

**Southwest Power Pool, Inc.**  
**Model Development Working Group**  
**St. Louis, Missouri**  
**May 17: 1:00 P.M. – 5:00 P.M.**  
**May 18: 8:00 A.M. – 12:00 P.M.**

• M I N U T E S •

**Agenda Item 1 - Administrative**

The following MDWG members were in attendance:

**MDWG Members present:**

MDWG Member	Proxy	Company	Present
Nate Morris		Empire District Electric Company	Yes
Derek Brown		Westar Energy	Yes
Jason Bentz		American Electric Power	Yes
Dustin Betz		Nebraska Public Power District	Yes
John Boshears		City Utilities of Springfield	No
Jerad Ethridge		Oklahoma Gas & Electric	Yes
Joe Fultz		Grand River Dam Authority	No
Wayne Haidle		Basin Electric Power Cooperative	No
Holli Krizek		Western Area Power Administration	Yes
Reené Miranda		Southwestern Public Service	No
Scott Schichtl		Arkansas Electric Cooperative Company	Yes
Jason Shook		GDS Associates	Yes
Brian Wilson		Kansas City Power & Light	Yes
Liam Stringham		Sunflower Electric Power Corporation	Yes
Anthony Cook		Southwest Power Pool, Inc.	Yes

**The following guests were also in attendance:**

- Alan Burbach – Lincoln Electric System
- Alex Mucha – Oklahoma Municipal Power Authority
- Aravind Chellappa – Southwestern Public Service
- Bruce Doll, Armin Sehic – Municipal Energy Agency of Nebraska
- Corey Falgout – American Electric Power
- Daniel Benedict – Independence Power & Light
- Dona Parks – Grand River Dam Authority
- Edgardo Manansala – Midwest Energy
- Gimod Olapurayil – ITC Great Plains
- Jeff Crites – Empire District Electric Company
- Joe Williams – Western Farmers Electric Cooperative
- John Weber – Missouri River Energy
- Mark Reinart – Golden Spread Electric Cooperative
- Ryan Baysinger – Kansas City Power & Light

Scott Mijin – Southwestern Power Administration  
Chris Colson – Western Area Power Administration  
Michael Odom, Mitch Jackson, Moe Shahriar, Moses Rotich, Theva Chanthaseny, and Zack Bearden – Southwest Power Pool

### **Proxies**

Aravind Chellappa held Reené Miranda's proxy. Dona Parks held Joe Fultz's proxy.

### **Meeting Agenda**

The agenda was reviewed by the group. Derek Brown asked to add an item under the 2018 Series Model Build for modeling Transformers in regards to TPL-007. Jerad Ethridge motioned to approve the agenda as modified. The motion was seconded by Scott Schichtl. The motion passed unopposed.

**(Attachment 1 - MDWG Meeting Agenda 20170517-18.docx)**

The group was asked if anyone had any issues or needed more time to review the posted materials. There were no concerns from anyone for this meeting.

### **Meeting Minutes**

The April 11, 2017 minutes were open for review. Nate Morris asked if anyone remembered who made specific motions and who seconded the motions in the previous meeting. Derek Brown was able to provide names based on his notes. The minutes were modified to include the individual names for the motions. Jason Shook motioned to approve the minutes as modified. The motion was made and seconded by Scott Schichtl. The motion passed unopposed.

**(Attachment 2 - MDWG Minutes April 11, 2017.docx)**

### **Agenda Item 2 – 2. 2016 Organizational Effectiveness Survey Analysis:**

Anthony presented the survey results and asked if anyone had any comments. Nate noted that some of the items that stood out to him were the meeting materials being posted late and that members are not prepared for meetings. He stated that the two go hand-in-hand. There were no other comments.

### **Agenda Item 3 – Charter Review:**

Anthony provided the charter and mentioned that working groups are required to review their charter every year even if there are no changes to be made. After a few edits were made to the charter, it was decided that it would be better for the members to review the charter with their respective companies and provide updates to SPP at a later time. SPP will then compile the comments and the group will discuss them at a later meeting. Once the group makes all necessary updates, the charter will be provided to the TWG for review. Chris Colson suggested that the final charter be provided to the TPITF for feedback before taking it to the TWG for review.

**\*\*Action Item\*\*:** SPP Staff to send out request for Charter updates.

**\*\*Action Item\*\*:** Members to submit Charter updates by May 31, 2017.

### **Agenda Item 4 – 2017 Series Update:**

Zack Bearden stated that the Pass 8 short circuit models are posted and is requesting the group to consider finalizing the model set in order for TPL studies to begin. Edgardo Manansala stressed the importance of correctly representing the external data such as wind farm

representation as a constant current source in the short circuit models. He also mentioned that in order to accomplish this, it would entail another set of models on top of the ones already being created. Joe Williams also mentioned that this is a problem with large solar farms as well. Chris Colson and Derek Brown expressed concern about transformer connection codes and the need to have them corrected in the models in order to prep for TPL-007 compliance; however, this would cause an extension in the model build. Anthony cautioned that staffing at both SPP and the Member companies can become a problem due to competing work projects. Chris added that this will be a substantial effort and suggested that revisions be made in the MDWDG manual to capture connection codes. Zack asked the group if it will be beneficial to include a contingency analysis to show fault currents during each pass of the model build. Many members said that this would not be a high priority during their review. Nate solicited for a motion to finalize the models. Derek Brown made a motion to approve the pass 8 short circuit models as final. Brian Wilson seconded the motion. Aravind asked if the remaining issues in the docucheck should be fixed before the models are voted as final. Zack replied that the majority of the issues have to do with non-members of SPP; however, there is one 500 kV transformer that is in the SPP footprint that should be corrected. Derek amended his motion to approve the Pass 8 models as final with the caveat that the 500 kV transformer be corrected. Brian Wilson seconded the amended motion. The motion passed unopposed.

**\*\*Action Item\*\*:** Include language in the MDWG manual about connection codes.

**\*\*Action Item\*\*:** SPP Staff get with appropriate member of transformer for corrections.

Moe Shahriar stated that a revised schedule for the dynamic models was previously sent out to the group for review and that the big difference is that it changed by two weeks from the original deadline. He asked the group to approve the revised schedule. Derek Brown stated that he had a proposal that would be discussed in item 7 that could revise the schedule even further. The motion was tabled until after item 7. After the item 7 discussion, Jason Shook motioned to approve the dynamics schedule as provided by Moe. Jared Ethridge seconded the motion. The motion passed unopposed.

#### **Agenda Item 5 – Renewable Dispatching:**

Aravind Chellappa discussed that the SPP Criteria is not realistic for solar farms and that most discussions on renewable resources focus on wind. He stated that there is also a sizeable amount of solar requests in the SPP GI queue, so there is a need for the MDWG to develop language to cover solar dispatch. He stated that wind typically blows in the morning and evening hours when solar is low and solar farms typically produce during the day when wind is low. Joe Williams suggested using irradiance data for the different peaks to determine dispatch values. Michael Odom briefly discussed the new renewable dispatch criteria that will be used in the base reliability models for the summer and winter peaks. Anthony stated that the current language in the MDWG procedure manual was close to the language for the new base reliability renewable resource dispatch methodology. Michael asked the group if they would be interested in using the same method in the MDWG models. Dustin Betz voiced concern stating NPPD's peak doesn't align with the SPP coincident peak. Dispatching renewables in the summer is not reliable and when the wind is not available, it causes adverse effects in the operations realm. Derek Brown also voiced concern that there needs to be a companywide policy by SPP on renewables so that they are aligned in all processes. The policy would work for SPP internal members but how about external entities. Nate asked if the group had a preference on the renewable dispatch methodology in the MDWG. Some asked that the MDWG manual taskforce work on language with SPP Staff.

**\*\*Action Item\*\*:** Update renewable dispatch methodology language in the MDWG procedure manual.

**Agenda Item 6 – 2018 Series Model Build:**

Anthony Cook presented the model set as requested by all groups within engineering at SPP. This set is to cover the needs of the MDWG and ITP since the models will be built in parallel due to the new TPITF process. He stated that SPP Staff pulled this as an action item because additional review needs to be performed as to what the “normal” model set will be vs. the need for the transition year. The group requested that Staff put together a presentation showing what the next three years will look like.

**\*\*Action Item\*\*:** SPP Staff to present three year timeline of the new model build process.

Anthony presented the schedule and asked the group review the dates and approve it. Derek Brown made suggestions as to shortening the schedule by ending it in November, but allowing updates to be submitted through February to correct any last minute issues. He also suggested moving the dynamics finalization date from September to August. Chris Colson stated that the powerflow should be trimmed even further. Anthony voiced concerns over shortening the schedule since the MDWG hasn’t produced models on time for the last several years. Aravind also voiced concern over DPP schedules and TPL studies being performed at the same time in the November timeframe and staff issues that go along with that. Jerad Ethridge stated that the schedule looked ok to him, and that the members need to just adhere to the voted on schedule. There was discussion about moving the Model Update meeting to later in the model build. Mark Reinart suggested shortening Pass 1 since there isn’t a lot of participation early in the model build. The group decided to table voting on the schedule pending further review.

**\*\*Action Item\*\*:** MDWG members to review the schedule and provide changes to Anthony and Nate by 5/30/2017.

**Agenda Item 7 – Dynamic Load Task Force Recommendation:**

Derek Brown went over his presentation. Questions were asked to whether 10MW or 20MW should be the threshold. Derek and Chris stated that 10MW was proposed because of industry standard based on gathered data. Derek recommended that the DLTF CMLD changes be included in the 2017 dynamic models. Nate Morris took a straw poll to determine implementing the practice in the 2017 vs. 2018 series and 10MW vs. 20MW. No one was in favor of requiring this in the 2017 Series; however, stated that dynamic loads can be submitted in the 2017 Series if individuals want to. There were nine in favor of the 10 MW threshold and two for the 20MW. Derek made a motion to approve the DLTF language revision about CMLD modeling in the MDWG procedure manual in the 2018 Series dynamic model build. Holli Krizek seconded the motion. The motion passed unopposed.

**\*\*Action Item\*\*:** Update MDWG manual to include Dynamic Load modeling of 10MW.

**\*\*Action Item\*\*:** Send out link to [NATF Guidance Document on TPL-001-4](#).

**Agenda Item 8 – Model On Demand:**

Moses Rotich briefly discussed some of the MOD v8.1.0.1 issues/bugs encountered during the 2017 series MDWG powerflow and short circuit builds. He mentioned that SPP staff was exploring the possibility of upgrading to MOD v9 in order to rectify some of the issues. Furthermore, he also mentioned that the MDWG would be updated once a decision to move to MOD v9 is finalized.

In addition, Moses also informed the group about contract negotiations with Siemens pertaining to MOD and MOD file builder. He stated staff would have more wiggle room to create separate accounts for different data submitters rather than grouping different companies under one umbrella. He also mentioned that consultants working for SPP member companies will have to sign a different agreement in order to access MOD and MOD file builder.

**Agenda Item 9 – SPP Engineering Hub Status Update:**

Mitch Jackson provided the current status of the Engineering Hub. He stated that the MDWG portion was about complete and that SPP Staff has been testing the functionalities. The next step is the Resource Adequacy Working Group workbook. SPP Staff will be reaching out to a few members to help with external testing. The Hub will not be ready for the 2018 Series model build; however, SPP Staff hopes to provide training toward the end of the model build.

With the meeting drawing to a close, Moses quickly told the group that staff will be sending out a new data coordination template for entities to fill out, noting if they'll be submitting data for themselves only or on behalf of other entities as well in the 2018 series MDWG model build. Chris Colson asked that an aggregated data coordination workbook from the 2017 series MDWG model build also be provided in order for members to identify any gaps that might exist in terms of entities submitting data.

**\*\*Action Item\*\*:** SPP staff to provide an aggregated data coordination workbook to the members.

All other items were tabled for future meetings.

**Agenda Item 14 – Administrative Items:**

**Summary of Action Items**

- SPP Staff send out request for Charter updates.
- Members to submit Charter updates by May 31, 2017.
- Include language in the MDWG manual about connection codes.
- SPP Staff get with appropriate member of transformer for corrections.
- Update renewable dispatch methodology language in the MDWG procedure manual.
- SPP Staff to present three year timeline of the new model build process.
- MDWG members to review the schedule and provide changes to Anthony and Nate by 5/30/2017.
- Update MDWG manual to include Dynamic Load modeling of 10MW.
- Send out link to [NATF Guidance Document on TPL-001-4](#).
- SPP staff to provide an aggregated data coordination workbook to the members.

**Adjourn Meeting**

With no further business to discuss, Nate asked for a motion to adjourn. Aravind Chellappa motioned to adjourn the meeting, Jerad Ethridge seconded the motion. The motion passed unopposed. The meeting was adjourned.

Respectfully submitted,  
Anthony Cook  
SPP Staff Secretary

**Southwest Power Pool, Inc.**  
**MODEL DEVELOPMENT WORKING GROUP**

**May 17-18, 2017**

Hilton at the Ballpark  
1 South Broadway  
St Louis, Missouri 63102

**• A G E N D A •**

May 17: 1:00 p.m. – 5:00 p.m.  
May 18: 8:00 p.m. – 12:00 p.m.

1. Administrative Items ..... Nate Morris (15 min)
  - a. Call to Order
  - b. Introductions
  - c. Proxies
  - d. Agenda Review (**Action Item**)
    - i. Meeting Materials
  - e. Previous Meeting Minutes (Action Item)
    - i. April 11, 2017
2. 2016 Organizational Effectiveness Survey Analysis ..... Anthony Cook
3. Charter Review (**Action Item**) ..... All
4. 2017 Series Update
  - a. Short Circuit ..... Zack Bearden
  - b. Dynamics ..... Moe Shahriar
5. Renewable Dispatching.....Aravind Chellappa
  - a. Photovoltaic vs. Wind
6. 2018 Series Model Build..... All
  - a. Model Selection
  - b. Schedule
  - c. Report Card Improvements
  - d. Company Workbook Improvements
  - e. Additional Model Reports
  - f. PSS@E Version
  - g. Model Review Form: Entity Sign Off
  - h. TPL-007 Transformers
7. Dynamic Load Task Force Recommendation ..... Derek Brown
8. Model On Demand ..... Moses Rotich
  - a. New Contract Details
  - b. Update/Upgrade

*Relationship-Based • Member-Driven • Independence Through Diversity*

*Evolutionary vs. Revolutionary • Reliability & Economics Inseparable*

- 9. SPP Engineering Hub Status Update ..... Mitch Jackson
- 10. MOD-033-1 ..... Anthony Cook
- 11. MMWG Update ..... Moses Rotich
  - a. Powerflow Database
    - i. Area Interchange
    - ii. MTL: Single/Double Entry
- 12. Frequency of MDWG Meetings ..... All
- 13. Administrative Items ..... Nate Morris
  - a. Summary of Action Items
  - b. Future Meeting
  - c. Adjourn

**Southwest Power Pool, Inc.  
Model Development Working Group  
Net Conference  
April 11: 9:00 A.M. – 12:00 P.M.**

**• M I N U T E S •**

**Agenda Item 1 - Administrative**

The meeting was called to order at 9:06 a.m. The following MDWG members were in attendance:

**MDWG Members present:**

MDWG Member	Proxy	Company	Present
Nate Morris		Empire District Electric Company	Yes
Derek Brown		Westar Energy	Yes
Jason Bentz		American Electric Power	Yes
Dustin Betz		Nebraska Public Power District	Yes
John Boshears		City Utilities of Springfield	Yes
Jerad Ethridge		Oklahoma Gas & Electric	Yes
Joe Fultz		Grand River Dam Authority	No
Wayne Haidle		Basin Electric Power Cooperative	Yes
Holli Krizek		Western Area Power Administration	Yes
Reené Miranda		Southwestern Public Service	Yes
Scott Schichtl		Arkansas Electric Cooperative Company	Yes
Jason Shook		GDS Associates	Yes
Brian Wilson		Kansas City Power & Light	No
Liam Stringham		Sunflower Electric Power Corporation	Yes
Anthony Cook		Southwest Power Pool, Inc	Yes

**The following guests were also in attendance:**

- Alan Burbach – Lincoln Electric System
- Aravind Chellappa – Southwestern Public Service
- Daniel Benedict – Independence Power & Light
- David Spargo, Joshua Verzal, Steve Hohman – Omaha Public Power District
- Dona Parks – Grand River Dam Authority
- Edgardo Manansala – Midwest Energy
- Ellis Lutz – Associated Electric Cooperative
- Gimod Olapurayil – ITC Great Plains
- Jeremy Severson – Basin Electric Power Cooperative
- Joe Williams, Shaun Golden – Western Farmers Electric Cooperative
- John Weber – Missouri River Energy
- Mark Reinart – Golden Spread Electric Cooperative
- Ryan Baysinger, Tien Le – Kansas City Power & Light
- Samuel Zewdie – MRO



Scott Mijin – Southwestern Power Administration  
Chris Colson – Western Area Power Administration  
Robert Jones – Monterey SW  
Michael Odom, Moe Shahriar, Theva Chanthaseny, English Cook, Zack Bearden –  
Southwest Power Pool

### **Proxies**

Ryan Baysinger held Brian Wilson's proxy. Dona Parks held Joe Fultz's proxy.

### **Meeting Agenda**

The group was asked if anyone had any issues or needed more time to review the posted materials. There were no concerns from anyone for this meeting.

The agenda was reviewed by the group. Jason Shook motioned to approve the agenda and seconded by Derek Brown. The motion passed unopposed.

**(Attachment 1 - MDWG Meeting Agenda 20170411.docx)**

### **Meeting Minutes**

The January 17, 2017, February 6, 2017, and March 17, 2017 minutes were open for review. John Boshears motioned to approve the three sets of minutes was made and seconded by Dustin Betz. The motion passed unopposed.

**(Attachment 2 - Update 2017 Series MDWG Schedule Email Vote 20170117.doc,**

**Attachment 3 - MDWG Minutes February 6, 2017.docx,**

**Attachment 4 - Approve 2017 Series Powerflow Models Vote 20170317.doc)**

### **Agenda Item 2 – Transmission Planning Improvement Effort:**

English Cook provided the TPITF Whitepaper and presented on the Accountability document.

**(Attachment 5 - TPITF\_Recommendations\_White\_Paper\_Final\_MOPC\_Approved\_7-12-**

**2016.docx, Attachment 6 - TPITF SPP Staff and Stakeholder Accountability.docx,**

**Attachment 7 - TPITF Staff\_Stakeholder Accountability.pptx)**

Michael Odom presented on renewable dispatch for the light load in the new base reliability models. Comments were made in favor of using a 5 year average of real data for dispatching; however, the idea of only including units with firm service does not make sense. Will the Tariff language change for the protection of firm service? If the model isn't based on actual data, there will be a hard time defending the model in TPL-001-4. The question was asked how the models will be dispatched in the CBR models. Question as to whether the MDWG and ITP models should match. Anthony stated that the MMWG doesn't want models that have high wind dispatch; however, the manual states that renewable generation should be dispatched at seasonally expected values corresponding to the appropriate model. Michael stated that the TWG will be discussing the light load renewable dispatch language at their May meeting.

**(Attachment 8 - Modeling Firm Service in the Light Load Season.pptx)**

Michael told the group that he needs help understanding how Phase Shifting Transformers should be modeled so that language can be drafted language for the ITP manual. Several expressed interest in being part of the conversation. Michael stated that he would set up a call.

**\*\*Action Item\*\*:** Find out about units without firm service in the CBR models. Will the Tariff language change for the protection of firm service?

**\*\*Action Item\*\*:** Find out what the dispatch order will be in the CBR model, i.e. block or ECDI.

**\*\*Action Item\*\*:** Michael to set up a small group call for modeling PSTs.

**Agenda Item 3 – 2017 Series MDWG Powerflow, Short Circuit, Dynamic Status Update:**

Anthony stated that the powerflow models were posted on March 17, 2017.

Zack Bearden stated that pass 7 of the Short Circuit models was posted. He asked the group if the models were ready to be voted on or if additional time was needed for review. The group decided to allow for another pass with data to be submitted to SPP by April 28, 2017.

Moe stated that him and Michael are still working on updates to the master dyre file and wind farm topology. There were requests for SPP to post the Dyre file information periodically so that individuals can ensure their data is modeled accurately. One of the members asked how SPP calculates/utilizes single line to ground values. Moe stated that this is taken care of in another group but would get back with everyone interested.

**\*\*Action Item\*\*:** Data Submitting Entities submit sequence data updates by April 28, 2017 for the Short Circuit model build.

**\*\*Action Item\*\*:** Moe to post the dyre file.

**\*\*Action Item\*\*:** Moe to address SLG.

**Agenda Item 4 – 2018 Series Model Build:**

Anthony stated that a draft model selection and draft schedule were posted for the members to review. He stated that SPP Staff is still working to finalize the model needs that will cover the needs for all models. He added that the members should review the list for any additional needs not already captured by SPP Staff. He also stated that the dates in the schedule are rough dates at the moment to give a sense of timing of the model build. He asked the members to review both files and be ready to discuss at the May meeting.

**(Attachment 9 - 2018 Series MDWG-ITP Model Selection.xlsx, Attachment 10 - 2019 ITP & 2018 Series MDWG Powerflow, Short Circuit, and Dynamics Model Build\_DRAFT.pdf)**

**Agenda Item 5 – TPL-007-1 GMD Vulnerability Assessment:**

Chris Colson gave a quick update on TPL-007-1. He stated that the TPLTF is working on automation files to add transformers to the models that are applicable to the standard. A data request will be sent out soon to start gathering the data in order to meet the dates specified by the standard.

**Agenda Item 6 – Keystone XL Pumping Station Load:**

Derek Brown quickly asked if anyone was re-examining the inclusion of the loads to be included in the models. He asked if SPP has communicated with TransCanada lately. Michael stated that he would reach out to SPP management to find out if there have been any discussions and how that process should be initiated.

**\*\*Action Item\*\*:** Michael to reach out to SPP Management to find out if TransCanada has communicated with SPP on the Keystone XL project.

**Agenda Item 7 – MDWG Manual TF Members:**

Anthony announced the individuals that expressed interest in being part of the taskforce to update the MDWG procedure manual. He will get in contact with those individuals to schedule time to begin working on the manual.

**Agenda Item 8 – 2016 Organizational Effectiveness Survey Analysis:**

This item was postponed to a later meeting.

**Agenda Item 9 – SPP Engineering Hub Training/Testing:**

This item was postponed to a later meeting.

**Agenda Item 10 – Frequency of MDWG Meetings:**

This item was postponed to a later meeting.

**Agenda Item 10 – Administrative Items:**

**Summary of Action Items**

- Find out about units without firm service in the CBR models. Will the Tariff language change for the protection of firm service?
- Find out what the dispatch order will be in the CBR model, i.e. block or ECDI.
- Michael to set up a small group call for modeling PSTs.
- Data Submitting Entities submit sequence data updates by April 28, 2017 for the Short Circuit model build.
- Moe to post the dyre file.
- Moe to address SLG.
- Michael to reach out to SPP Management to find out if TransCanada has communicated with SPP on the Keystone XL project and how that process should be initiated.

**Future Meetings**

- TBD

**Adjourn Meeting**

With no further business to discuss, Nate asked for a motion to adjourn. Reené Miranda motioned to adjourn the meeting, Scott Schichtl seconded the motion. The motion passed unopposed. The meeting adjourned at 12:16 p.m.

Respectfully submitted,  
Anthony Cook  
SPP Staff Secretary