after the off the shelf models to accurately model the neighboring generation
- Moses noted that post processing idevs could be submitted for those steps.
- Anthony Cook explained the external areas would be scaled if there were no additional corrections/idevs provided.
- Wayne Hilde mentioned merger with the current MISO model build would be beneficial and provide more accurate updated MISO modeling information. Moses sate that MISO is building their models at the same time as SPP. Moses mentioned this would require additional discussion.

Nate Morris asked for straw poll of how the MDWG models look for finalization. The group generally expressed acceptance the models with post processing idevs. Nate opened the floor to entertain a motion.

Motion: Jason Shook motioned to finalize the 2018 MDWG power flow pass 5 models. John Foshears seconded the motion. The motion passed unanimously.

– Agenda Item 2a(ii) – ITP Power Flow:

Zack Bearden provided a status update for the ITP power flow models. Zack noted that late submissions were not included in the posted models. Zack suggested resubmitting the late submissions through RMS for SPP review and determination of inclusion in the ITP models. Zack noted one, an inadvertent duplicate 345kV line, late submission was included due to its significant impact. Zack mentioned spring and fall wind levels dispatch assumptions concerns.

– Agenda Item 2b – MDWG Short Circuit:

Zack Bearden provided a status update for the MDWG short circuit models. Zack mentioned the models would be posted soon after the meeting.

– Agenda Item 2c – MDWG Dynamics:

Moe Shahriar provided a status update for the MDWG dynamic models. Moe reiterated the requirement for accurately modeling wind farm topology. Moe asked the group to continue reviewing Mbase values below Pmax. Additionally voltage criteria violations are still a concern for Moe. Moe reviewed the initial data due date and status call following the initial data due date for.

Agenda Item 3 – Misc Discussions:

The meeting was pressed for time. The group elected to defer the Misc. Discussion for a future meeting.

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Agenda Item 11.4 – Administrative Items:

Future Meetings

- Anthony Cook mentioned SPP Staff request to schedule a special meeting for the group. The special meeting would be scheduled to provide a Short Circuit Model approval discussion item and introduction to the potential Mountain West Integration.

AL: SPP Staff to send out Doodle poll for availabilities on March 9th, 15th, or 16th.

- April 5th conference call
- May Face to Face to be determine.

Summary of Action Items:

- **SPP Staff to send out Doodle poll for availabilities on March 9th, 15th, and 16th.**

Adjourn Meeting

With no further discussion, Nate solicited a motion to adjourn the meeting.

Motion: Jerad Ethridge motioned to adjourn the meeting. Holli Krizek seconded it. The motion passed unanimously.

The meeting was adjourned at 12:12pm.

Respectfully submitted,
Sunny Raheem
SPP Staff Secretary

Southwest Power Pool, Inc.
Model Development Working Group
Conference Call
March 9th: 10:30 A.M. – 11:30 A.M. (CST)

• M I N U T E S •

Agenda Item 1 – Administrative Items:

– Agenda Item 1a – Call to Order:

The meeting was called to order at approximately 10:32 a.m.

– Agenda Item 1b.c – Attendance and Proxies:

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Dustin Betz	NO			Nebraska Public Power District
John Boshears	YES			City Utilities of Springfield
Jerad Ethridge	YES			Oklahoma Gas & Electric
Joe Fultz	YES			Grand River Dam Authority
Wayne Haidle	YES			Basin Electric Power Cooperative
Holli Krizek	NO	Chris Colson	YES	Western Area Power Administration
Reené Miranda	NO	Aravind Chellappa	YES	Southwestern Public Service
Alex Mucha	YES			Oklahoma Municipal Power Authority
Gimod Olapurayil	YES			ITC Great Plains
Scott Schichtl	YES			Arkansas Electric Cooperative Company
Jason Shook	YES			GDS Associates
Liam Stringham	YES			Sunflower Electric Power Corporation
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Jeremy Severson	Basin Electric Power Cooperative
Jerry Bradshaw, Kevin Foflygen	City Utilities of Springfield
Mark Reinart	Golden Spread Electric Coop
Ryan Baysinger, Lafayette Gatewood IV	Kansas City Power & Light
John Bell, Lenn Blick	Kansas Corporation Commission
James Ging	Kansas Power Pool
Ahsan UI Hasnine	Lubbock Power & Light
Bruce Doll, Armin Sehic	Municipal Energy Agency of Nebraska
Daryl Huslig	Oklahoma Gas & Electric Company
John Mayhan	Omaha Public Power District
Dave Sargent	Southwest Power Administration
Eddie Watson, Anthony Cook, Moses Rotich, Michael Odom, Zack Bearden, Mitch Jackson, Moe Shahriar, Theva Chanthaseny	Southwest Power Pool, Inc.
Aravind Chellappa, Frank Favela	Southwestern Public Service
	Tri-State Generation and Transmission
Jeremy Harris	Westar Energy
Chris Colson, Garrick Nelson, Ben Hammer	Western Area Power Administration
Shaun Golden, Joe Williams	Western Farmers Electric Coop

– Agenda Item 1d – Agenda Review:

Nate Morris asked the group if they had any modifications to the agenda or issues with the posted material. No one stated any issues with agenda.

Motion: Jason Shook made the motion to adopt the agenda as posted (Attachment 1 - 1d. MDWG Meeting Agenda 20180309.docx). Joe Fultz seconded the motion. The motion passed unanimously.

Agenda Item 2 – Mountain West Introduction:

Nate introduced Antoine Lucas to the group. Antoine thank the group for the time to present an update on the potential Mountain West Introduction. Antoine mentioned he would like to give an overview of the Mountain West (MW) information that was shared with TWG and ESWG at the end of 2017.

Antoine stated the purpose of the meeting is to prepare the working group with the possibility of what might be coming down the line. Antoine conducted a pulse check on the familiarity of the group’s exposure to MW. The group did not feel very familiar with the MW integration.

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- Antoine provided a background on how SPP has arrived at this point with MW and characteristics of the Mountain West Transmission Group (MWTG) in relation to the existing SPP footprint.
- Antoine provided an introduction of MWTG participants, SPP's revision request process, SPP working group Point of Contacts for MWTG, working group schedules, and revision request schedules.
- Additionally Antoine provided overviews of the following publicly posted policy areas:
 - Policy Area #16 – Definition of Transmission Facilities
 - Policy Area #5 – Transmission Planning
 - Policy Area #1 – DC-Ties
 - Policy Area #6 – Order 1000 Process
 - Policy Area #4 – West Regional Cost Allocation

Antoine mentioned the Board of Directors would be evaluating the policies in a upcoming special session meeting schedule for March 13th, 2018.

Nate Morris voiced his concern with how timelines, submission data, and model coordination would be conducted with new entities.

The group asked what the mileage of the 69-100kV would be. Chris Colson provide support in answering this question but estimate 800-900 miles would be WAPA's portion of 69-100kV facilities.

Agenda Item 3 – 2018 Series Status:

– Agenda Item 3a – MDWG Short Circuit:

Zack Bearden started the discussion with the MDWG Short Circuit status update by describing minor changes to the short circuit models. Zack provided a reminder of when the models were posted. SPP Staff recommends approving the models with post processing idevs.

- Jeremy Severson questioned if SPP receives short circuit data from 1st tiers. The group discussed there is room for improving on the 1st tier information. In the past, communication attempts to reach out to 1st tier entities haven't resulted in much progress.
- **AL: Staff will continue to identify ways to reach out to the 1st tier entities in a more effective way.**

Nate Morris opened the floor to entertain a motion. A few members in the group mentioned they were having issues accessing the models on GlobalScape. Zack Bearden mentioned SPP IT is looking into the GlobalScape issue for those members. Moses Rotich recommended sending short circuit models to the few members that are having issues with GlobalScape through GlobalScape Send-A-Link function. Nate Morris and Sunny Raheem suggested facilitating further motion consideration through email protocol the following week after models are provided to the members via GlobalScape Send-A-Link function.

- **AL: SPP Staff to continue working with SPP IT to address the GlobalScape issues.**

The following week, Nate Morris opened the floor to entertain a motion via email.

Motion: Derek Brown moves to approve the finalized model set for the 2018 MDWG Short Circuit models posted to GlobalScape on March 8, 2018. John Bfoshears seconded the motion. The motion passed unanimously.

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.

Agenda Item 4 – Administrative Items:

Future Meetings

- Sunny Raheem went over the future meetings schedules for the next few months. Sunny mentioned the group sounded interested in a face-to-face meeting in May 2018 based on discussion in the January 2018 meeting. The group requested a preliminary agenda to aid in the need of a face-to-face meeting

AL: SPP Staff to send out Doodle poll for availabilities on mid-May for a possible Face-To-Face Meeting and provide a preliminary agenda

- April 5th conference call
- May Face to Face to be determine.

Summary of Action Items:

- **Staff will continue to identify ways to reach out to the 1st tier entities in a more effective way.**
- **SPP Staff to continue working with SPP IT to address the GlobalScape issues.**
- **SPP Staff to send out Doodle poll for availabilities on mid-May for a possible Face-To-Face Meeting and provide a preliminary agenda**

Adjourn Meeting

With no further discussion, Nate solicited a motion to adjourn the meeting.

Motion: Chris Colson motioned to adjourn the meeting. Jerad Ethridge seconded it. The motion passed unanimously.

The meeting was adjourned at 11:49pm.

Respectfully submitted,
Sunny Raheem
SPP Staff Secretary

SECTION 1: INTRODUCTION

SUBSECTION A: PURPOSE

This manual establishes consistent modeling data requirements and reporting procedures for the development of Near-term and Long-term Transmission Planning Horizon models necessary to support analysis of the capability, reliability, and suitability of the SPP Transmission System. This section describes the applicability of entities, data owners, equipment, and data submitters to which this manual is germane.

SUBSECTION B: SCOPE OF APPLICABILITY

It is well understood that transmission system modeling is a complex process predicated upon accurate and comprehensive data collection, review, and compilation. The SPP Model Development Working Group recognizes that to properly develop SPP Transmission System models, a constituency of responsible entities must collaborate in the model building effort. ~~Likewise, it is clear that transmission equipment below the typical 100kV demarcation of the Bulk Electric System (BES) must be accounted for in the SPP Transmission System models. The transmission system subject to the SPP OATT including facilities 60kV and above must be accounted for in the SPP Transmission System models.~~ Therefore, consistent with both the applicability of the NERC Data for Power System Modeling and Analysis Reliability Standard (MOD-032-1)¹ and the provisions of the SPP Open Access Transmission Tariff (OATT), as well as ~~good modeling utility practice~~, this manual is applicable to the following NERC-registered and non-NERC-registered entities:

- Planning Coordinator;
- Balancing Authority;
- Transmission Service Provider;
- Transmission Planners;
- Transmission Owners² of equipment within the SPP Planning Coordinator planning area and/or of equipment that is part of the SPP Transmission System;
- Owners or lessors of generating units, including Generator Owners, within the SPP Planning Coordinator planning area of Network Resource(s) designated by the SPP OATT and/or who have submitted a Generation Interconnection Request consistent with the SPP OATT.
- Resource Planners;
- Distribution Providers;
- Network Customers receiving Network Integration Transmission Service pursuant to the SPP OATT for designated Network Load and/or having arranged Point-To-Point Transmission Service for non-designated load;
- Native Load Customers of an SPP Transmission Owner;
- Transmission Customers pursuant to the SPP OATT.

¹ The NERC petition to remove the Load Serving Entity (LSE) registration was approved by 153 FERC ¶ 61,024, issued 15 October 2015. Therefore, the LSE registration is not discussed in this manual.

² Capitalization is intended to include transmission-owning entities as defined in the NERC Glossary of Terms, as well as defined in the SPP OATT.

Commented [SR1]: Follow up on reference

Commented [MO2]: Check to see about adjacent TPs, what's their Requirement?

It is noted that within the SPP Region, consistent with SPP Regional Transmission Organization (RTO) procedures and the SPP OATT, SPP serves as both a Balancing Authority³ and Transmission Service Provider for the SPP Transmission System.

Applicable Data Owners

A subset of the applicable entities annotated above comprise the Data Owners subject to the modeling data requirements and reporting procedures of this manual:

- Balancing Authority is responsible for submitting modeling data for aggregated existing and future load, integrated resource plans, and interchange obligations corresponding to the case conditions specified.
- Transmission Service Provider is responsible for submitting modeling data for their existing and future service commitments and obligations corresponding to the case conditions specified.
- Distribution Providers are responsible for submitting modeling data for their aggregated existing and future load, and interchange obligations corresponding to the case conditions specified.
- Transmission Owners are responsible for submitting modeling data for their existing and future Transmission or sub-transmission equipment that they own or maintain.
- Owners or lessors of generating units, including Generator Owners, are responsible for submitting modeling data for the existing and future generating equipment that they own or maintain.
- Resource Planners are responsible for submitting modeling data for their existing and future long-term resource adequacy plan(s) of specific customer load demand and energy requirements, corresponding to the case conditions specified.
- Network Customers are responsible for submitting modeling data for their existing and forecasted load, existing and forecasted load transactions, as well as existing and forecasted resource transactions corresponding to the case conditions specified.
- Native Load Customers are responsible for submitting modeling data for their existing and forecasted load corresponding to the case conditions specified.
- Transmission Customers are responsible for submitting modeling data for their existing and forecasted transactions utilizing the SPP Transmission System, serving Network Load, or sales of Network Resources corresponding to the case conditions specified.

³ For Eastern Interconnection equipment only. WAPA-UGPR independently operates the WAUW BA area within the Western Interconnection for equipment which is under the SPP OATT.

Applicable Data Submitters

The Data Owner shall be the Data Submitter, subject to the modeling data requirements and reporting procedures of this manual. A Data Submitter may be designated as the entity who takes responsibility for collating, formatting, and corresponding a Data Owner's modeling data to SPP, as Planning Coordinator, in the approved format. A Data Submitter may be delegated only if the following are completed:

1. Data Submitter is designated in writing, showing mutual agreement by the Data Owner and Data Submitter.
2. Written notification is provided to SPP, as Planning Coordinator, regarding the specific data (e.g., load at bus X; generating unit Y; transmission branch Z) for which the Data Submitter will be responsible for.

Responsibility for the timely and accurate submission of Data Owner information to SPP, as Planning Coordinator, resides with the Data Owner.⁴ When a Data Owner delegates the submission of data to a Data Submitter, all communication that would otherwise be sent to the Data Owner alone, will be copied to the Data Submitter.

A Data Owner's submitted data shall not modify another Data Owner's data without explicit consent. Data Owners are encouraged to coordinate data submissions that may impact another Data Owner's system.

Commented [M03]: SPP could have a workbook that lists the linkage of Data Owners and Data Submitters behind Globalscape for anyone that has the appropriate access to view. Could also be linked and listed in the EDST.

SPP could have distribution lists made to help ensure the appropriate Data Owners & Data Submitters are included in each communication. These lists could be linked to the EDST or Globalscape workbook.

Check with Moses on the workbooks
Entity Mapping Data Request
MDWG Data Coordination Workbook

⁴ When delegated, the Data Submitter is not responsible for validating data provided by the Data Owner.

Applicable Equipment

The modeling data required from Data Owners supports both the creation of the Electric Reliability Organization (“ERO”), or its designee, Interconnection-wide modeling cases, and the other Near-term and Long-term Transmission Planning Horizon cases required under the SPP OATT.⁵ Planned equipment, as differentiated from existing equipment, consists of equipment expected to be in-service for the case conditions specified (e.g., month; year). Existing or planned⁶ equipment for which non-equivalenced⁷ modeling data shall be reported include, but are not limited to:

1. All Facilities comprising the BES.
2. All non-BES equipment 60 kV and above, subject to the SPP OATT⁸.
3. All BES or non-BES equipment that includes a normally-open point that, when closed, shifts load or creates a network path affecting the SPP Transmission System.
4. All non-BES equipment interconnecting within the SPP Transmission System or interconnecting the SPP Transmission System with non-SPP Transmission System(s), subject to the SPP OATT⁹.
5. All non-BES equipment known to have a significant interaction with the BES, including reactive resources.
6. All direct-current connections within the SPP region or interconnecting to Transmission outside of the SPP region.
7. All Network Resource generation assets, subject to the SPP OATT¹⁰, excluding Small Generating Facilities (< 2MW).
8. All Network Resource (pursuant to Item 7) generator step-up transformers and generator interconnection equipment. Generator interconnection equipment shall include, at a minimum, collector electrical equivalent representations, where applicable.
9. All Resources that are registered in the SPP Integrated Marketplace, including the transmission equipment necessary to deliver that Resource to the SPP Transmission System when the registered Resource is not directly connected to the SPP Transmission System.
10. All Network Load, subject to the SPP OATT¹¹.
11. All firm power purchases served by SPP Network Resource(s) and firm power sales sunk to SPP Network Load, including all firm power transactions that result in an area interchange.

Other information regarding equipment not specified above may be requested by SPP, as the Planning Coordinator, or by Transmission Planner(s) for modeling purposes, as necessary. Likewise, consistent

⁵ Pursuant to the provisions of the OATT, equipment below the typical 100kV demarcation of the BES must be accounted for in the SPP Transmission System models.

⁶ As part of the MDWG model building process to support of the TPL-001-4 R1 model building requirement

⁷ Equivalencing is a general technique that substitutes power system equipment with a simplified representation that closely approximates the characteristics and behavior of the actual equipment.

⁸ Sixth Revised Volume No.1, Attachment AI, Part II-1.

⁹ Sixth Revised Volume No.1, Attachment AI, Part II-2.

¹⁰ Sixth Revised Volume No.1, Part III-30.

¹¹ Sixth Revised Volume No.1, Part III-31

Commented [JH4]: What about Spare equipment since we have to consider it in the TPL assessment. Should it be included as well? Only applicable to BES facilities and the spare equipment strategy is captured by TPL data.

Commented [M05R4]: Is this something that is added to/can be added to the EDST? If so it will be an enhancement and will come at a later date, not with the initial rollout. Sync the data request where appropriate, either MDWG manual or AEDRS.

Commented [CC6]: NEEDS WORDS.

From Renee: This includes modeling data from any radially served Transmission or sub-transmission from an SPP transmission point, which has the potential of creating a looped system to another SPP transmission point, via operation of a single current interrupting device.

Commented [M07R6]: Check with Reen , but Chris thinks this language has been updated to meet the concern raised by Reen .

Commented [SR8]: Define in a footnote?

Commented [M09]: Check against DER modeling for consistency

with MOD-032-1 Requirement R3, the Planning Coordinator or Transmission Planner may request additional data or clarification regarding technical concerns with modeling data submitted. Written notification will typically be communicated through electronic means (e.g., email) to the Data Submitter and/or Data Owner and will include the technical concerns with the data submitted. Upon receipt of written notification, the Data Submitter and/or Data Owner shall respond to the notifying Transmission Planner or SPP, as the Planning Coordinator, with either updated data or an explanation with a technical basis for maintaining the current data in accordance with the reporting procedure schedule (“schedule”) jointly developed by the Transmission Planners and Planning Coordinator.

Accountability

SPP, through coordination with the MDWG, cannot be effective at building timely and accurate models without **Applicable Entity** participation. All **Applicable Entities** are responsible for providing the data necessary to model their **Applicable Equipment**. Likewise, **Applicable Entities** are accountable for meeting specific deadlines and milestones established by the **MDWG**, for model development, in the jointly developed schedule. The schedule will be made available to all **Applicable Entities** at the outset of each model-building period.

Clear and timely two-way communication between SPP, as Planning Coordinator, the Transmission Planners comprising the SPP PC, and **Applicable Entities** is vital to the successful compilation of modeling data, reporting, and ultimate production of accurate SPP Transmission System models. It is the responsibility of the **Applicable Entity** to communicate with SPP to establish the responsible contact for steady state, dynamic, and short circuit model data coordination.

Given that the MDWG relies upon Data Owner and Data Submitter input for the model building effort, the following are some of the established characteristics that support model-building best practices:

- Establishes a contact for model data coordination.
- Responds to model-building communications in a timely fashion.
- Data Owner begins coordinating data submittal well in advance of the initial model data submittal deadline.
- Submits model data ahead of established deadlines.
- Submit majority of model updates by initial model data submittal deadline.
- Ensures model data submitted is complete and accurate.
- Participates in MDWG conferences, calls and meetings.
- Performs a data integrity review of each model-building pass to identify and correct errors.
- Engages throughout the model-building process in a timely fashion.
- Keeps their respective managerial chain informed about model-building progress.
- Coordinates data submissions that may impact another Data Owner’s system.

Following each model-building cycle, SPP staff, in conjunction with MDWG members, will prepare a lessons-learned and modeling best practice recommendations assessment. This assessment will focus on challenges experienced by the preceding model-building cycle, attempt to identify root causes, and suggest improvements for subsequent model-building cycles.

Commented [AC10]: Accountability brings consequences if obligations not met. What are the consequences for **Applicable Entities** that fail to provide data? Comment by Legal.

Commented [MO11]: Add to the Definitions section.

Commented [AC12]: Ensure MDWG is defined above

Commented [MO13]: Potentially add to the MDWG model build schedule. Survey add as well?

MDWG experience has shown that some natural obstacles exist to achieving model-building best practices. The following cautionary situations are examples for the purpose of Data Owner and Data Submitter awareness during the model-building process:

- Appropriate lead times. Data Owners may rely on other entities to provide data; therefore, Data Owners should consider lead times when requesting data from others (e.g., Data Owner entity X is the Market Participant and Network Load registrant who serves a municipal customer). Knowing that source data may be more difficult or slower to obtain, the Data Owner should act as early as possible so not to delay the submission of data until late in the model-building process.
- An early and complete submission of a Data Owner's modeling data does not eliminate the need for the Data Owner to participate in all model-building passes. In many cases, model parameters that affect multiple Data Owners within a region (e.g., load, generation dispatch, and transactions) may change between model iterations. The aggregation of these changes can have a pronounced effect on the model data that Data Owners have submitted and emphasizes the need for checking/re-checking the integrity of a Data Owner's model representations in each model iteration.

During each model iteration, an assessment of model-building progression and participation may be performed. Given that incomplete or late data submission has a tremendous impact upon the ability to meet the model-building schedule, any Data Owner who seeks to submit late data will be obligated to present before the MDWG about how proposed model changes will impact the models themselves, as well as impacts to the overall modeling schedule. The MDWG has the obligation to report its progress and achievement of model-building milestones to various SPP working groups/committees.

In cases where an Applicable Entity has not participated or otherwise supported MDWG efforts in good faith towards the achievement of published milestones, the MDWG may report non-participating entities to the TWG/MOPC.



Southwest Power Pool, Inc.
MODEL DEVELOPMENT WORKING GROUP
May 9-10, 2018

Doubletree Stapleton North - Aspen III BC
 4040 Quebec Street
 Denver, Colorado 80216

• **A G E N D A** •

May 9: 8:00 p.m. – 5:00 p.m.
 May 10: 8:00 p.m. – 12:00 p.m.

- 1. Administrative Items Nate Morris
 - a. Call to Order
 - b. Antitrust Statement
 - c. Attendance
 - d. Proxies
 - e. Agenda Review (**Approval Item**)
 - i. Acknowledgement of discuss meeting materials
 - f. Previous Meeting Minutes
 - i. April 5th, 2018 (**Approval Item**)
- 2. MOPC Recap for MDWG Charter Sunny Raheem
- 3. 2018 MDWG Dynamics Model Build Update SPP Staff
- 4. 2018 Geomagnetic Disturbance Model Update Scott Jordan
- 5. Untimely Submission Survey Results & Recommendations Sunny Raheem
- 6. 2019 MDWG Powerflow/Short Circuit Model Build Schedule (**Approval Item**) SPP Staff
- 7. MDWG Manual Task Force Update (**Approval Item**) SPP Staff
- 8. Acceptable Dynamic Model Discussion SPP Staff
- 9. 2018 Series ITP to MMWG Conversion Recommendation SPP Staff
- 10. 2019 MDWG Models dispatched by SPP Recommendation SPP Staff
- 11. Engineering Data Submission Tool (EDST) Status SPP Staff
- 12. Misc. SPP Staff
- 13. Administrative Items Nate Morris
 - a. Summary of Action Items
 - b. Future Meetings
 - c. Adjourn

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.