



**Southwest Power Pool, Inc.
Model Development Working Group
November 12, 2014
SPP Corporate Offices
Little Rock, Arkansas
1:00 P.M. – 5:00 P.M.**

• M I N U T E S •

Agenda Item 1 - Administrative

The meeting was called to order at 1:00 p.m. The following Model Development Working Group (MDWG) members were in attendance:

Nate Morris, Chair – Empire District Electric Company
Dustin Betz – Nebraska Public Power District
John Boshears - City Utilities of Springfield
Derek Brown – Westar Energy
Nathan McNeil – Midwest Energy
Reené Miranda – Southwestern Public Service
Scott Rainbolt – American Electric Power
Brian Wilson – Kansas City Power & Light
Jason Shook – GDS Associates
Liam Stringham – Sunflower Electric Power Corporation

SPP Staff in attendance included Anthony Cook (Secretary), Brandon Hentschel, Mitch Jackson, Scott Jordan, John Mills, Michael Odom, Chris Haley, Chris Jamieson, Clayton Mayfield, Rosemary Mittal, Zack Bearden, Daniel Harless, James Bailey, and Doug Clark.

The following guests were also in attendance:

Jason Bentz, Tony Tong – American Electric Power
Martin Green, Dona Parks – Grand River Dam Authority
Peter Howard – Kansas City Power & Light
Aravind Chellappa – Southwestern Public Service
Jerry Bradshaw, Kevin Foflygen - City Utilities of Springfield
Gimod Olapurayil – ITC Great Plains
Mark Reinart – Golden Spread Electric Cooperative
Alex Mucha – Oklahoma Municipal Power Authority
Jared Ethridge, James Thomas Jr. – Oklahoma Gas & Electric
John Weber – Missouri River Energy Services
Bruce Doll – Municipal Energy Agency of Nebraska
William Hawkins – Western Farmers Electric Cooperative
David Fargo – Omaha Public Power District
Danny Parrish – Green Country

Proxies

Martin Green for Joe Fultz

*Power Pool
Group Membership Update*

Liam Stringham filled the member position left vacant by Mike Clifton and was approved by President and CEO of SPP Nick Brown.

Meeting Agenda

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

The agenda was reviewed by the group. The agenda was rearranged in order of importance. Two additional items, TPL 007-1 and MDWG Membership Survey, were added to discuss if time allows. Scott Rainbolt motioned to approve the agenda with changes; Derek Brown seconded the motion. The motion passed unopposed.

(Attachment 1 - MDWG Meeting Agenda 20141112.docx)

Meeting Minutes

The October 23, 2014 minutes were open for review. Anthony presented changes made to the minutes. Brian Wilson motioned to approve the minutes with changes. Jason Shook seconded the motion. The motion passed unopposed.

(Attachment 2 - MDWG Minutes October 23, 2014.docx)

Agenda Item 2 – TPLTF Updates:

Michael Odom presented updates for the TPLTF per the provided PowerPoint presentation posted with the background materials. He stated to contact anyone on the Taskforce if there were additional questions. Scott Rainbolt stated the Taskforce is working with the SPP Regional Entity (RE) to send out a guidance letter to the Compliance Departments of each SPP Member company.

Nate Morris asked what the individual companies need to be prepared for as far as work load and time frame. The Taskforce plans to have a Guidance Document posted by February 2015 that addresses stability criteria, but focuses mainly on R1 and R7 of the TPL-001-4 standard. Nate Morris asked if the Taskforce could expand on how much more stability analysis will be needed. Reené Miranda simply stated it could be a significant amount. Nate pointed out his concern and suggested each company make sure they have the needed trained staff to perform the required stability analysis. Derek Brown stated there is a TWG action item to determine a tool for stability analysis. Michael stated he will follow up with Kirk Hall. John Boshears asked how much responsibility individual utilities have versus SPP to perform these analyses. Michael said the Taskforce currently does not have an accurate portrayal of the amount of work the PC and TOs will have to do, but they are working on a scope document to be out sometime in December.

Dustin Betz asked about a schedule for developing the contingency files by SPP. Scott Jordan stated Staff plans to provide the files for review with the final 2015 Series MDWG model set. Michael stated that additional discussion is needed by Staff to further determine a schedule.

Nate asked if SPP plans on hosting another Dynamic Workshop next summer. Scott Jordan stated the goal is to start having them annually.

Agenda Item 3 – ITP 10 Model Review:

Clayton Mayfield presented on ITP 10 process improvements and plans to have the steady state modeling contacts participate in the Economic Group's data updates per the provided

PowerPoint presentation and Excel Workbook posted with the background materials. Currently the ESWG has a month to review the data which can end up with discrepancies when compared to the powerflow models. Clayton explained the data in the workbook and asked the group if the modeling contacts would be willing to help update the data to get it more accurate.

Reené stated that SPS doesn't have data for IPPs for percent based ownership. Chris Jamieson stated that these records are not used for just ownership but also for purchase percentages and that IPPs would need to be thought about more by the Economic group as to who is responsible for that data. Nate Morris asked about generation outside of the SPP footprint. Chris said those would also fall under the same problem as IPPs.

Derek Brown asked if SPP Staff is asking the members to start reviewing the data now and when is it due. Anthony stated the idea is for the members to be aware of the data earlier instead of waiting until one month prior to the build. He stated that the plan is to post the data with each pass in future MDWG model builds. Derek asked how SPP wants to handle it this year since the 2015 series is almost complete. Nate stated that since the 2015 Series models are on a tight schedule it would be best to wait until January to start the review. Chris and Clayton agreed that waiting until January would be fine.

Derek commented on modeling auxiliary load for generators. He stated that in some cases the auxiliary load is two-thirds the maximum value when the unit is off. He stated that it could be cumbersome modeling the auxiliary load compared to the unit output. John Boshears stated it can be more complicated if there are multiple units at a plant. Clayton stated the auxiliary load data will be removed from the data workbook until the MDWG has a chance to discuss best modeling practices of auxiliary load.

AI: Clayton Mayfield to post economic data workbook.

AI: Modeling contacts to review the Economic Planning workbook in January.

AI: Staff to check with the TPLTF on how to handle auxiliary loads in the ITP models.

Agenda Item 4 – MOD-32 Requirement 1 Gap Analysis:

Anthony Cook asked the group if the gap analysis posted with the background materials fulfilled the need of the request. Derek Brown stated that it appeared to be sufficient. Nate Morris asked for the MDWG Participation Sheet to be updated to support MOD-32 data requirements.

AI: SPP Staff to update the MDWG Participation sheet to support MOD-32 data requirements by February 1, 2015.

Agenda Item 5 – NERC Requirements: Compliance for IPPs:

Scott Rainbolt stated Green Country requested information to meet the new MOD standards. He referenced the letters sent out by SOO to gather generation data. He asked SPP to provide a different specification sheet for the IPP owners since they do not have PSS/e and incorporate it into the MDWG Procedure Manual. Derek Brown stated that it might be difficult to capture all data in one generic specification sheet. Scott Jordan stated that Staff would like to work one-on-one with individuals to gather the needed data. Reené stated that one option to gather the needed data is through NATF. John Mills answered that the issue with NATF is they require a password for accessibility. Scott Jordan added that the data is too generic for PSS/e. Reené stated the SPS generation group put together a procedure to contact the manufacturer to get the information or hire a subject matter expert. SPP Staff is continuing to look at ways to request data.

Agenda Item 6 – MMWG Update:

Anthony stated that the MMWG is migrating to PSS/e version 33 for powerflow but are still working on testing for dynamics. Anthony stated that SPP will be moving to version 33 for the 2016 MDWG series model build.

He then stated what models the MMWG are proposing to the ERAG Management Committee for the 2015 series build. If approved, there will be several models that don't have a one-for-one match from the MDWG set. He stated that SPP Staff may have to ask for profiles to be submitted to support the extra models when the MMWG begins to build the 2015 series.

AI: Anthony to provide the 2015 Series MMWG case list once decided upon.

Agenda Item 7 – Model Dispatch Options:

Zack Bearden gave an overview of potential improvements to dispatching the ITP NT models. Staff is looking to incorporate something in future builds. He stated he is looking into creating PSS/e ECDI files based on economic data from recent market data. This would replace the current method of using a block dispatch. Brandon Hentschel said that the ECDI file is much easier to maintain versus the block dispatch. Nate Morris asked if a priority report could be provided to the members for an initial review. Nathan McNeil asked how companies with long term contracts with other companies would be handled. Nate asked how often the data would need to be reviewed. Zack answered once a year as is the current process. Zack stated Staff would build parallel models for testing purposes before fully implementing this new process. Anthony added that the main purpose for now is to present the concept to the MDWG to spark discussion and weed out any possible deficiencies.

Agenda Item 8 – Definition of Pmax:

Anthony stated that this item wasn't needed. Per the approved "Modeling of Generator Parameters" document, the generator parameter PMAX shall be modeled as a gross seasonal maximum capability based on MOD-025-02 and SPP Criteria 12.1 testing and reporting procedures.

Agenda Item 9 – Model Development Procedure Manual:

General Updates

Anthony presented the changes made to the manual. The group asked to update the membership section as well. The group made edits to the short circuit updates. Reené asked how windfarms are handled during short circuit analysis. Staff will have to review and report back to the group. The group directed Staff to not make the generator changes in the manual until the required date. Leave the Generator Parameter sheet but add a footnote for effective date.

AI: Staff to ask Doug Bowman how windfarms are handled in short circuit analysis. How they should be modeled.

AI: Provide updated manual to MDWG for approval by November 21.

Agenda Item 10 – Modeling Practices of Windfarms; GI updates:

The discussion continued from the meeting held on October 23, 2014. Anthony asked multiple vendor turbines are used on one collection system and are they modeled as one aggregated unit or as separated. Several members stated that situation is not typical.

Derek Brown stated that it is usually much easier to get the needed data prior to interconnection than after the windfarm has gone in-service. He stated that one way is to make it a milestone in

the interconnection agreement. Reené stated that MOD-32 requires the owner to provide the data within 90 days of request. Derek added that the owners are required to validate the data is correctly represented.

Agenda Item 11 – TPL 007-1: Tabled

Agenda Item 12 – MDWG Membership Survey: Tabled

Agenda Item 13 – Summary of Action Items:

- Clayton Mayfield to post economic data workbook.
- Modeling contacts to review the Economic Planning workbook in January.
- Anthony to provide the 2015 Series MMWG case list once decided upon.
- Staff to ask Doug Bowman how windfarms are handled in short circuit analysis. How they should be modeled.
- Provide updated manual to MDWG for approval by November 21.
- Staff to check with the TPLTF on how to handle auxiliary loads in the ITP models.
- Anthony to solicit nominations for Vice Chair position.

Adjourn Meeting

Scott Rainbolt motioned to adjourn the meeting, Dustin Betz seconded the motion. The motion passed unopposed.

Respectfully submitted,
Anthony Cook
SPP Staff Secretary



**Southwest Power Pool, Inc.
MODEL DEVELOPMENT WORKING GROUP
November 12, 2014
SPP Corporate Offices
Little Rock, Arkansas
1:00 P.M. – 5:00 P.M.**

• A G E N D A •

1. Administrative Items Nate Morris (20 min)
 - a. Call to Order
 - b. Introductions
 - c. Proxies
 - d. Group Membership Update
 - e. Agenda Review (Action Item)
 - i. Meeting Materials
 - f. Previous Meeting Minutes (Action Item)
 - i. October 23, 2014 Conference Call
2. TPLTF Updates Scott Rainbolt (30 min)
3. ITP 10 Model Review Clayton Mayfield (30 min)
4. MOD-32 Requirement 1 Gap Analysis All (min)
5. NERC Requirements: Compliance for IPPs Scott Rainbolt (min)
6. MMWG Update All (min)
 - a. PSS/e Version 33 Migration
 - b. Proposed Model Set
7. Model Dispatch Options Zack Bearden (min)
8. Definition of Pmax Anthony Cook (min)
9. Model Development Procedure Manual All (min)
 - a. General Updates
10. Modeling Practices of Windfarms: GI updates All (min)
11. TPL 007-1 All (min)
12. MDWG Membership Survey Anthony Cook (min)
13. Summary of Action Items Anthony Cook (5 min)



**Southwest Power Pool
MODEL DEVELOPMENT WORKING GROUP**

October 23, 2014

Conference Call

2:00 – 4:00 P.M.

• M I N U T E S •

Agenda Item 1 - Administrative

The meeting was called to order at 1:00 p.m. The following Model Development Working Group (MDWG) members were in attendance:

Nate Morris, Chair – Empire District Electric Company
Joe Fultz – Grand River Dam Authority
Dustin Betz – Nebraska Public Power District
John Boshears - City Utilities of Springfield
Derek Brown – Westar Energy
Mike Clifton – Oklahoma Gas & Electric
Nathan McNeil – Midwest Energy
Reené Miranda – Southwestern Public Service
Scott Rainbolt – American Electric Power
Scott Schichtl – Arkansas Electric Cooperative
Brian Wilson – Kansas City Power & Light
Jason Shook – GDS Associates

SPP Staff in attendance included Anthony Cook (Secretary), Brandon Hentschel, Mitch Jackson, Scott Jordan, John Mills, Sunny Raheem, and Doug Clark.

The following guests were also in attendance:

Peter Howard – Kansas City Power & Light
Jerry Bradshaw - City Utilities of Springfield
Holli Krizek, Ben Hammer – Western Area Power Administration
Wayne Haidle, Jeremy Severson – Basin Electric
Gimod Olapurayil – ITC Great Plains
Martin Green, Dona Parks – Grand River Dam Authority
Mark Reinart – Golden Spread Electric Cooperative
Alan Burbach – Lincoln Electric System
Thomas Mayhan – Omaha Public Power District
Alex Mucha – Oklahoma Municipal Power Authority
John Payne – Kansas Electric Power Cooperative
Liam Stringham – Sunflower Electric Power Corporation
James Thomas Jr. – Oklahoma Gas & Electric
John Weber – Missouri River Energy Services
Bruce Doll – Municipal Energy Agency of Nebraska

Group Membership Update

Joe Fultz stepped down as chair after serving in this position for 2 ½ years. Nate Morris filled the position and was approved by President and CEO of SPP Nick Brown and the Chairman of the Board of Directors Jim Eckelberger. Anthony will solicit the members to fill the Vice Chairman position.

Mike Clifton is retiring and therefore stepping down as a member of the group. This will leave an open position. Anthony will solicit for applicants to fill the position.

Meeting Agenda

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

The agenda was reviewed by the group. Scott Schichtl motioned to approve the agenda; Jason Shook seconded the motion. The motion passed unopposed.

(Attachment 1 - MDWG Meeting Agenda 20141023.docx)

Meeting Minutes

The July 1, 2014, August 14, 2014 and September 17, 2014 minutes were open for review. Jason Shook motioned to approve all three sets. Scott Schichtl seconded the motion. The motion passed unopposed.

(Attachment 2 - MDWG Minutes July 1, 2014.docx)

(Attachment 3 - MDWG Minutes August 14, 2014.doc)

(Attachment 4 - MDWG Minutes September 17, 2014.docx)

Agenda Item 2 – MDWG Model Building Activities:

2014 Series Dynamic Update

Scott Jordan stated that the models have been approved and posted. Nathan McNeil requested that members be notified of needed changes earlier in the model building process to avoid any confusion or delays. Scott stated that earlier data change coordination will be implemented in future builds.

Agenda Item 3 – New SPP Website Presentation:

This item has been tabled for the November 12, 2014 meeting.

Agenda Item 4 – Modeling Practices of Windfarms; GI updates:

Doug Clark with the SPP Generation Interconnection (GI) Studies department discussed the desire for in-service wind farms to be modeled on the generator bus voltage (e.g. 0.69 kV) with GSU transformers represented, as called for within the MDWG Manual. He stated that if not modeled correctly, his group will modify the models to this detailed representation when performing interconnection studies. The problem is that the information for studies is preliminary and should not be used once the generation goes in-service. He stated that the GIA requires the wind farm owner to supply as built data to the Transmission Planner. Derek Brown stated that Westar has a template he uses to request as built information. Scott Rainbolt asked if he would provide the template to the group. Derek agreed to do so. Anthony stated that this would work toward the goal of

increasing model consistencies between the various groups and studies. He also stated that the GI and Modeling departments are working together to provide a feedback loop. Doug stated that any member that has questions about specific planned or studied generators in their area can contact him to coordinate data and modeling needs. Nate Morris asked the group to think about this and be ready to further discuss at the November 12, 2014 meeting.

AI: Derek Brown to provide the Wind Farm data request template.

Agenda Item 5 – Model Development Procedure Manual:

General Updates

Anthony presented the changes made to the manual. The group discussed and made additional edits. These changes are captured in the redlined copy attached with the minutes. The group did state that the short circuit section should include a summary of how the models are built. Anthony and Brandon Hentschel will add this for future edit approval. Reené Miranda motioned to approve the updates. Derek Brown seconded the motion. The motion passed unopposed.

(Attachment 5. SPP MDWG Model Development Procedure Manual (Public).doc)

AI: Anthony and Brandon to add summary of how short circuit models are built.

Agenda Item 6 – Summary of Action Items:

- **Derek Brown to provide the Wind Farm data request template.**
- **Anthony and Brandon to add summary of how short circuit models are built to the procedure manual.**

Agenda Item 7 – Little Rock Meeting:

Nate asked for a summary for what would be discussed about the short circuit models at the November 12, 2014 meeting.

It was requested to add an agenda item to discuss moving to PSSE version 33.

Nate asked if a record of attendance can be kept at the Model Update meeting and sent out to the entities.

Adjourn Meeting

Scott Rainbolt motioned to adjourn the meeting, Derek Brown seconded the motion. The motion passed unopposed.

Respectfully submitted,
Anthony Cook
SPP Staff Secretary