

**Southwest Power Pool, Inc.**

**VOLTAGE TASK FORCE**

**Face to Face Kansas City, MO**

**Wednesday July 27, 2016 1:00 p.m. - 5:00 p.m.**

**Thursday July 28, 2016 8:00 p.m. - 12:00 p.m.**

**• A c t i o n I t e m s a n d V o t i n g R e c o r d •**

**Action Item 1: Provide a list outages utilized in the VIS models.**

**Action Item 2: PLI to provide a list of feeder constraint issues to SPP.**

**Action Item 3: Work with TPITF and other Working Groups to determine which issues are defined as chronic issues from draft list before beginning scope development.**

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**• M I N U T E S •**

**Administrative Items / Attendance / Agenda Review**

Chairman Mark Eastwood (City Utilities of Springfield, Mo) called the VTF to order at 1:03 PM on 7/27/2016, and 8:04 AM on 7/28/2016.

Jason Tanner (Southwest Power Pool) called attendance.

Mark Eastwood reviewed and set the agenda.

**Consent Agenda**

**Mark Ahlstrom (NextEra Energy Resources, WindLogics) moved to approve the Consent Agenda, and Kyle Drees (Westar Energy) seconded the motion. The motion was approved without opposition or abstention.**

**Approval Items and Staff Reports for Discussion**

**Agenda Item 5 – NERC Drafting Team “Voltage Limits and SOLs”**

Jason Smith (Southwest Power Pool) provided an update to the NERC drafting teams Voltage limits and SOL discussions. Jason stated that in 2014 changes were made to TOP and IROL standards for real-time operations responsibilities that consolidated the standards to 7 standards. Jason stated that SOL was replaced with SOL Exceedance, and the Industry agreed to review FAC10, 11, 14 in relation of SOLs and IROLs. Jason presented a document explaining where the Drafting team stands on SOLs, and discussed the 45 day posting review, which ends August 17<sup>th</sup>. Jason stated that SPP will host a conference call on August 4.

**Agenda Item 6 – PLI 2017 VIS Update**

Frederic Howell (PowerTech Labs) provided an update to the status for the 2017 VIS, Fredrick stated he will provide more analysis about constraints around wind farms, and the associated limitations on transmission. The VTF requested a review of the draft report October 15, 2017 prior to the release of the final report. Questions were addressed around what models were used and what triggers executed the expansion for additional wind capacity within the models. The 2017 MDWG models were used as a base case, and the existing wind farms within the model were used to increase the wind penetration levels, and additional wind capacity was not needed from the GI queue to achieve 60% wind penetration.

**Agenda Item 7 – TPITF Chronic Operational Issues**

English Cook (Southwest Power Pool) discussed that TPITF Chronic Operational Issues, and stated that propose of the TPITF. English stated that the TPITF was tasked with developing recommendations that produce more progressive, forward-thinking, regional planning processes that is responsive to the continued growth of SPP’s transmission system and markets. English stated that TPITF will not commission an Operation Study or issue NTCs, and the next step is for SPP Staff to identify the necessary working groups to assess the white paper changes. Jason Tanner (Southwest Power Pool) recommended

to the VTF that we utilize the 2018 VIS scope to address the identified chronic recurring operational issues. Jason provided a draft list of issues from the MMU report, but stated that we would need to first determine through the stakeholders group what is considered a chronic operational issue, and once that is defined the VTF could begin work to develop a scope to assess the issues.

#### **Agenda Item 8 – 2018 VIS Draft Scope**

Jason Tanner (Southwest Power Pool) discussed the comments submitted from the VTF members and the group worked to continue expanding the scope. The group recommended studying a scenario where known retirements for coal facilities are converted to synchronous condensers and utilized during light load and high wind and solar penetration. Jason Tanner (Southwest Power Pool) continued discussions from the TPITF Chronic Operational Issues discussion into scoping mini studies for the 2018 VIS. Steve Gaw (The Wind Coalition) recommended that the VTF either focus on creating high priority studies for the 2018 VIS that addresses the chronic operational issues or focus on producing another study similar to the 2018 VIS. Steve stated that if we choose to study the chronic operational issues and issue NTCs then we would need to determine how the projects fit into FERC Order 1000.

#### **Agenda Item 9 – Online VSAT Status**

Will Tootle (Southwest Power Pool) discussed using online VSAT inputs and models and how the results would input into analysis tools. Will stated that transfers could be created to identify breaking points and instability. Will stated that Online VSAT would use inputs from EMS, and we could create different scenarios across footprint, while running analysis every 15 minutes. Will discussed the online mode and study horizon, and the real-time mode looking at current system conditions. Will stated that the look-ahead mode would extract data from market database to create cases 4 hours ahead to mitigate issues before they occur. Will stated that study mode would be used to do ad hoc studies on voltage stability to analysis a few days ahead to schedule outages where needed. Will stated that implementation of VSAT to interface with EMS would begin January 2017, and may take around a year to implement. Will stated that during implementation we would include scenarios we know about, but would like to ask for input on other specific areas from membership now.

#### **Agenda Item 10 – Dynamics – Transient Stability**

Doug Bowman (Southwest Power Pool) discussed the transient stability analysis that SPP would be performing for the 2017 VIS. Doug discussed fast fault screening and how to identify and determine the most severe fault locations. Doug explained transient instability and provided examples of generators operating with differences in rotor angles, and how large disturbances cause rotor angles to oscillate. Doug explained the factors that influence rotor angle stability, and discussed why wind turbines are not impacted by rotor angle instability, since they are inductive machines. Doug discussed the importance of 60 Hz grid frequency and explained PRC-006-2 Under Frequency Load Shedding requirements. Doug discussed the impact of generation loss and the impacts of wind on frequency dynamics. Doug stated that the 2017 VIS would utilize the 2016 light load case with 45% and 60% wind penetration with generic 1<sup>st</sup> generation wind turbines converted to 2<sup>nd</sup> generation. Doug stated that assessments will utilize DSATools TSAT, and will assess Wind turbine synthetic inertia controls off in the base case and on in the change case. Doug stated that we will determine frequency response (Nadir and Recovery) to determine if SPP provides enough additional inertial response to arrest frequency decline before UFLS engages.

### **Agenda Item 11 – EMS Modeling Changes Status Report**

Mike Nugent (Southwest Power Pool) discussed the state estimator voltage improvements, and stated that modeling is verifying transformer tap changers, generator MVAR capability curves, and voltage schedules. Modeling is making adjustments to SCADA measurement weighting and verifying and adjusting inbound KV SCADA measurements. Mike stated that the EMS Engineering group has already completed improvements for automatic capacitor switching to regulate voltage, and to utilize AVR telemetry for generators. Mike stated that adjustments have been made to the EMS model to lower the standard deviation allowed for KV measurements, which effectively gives more weight to SCADA, and forces State Estimator to solve closer to actual KV measurements. Mike stated that staff experimented with different standard deviations and found .1 to be optimal, and the changes will be in production on 8/1/16.

### **Agenda Item 12 – Voltage Criteria Holdback Margin**

Harvey Scribner (Southwest Power Pool) discussed voltage stability and the ability to maintain steady voltages after a large disturbance. Harvey also discussed voltage collapse and the process by which a sequence of events accompanying voltage instability leads to abnormally low voltages or system collapse. Harvey discussed real and reactive power reserve margins and the need for a voltage criteria percentage holdback margin. Harvey discussed the margins used by California ISO, which is 5% for the worst single contingency and 2.5% for the worst multiple contingencies. The VTF discussed creating a small group to gather information and perform voltage criteria comparisons between California ISO, Ercot, MISO, SPP, and PJM with the goal of developing new SPP Voltage operating criteria. Neal Faltys (Omaha Public Power District) and Sakshi Mishra (American Electric Power) volunteered to lead the research efforts and Mike Grimes (EDP Renewables) stated he would discuss with Rouslan Tzartzev (EDP Renewables) about availability. The small group will report back to VTF during the August 30, 2016 VTF meeting.

### **Agenda Item 13 – RUC and STRUC**

Ricky Finkbeiner (Southwest Power Pool) provided an overview of the STRUC process and stated that SPP implemented the STRUC process in the spring of 2016. Ricky stated that the purpose of the study is to recommend commitments and extensions with more granularity than the Day Ahead Market, Day Ahead RUC, and Intra-Day RUC. Ricky stated that the STRUC also reduced the number of manual commitments made in real-time by smoothing transitions with small granularity extensions. Ricky discussed the timeline of STRUC, the network topology, and how load and wind forecast are utilized within STRUC. Ricky also discussed how STRUC utilizes constraints, and how the study honors other obligations such as scheduled transactions, ramping headroom and floor room. Ricky stated that commitments made from STRUC are based on the ability to start within a study window, cost, and economics to be online within the study window. Ricky stated that STRUC has provided SPP operators with more granular control to mitigate short term ramping needs for Energy and operating reserves, flowgate control, extending or early starting resources with commitments for congestion management, and it allows SPP operators to hold off commitments for more flexible resources.

### **Agenda Item 10 – Meeting Schedule**

- a. 8/30/2016, Net Conference, 0830-1200
- b. 9/28/2016, Net Conference, 0830-1200
- c. 10/26/2016, Net Conference, 0830-1200

**Agenda Item 11 – Adjourn**

Chairman Mark Eastwood (City Utilities of Springfield, Mo) adjourned the VTF at 5:11 PM on 7/27/2016.

Chairman Mark Eastwood (City Utilities of Springfield, Mo) adjourned the VTF at 12:05 PM on 7/28/2016.

Respectfully Submitted,

Jason Tanner  
Secretary



**Operating Reliability Working Group**  
**Meeting Attendance: 7/27/2016 - 7/28/2016**  
**M=Member, G=Guest, S=SPP Staff, P= Proxy**



Day 1			Name	Status	Company
x	x	1	Chariman Mark Eastwood	M	City Utilities Springfield
A	x	2	Jim Useldinger	M	South Central MCN
x	x	3	Kevin Harrison	M	ITC Holdings Corp.
x	x	4	Sakshi Mishra	M	AEP Service Corporation
x	x	5	Mark Ahlstrom	M	NextEra Energy Resources, WindLogics
P	P	6	Feng (Kevin) Ma	M	Oklahoma Gas and Electric
P	P	7	Rouslan Tzartzev	M	EDP Renewables
x	x	8	Clinton Bruhn	M	Lincoln Electric System
x	x	9	Kyle Drees	M	Westar Energy
x	x	10	Dustin Betz	M	Nebraska Public Power District
x	x	11	Neal Faltys	M	Omaha Public Power District
x	x	15	Bryn Wilson	P	Proxy for Feng (Kevin) Ma
x	x	12	Mike Grimes	P	Proxy for Rouslan Tzartzev
x	x	12	Derek Brown	G	Westar Energy
x	x	13	Allan George	G	Sunflower Electric Power Corporation
x		14	Bernie Liu	G	Xcel Energy
x		16	Fred Howell	G	PowerTech Labs
x	x	17	Jamie Hajek	G	NorthWestern Energy
x		18	Josie Daggett	G	Western Area Power Administration
x		19	Natalie Jackson	G	Golden Spread Electric Cooperative, Inc.
x		20	Robert Hirschak	G	Cleco
x		21	Ron Thompson	G	Nebraska Public Power District
x		22	Ross Hohlt	G	Ameren
x	x	23	Tanner New	G	Sunflower Electric Power Corporation
	x	24	John Allen	G	City Utilities of Springfield
	x	25	John Stephens	G	City Utilities of Springfield
x		26	Jeff Knottek	G	City Utilities of Springfield
x		27	John Boshears	G	City Utilities of Springfield
x		28	Jerry Bradshaw	G	City Utilities of Springfield
x	x	29	Steve Gaw	G	The Wind Coalition
x		30	Kevin Sanson	S	Southwest Power Pool
x	x	31	Will Tootle	S	Southwest Power Pool
x	x	32	Jason Tanner	S	Southwest Power Pool
x	x	33	Kim Gorter	S	Southwest Power Pool
x		34	Jason Smith	S	Southwest Power Pool
x	x	35	Harvey Scribner	S	Southwest Power Pool
x	x	36	Neil Robertson	S	Southwest Power Pool
x	x	37	Charles Hendrix	S	Southwest Power Pool
x	x	38	Mike Nugent	S	Southwest Power Pool
x		39	Cody Parker	S	Southwest Power Pool
x		40	English Cook	S	Southwest Power Pool