

**Southwest Power Pool
TRANSMISSION WORKING GROUP MEETING
April 24, 2013
Net Conference**

• Summary of Action Items •

1. TWG approved BPR-035 as amended.
2. TWG approved BPR-036 as presented.

**Southwest Power Pool
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• M I N U T E S •

Agenda Item 1 – Administrative Items

TWG Chair Noman Williams called the meeting to order at 9:01 a.m. The following members were in attendance or represented by proxy (Attachment 1 – Proxies):

Mo Awad, Westar Energy, Inc.
Scott Benson, Lincoln Electric System
John Fulton, Southwestern Public Service Co.
Travis Hyde, Oklahoma Gas & Electric
Dan Lenihan, Omaha Public Power District
Randy Lindstrom, Nebraska Public Power District
Jim McAvoy, Oklahoma Municipal Power Authority
Matt McGee, American Electric Power
Nate Morris, Empire District Electric Company
Michael Mueller, Arkansas Electric Cooperative Corp.
Alan Myers, ITC Great Plains
John Payne, Kansas Electric Power Co.
Maureen Ochola for Jason Shook, GDS representing East Texas Electric Coop.
Tim Smith, Western Farmers Electric Cooperative
Noman Williams, Sunflower Electric Power Corporation and Al Tamimi for Noman Williams

The following stakeholders and staff were also in attendance:

Roy Boyer, Southwestern Public Service Company
Bob Burner, Duke Energy
Kevin Demeny, American Transmission Company
Christin Domian, Mitsubishi
Wayne Galli, Clean Line Energy
Terri Gallup, American Electric Power
Steve Gaw, Wind Coalition
Noumvi Ghomsi, Missouri Public Service Commission
Matt Gomes, Lone Star Transmission
Kirk Hall, SPP Staff
Jody Holland, SPP Staff
Rachel Hulett, SPP Staff
Don Le, Lone Star Transmission
Bob Lux, SPP Staff
Steve Purdy, SPP Staff
Al Tamimi, Sunflower Electric Power Corporation
Wayman Smith, American Electric Power
Pat Wilkins, Tres Amigas

Rachel Hulett, SPP staff, noted that there was a quorum.

Agenda Item 2 – Business Practice Reviews

BPR-035: PCWG Review of Legacy Projects Over \$20M and 100 kV

PCWG Chair Terri Gallup presented BPR-035: PCWG Review of Legacy Projects Over \$20M and 100 kV, which address a MOPC action item for PCWG to review legacy upgrades greater than \$20 million and greater than 100 kV. TWG revised BPR-035 (Attachment 2a – BPR-035). Terri stated PCWG will add definition(s) based on TWG's feedback.

Travis Hyde made a motion to approve modified BPR-035 to Business Practice 7050. Mo Awad seconded the motion which passed unopposed.

BPR-036: Definition of Applicable Project for PCWG Review

Terri Gallup shared BPR-036: Definition of Applicable Project for PCWG Review (Attachment 2b – BPR-036). The change will provide for PCWG oversight for projects when their cost estimates increase above \$20 million.

Travis Hyde motioned to approve BPR-036 to Business Practice 7060. The motion, which was seconded by Mo Awad, passed unopposed.

Agenda Item 3 – 2015 ITP10 Update

Rachel Hulett, SPP staff, presented to TWG an update on the current progress of the 2015 ITP10 as well as the data that will be needed from stakeholders (Attachment 3 – 2015 ITP10 Update). Noman suggested that in addition to member contacts staff should send the policy survey to MOPC representatives as well. Noman also suggested that extra efforts be made to model WAPA, Basin, and Heartland facilities correctly in anticipation they may decide later this year to join SPP. Alan Myers, ITC Great Plains, also recommended incorporating contingencies at lower voltage levels for those areas.

Rachel mentioned discussion from the April MOPC meeting. The MOPC discussed the need for a study to understand impacts of oil and gas load in certain areas of the SPP footprint and discussed addressing this with two possibilities: as a future in 2015 ITP10 or as a high priority study. Members discussed the options and asked that this topic be on the agenda for TWG's next meeting. TWG asked staff to prepare information on cost and resource needs as part of this discussion. Alan Myers proposed TWG develop rules for consistently modeling these oil and gas loads for either study option at its next meeting.

Agenda Item 4 – Interconnection Updates

Tres Amigas

John Fulton, SPS, and Pat Wilkins, Tres Amigas, updated the TWG on the progress of Tres Amigas interconnection and the upcoming powerflow and dynamic studies (Attachment 4a – Alstom Grid TA studies). John and Pat stated they are working to determine the affected parties and study models for the respective studies. Noman suggested that John send out an interconnection notification following Criteria 3.5.

Noman Williams left the meeting and gave Al Tamimi his proxy for the remainder of the meeting. Travis Hyde, Vice Chair, led the remainder of the meeting.

Clean Line Grain Belt Express

Wayne Galli, Clean Line Energy, updated TWG on the progress of the Grain Belt Express interconnection review (Attachment 4b – GBX Update). Since Clean Line is ahead of schedule, they proposed providing their studies to TWG in early May for review and TWG voting on the interconnection on its June 26 TWG conference call.

Jody Holland stated staff is also working on a study for this interconnection, but it may not be complete in this same timeframe. Staff will advise Clean Line on the study schedule. A modified schedule may be brought back to TWG in May.

Agenda Item 5 – Other

Staff reviewed the major agenda items for the May 14 TWG meeting.

Seeing there was no further business the meeting was adjourned at 10:17 a.m.

Respectfully Submitted,

Rachel Hulett
Secretary

ETEC, Maureen Ochola for Jason Shook

From: Jason Shook [mailto:Jason.Shook@gdsassociates.com]
Sent: Friday, April 19, 2013 6:04 PM
To: Rachel Hulett; Williams, Noman
Cc: Ochola, Maureen; Chiles, John
Subject: Proxy for April 24 TWG call

Rachel, Noman,

Maureen Ochola will have the ETEC proxy for the TWG call on April 24, 2013.

Thanks,

Jason Shook
GDS Associates, Inc.
770-425-8100 ext 1137
770-426-0303 (fax)
jason.shook@gdsassociates.com

Sunflower Electric, Al Tamimi for Noman Williams

During the meeting, Noman Williams verbally gave his proxy to Al Tamimi.

Business Practice Revision

BPR Number 7050	BPR035	BPR Title	PCWG Review of Legacy Projects Over \$20M and 100 kV
Business Practice Section(s) Requiring Revision (include Section No., Title, and Protocol Version)		COST ESTIMATES	
Impact Analysis Required (Yes or No)		No	
MMU Report Required (Yes or No)		No	
Requested Resolution (Normal or Urgent)		Normal	
Revision Description		Replace SPP staff review with Project Cost Working Group (PCWG) review for projects greater than 100 kV and greater than \$20 million.	
Reason for Revision		MOPC directive in January 2013 meeting	
Tariff Implications or Changes (Yes or No; If yes include a summary of impact and/or specific changes)		No	
Criteria Implications or Changes (Yes or No; If yes include a summary of impact and/or specific changes)		No	
Credit Implications (Yes or No, and summary of impact)		No	
Working Group/Committee Review and Results		BPWG – ORWG – RTWG – TWG – MOPC –	

Business Practice Revision

Sponsor	
Name	Terri Gallup, PCWG Chair
E-mail Address	tagallup@aep.com
Company	American Electric Power
Company Address	Tulsa, OK
Phone Number	918.599.2242
Fax Number	

Proposed Business Practice Language Revision

COST ESTIMATES

As part of the quarterly project tracking effort as specified in Attachment O of the SPP OATT, Staff will review the cost estimates provided by the designated Transmission Owner(s) and compile a list of Legacy Projects with a cost estimate increase of more than 20% from the previous quarter. For Legacy Projects greater than 100 kV and greater than \$20 million, Staff will provide the updated information to the Project Cost Working Group (PCWG).

Comment [RH1]: "Legacy Projects" needs definition

The PCWG will review and provide recommendations to the MOPC and SPP Board of Directors (BOD) regarding any Legacy Project greater than 100 kV and greater than \$20 million that has a cost estimate increase of more than 20% from the previous quarter. Recommended action(s) may include any of the following:

- i. Accept the cost estimate deviation as reasonable and acceptable.
- ii. Identify all or a portion of the costs related to the variances and recommend any changes to the NTC that would reduce the cost or avoid issues that may be causing the increase.
- iii. Suspend all future expenditures on the project while SPP restudies the project to determine appropriate changes to the NTC, possible withdrawal of the NTC or whether an alternative project should replace the project.

For all other Legacy Projects with a cost estimate increase of more than 20% from the previous quarter, Staff will determine the cause of the cost increase for each NTC Project in this list and make a recommendation to the MOPC and BOD as to whether the change in cost estimate is sufficient to justify the Legacy Project being re-evaluated replaced with an alternate Pproject.

SPP or TWG may request further analysis of a Legacy Project. Any analysis will be coordinated through TWG to identify any reliability concerns.

Comment [CF2]: DTO requests for re-evaluations are described in the new proposed NTC Review Business Practice

After SPP holds a 15 day stakeholder review period, a SPP proposed modification to an NTC will go to the SPP BOD ~~Board of Directors~~ for approval ~~action~~.

Business Practice Revision

Business Practice Revision

BPR Number	BPR036	BPR Title	Definition of Applicable Project for PCWG Review
Business Practice Section(s) Requiring Revision (include Section No., Title, and Protocol Version)		7060 Notification to Construct and Project Cost Estimating Processes Effective January 1, 2012, Sections 2 and 14.	
Impact Analysis Required (Yes or No)		No	
MMU Report Required (Yes or No)		No	
Requested Resolution (Normal or Urgent)		Normal	
Revision Description		Change the definition of Applicable Project to include non-Applicable Projects when their cost estimates increase above \$20 million.	
Reason for Revision		The change will provide for PCWG oversight for projects when their cost estimates increase above \$20 million.	
Tariff Implications or Changes (Yes or No; If yes include a summary of impact and/or specific changes)		No	
Criteria Implications or Changes (Yes or No; If yes include a summary of impact and/or specific changes)		No	
Credit Implications (Yes or No, and summary of impact)		No	
Working Group/Committee Review and Results		PCWG – Approved 2/12/2013 BPWG – ORWG – RTWG – TWG – MOPC –	

Sponsor	
Name	Terri Gallup

Business Practice Revision

E-mail Address	tagallup@aep.com
Company	AEP
Company Address	
Phone Number	
Fax Number	

Proposed Business Practice Language Revision

2. Notification to Construct with Conditions

A SPP Notification to Construct with Conditions (NTC-C) letter is a formal document directing a DTO to further refine its Study Estimate, as defined in Section 8, for an Applicable Project. A NTC-C does not authorize the DTO to start construction or to order materials for the project.

The NTC-C will direct a DTO to perform detailed engineering and cost studies within a stated timeframe in the NTC-C letter to refine its Study Estimate for further SPP analysis to determine if the project should proceed with a NTC for actual construction. The DTO shall provide SPP an estimate of the engineering and other costs (i.e., such as the costs for engineering to develop the design, perform siting/routing reviews, perform environmental studies, or to take other actions required to refine the Study Estimate) required to develop the NTC-C Project Estimate (CPE).

Applicable Projects

An Applicable Project is a construction project that SPP has the authority to direct construction of, has a nominal operating voltage of 100 kV or above, and has a Study Estimate in excess of \$20 million. A single Applicable Project may consist of multiple upgrades or multiple projects assigned to multiple DTOs. A non-Applicable Project with a nominal operating voltage of 100 kV or above that has been issued an NTC will become an Applicable Project if either its NPE or any subsequent cost estimate exceeds \$20 million. Applicable Projects will continue to be Applicable Projects even if their cost estimates fall below \$20 million.

14. Projects Reviewed by PCWG

The PCWG will provide recommendations to the MOPC and BOD regarding any Applicable Project whose cost estimate exceeded the +/-20% bandwidth of the established baseline cost estimate ~~(CPE)~~. Recommended action(s) may include any of the following:

- i. Accept the cost estimate deviation as reasonable and acceptable and reset the baseline used to evaluate future cost estimate deviations.
- ii. Identify all or a portion of the costs related to the variances and recommend any changes to the NTC that would reduce the cost or avoid the issues that may be causing the increase.
- iii. Suspend all future expenditures on the project while SPP restudies the project to determine appropriate changes to the NTC, possible withdrawal of the NTC or whether an alternative project should replace the project.

The BOD will make the final determination on whether to accept the PCWG recommendation(s) or to choose an alternative action.

If the BOD determines to reset the baseline cost estimate, the previous baseline cost estimate will be retained in the monitoring tool.

Business Practice Revision

The PCWG will notify MOPC if a trend appears to be developing whereby the information provided in the SCERTs is deviating from the Study Estimate Design Guide. The MOPC will then determine if a review of the SCERT indicates changes in the Study Estimate Design Guide are required.


2015 ITP10 Scope and Futures

April 24, 2013



Overview

- February 12-13 TWG Meeting
 - Scope Development
 - Schedule for scoping
 - ESWG and TWG responsibilities
- Today
 - Propose the initial data necessary to start developing the 2015 ITP10 Model



2015 ITP10 Initial Modeling Data

- Projected peak load per area (*)
- Energy per area (*)
- Fuel prices
- Projected losses (*)
- Emission prices forecasts for SO₂, NO_x and CO₂
- Hurdle rates
- Generation parameters (*)
- 2013 Ventyx data
- MDWG model

(*) – Data provided by stakeholders



3

2015 ITP10 Initial Modeling Data

- DC Ties data
- Capital Costs
- Prototypes for generation
- New Conventional Gen Siting
- New Wind Siting
- Economic Model Review (*)

(*) – Data provided by stakeholders



4

2015 ITP10 Policy Survey

- Policy survey
 - Existing wind renewable data (*)
 - Existing non-wind renewable data (*)
 - Renewable energy targets/mandates (*)

(*) – Data provided by stakeholders



5

Next Steps

- Develop a draft scope based on MOPC's feedback to present to the ESWG/TWG in May
- Incorporate ESWG/TWG feedback and present the proposed scope to both groups in June
- Present the final scope to MOPC and SPC in July



6

1. Load Flow and Short Circuit Levels (3 months duration, depending upon number of cases)

Load flows are carried out for various system conditions such as minimum and maximum SCLs and for various limiting HVDC power transfers`.

These load flows confirm that reactive power flow demands on the external systems are not excessive with the converter reactive power control strategy employed. The VSC is represented as a static controlled PQ current injection unit in the load flow.

Also, the load flows serve to establish pre-disturbance system conditions for transient stability type studies.

Powerflow studies will address the following conditions:

- Perform powerflow studies per the following: :
 - Use the Scenario 5 models, breaking them into an East to West and West to East Scenarios. SPP may be required to perform this model building operation.
 - N-1 studies will be done with the two scenario models, monitoring SPS and all first tier areas. Include all affected party systems
 - Results tabulated will allow parties to review and determine upgrades for their area.
 - Models to be used will be 2013 ITP Scenario 5. Available models will be:
 - 2014 summer
 - 2014 Light Load
 - 2015 summer
 - 2019 summer
 - 2019 Light Load

used - JSF

Review needs to be made to see if all or just a few need to be

Contingency list – to be determined JSF

Short Circuit Level

The short circuit level studies shall establish the minimum and maximum positive and zero sequence impedances at the converter bus bars in sufficient detail and with sufficient accuracy to allow design of the converters and rating of the converter equipment. It also provides three phase SCL benchmarks for validating the reduced equivalent networks.

The scenarios investigated will at a minimum include those identified for load flow analysis, with others added as needed to identify maximum and minimum short circuit conditions. To identify minimum short circuit conditions, generator, or transformer, line outages may be evaluated.

SPP PSSE faults will be benchmarked against SPS CAPE results as to short circuit levels, for selected faults to verify model accuracy.

Data Required (< 1 month after NTP)

Models: PSS/E saved case or raw data file for the load-flow for both the PNM and SPP regions

Cases:

2. Fundamental Frequency Temporary overvoltages (FFTOV) (4 months duration depending upon number of cases)

The objective of the FFTOV study is to assess the performance of the dc interconnection, its controls and any compensating equipments and the overvoltage limiting features in controls in response to large load rejection disturbances, blocking of converters, etc., in the equivalent AC/DC system, in order to determine the resulting temporary (i.e. dynamic) overvoltages. The full dynamic model of the VSC may be employed here although an approximation in the form of an outer level controller is also considered acceptable.

The transient stability program within PSS/E supplied by Siemens PTI is employed for the work, preceded by the use of an associated load flow program (Study 1) for calculation of steady state conditions.

The scenarios investigated for FFTOV will at a minimum include those identified for load flow analysis, with others added as needed to identify maximum FFTOV conditions.

Data Required (< 1 month after NTP)

Models:

Cases:

3. Reduced Equivalent Network (PSS/E) for studies (4 months duration)

To enable controls proving studies to be carried out on EMTDC (in the Dynamic Performance Study) and subsequent tests on RTDS, a static and dynamic reduced equivalent network retaining agreed buses, lines and generation is derived with particular reference to faithfulness for inertial oscillations (unless provided by customer). This will be carried out for various system conditions, for the AC networks up to the converter buses on both sides of the HVDC link.

Steady State and dynamic validation will be carried out using PSSE to show that these reductions exhibit acceptably similar characteristics to those of the full systems. The

responses are then used for comparison with results from PSCAD/EMTDC and RTDS investigations.

Data Required (< 1 month after NTP)

Models:

Cases:

4. Power System Transient Stability (PSS/E) (5 to 6 months duration depending upon number of cases)

These studies are performed to assess transient stability of the full AC system under the influence of the system HVDC controls. The investigations fall into four groups.

- Steady state weak system operation.
- Transient stability and recovery following AC system faults and disturbances.
- Frequency stabilisation and power modulation for oscillation damping.
- Establishment of run-back levels for AC system stabilisation.

The full dynamic model of the VSC is employed here.

- With new HVDC model, above information, re-run stability studies and capture generator information in all first tier systems. plus Nebraska Public Power District and Westar Energy, Inc. Plot files should be able to plot machine behaviors and interface voltages at points of interconnections. Reclosing should be used on lines that have existing reclosing schemes.
- No additional (not pre-existing) non-convergent solutions should be noted in the SPP region and should be mitigated if outside the SPP region.
- Run stability studies on multiple HVDC interactions, which may include Lamar, Blackwater, Eddy County, Oklaunion, and CleanLine Plains & Eastern.
- Plots will be done for 20 seconds. Plot data will be available for export in to MS Excel for assessing damping by affected parties.
- System disturbances should include, but not be limited to the following: DC side faults, energization of DC facility, DC facility step response, blocking and de-blocking of DC facility, AC side faults, and tripping of generation or switching of large loads in the proximity of DC terminal, switching of HVDC facilities AC filters and bus voltage control devices, and switching of nearby transformers, reactors, capacitor banks, etc.

SPP and SPS shall:

- a. Provide guidance on modeling of faults (3 phase fault impedance).
- b. Provide guidance on clearing time requirements.
- c. Define the combination HVDC interactions cases for Tres Amigas to study in the updated stability studies.

- SPS shall:
 - In conjunction with PNM, provide guidance on HVDC restart after a block/shutdown for simulation timing.
 - In conjunction with Golden Spread Electric Cooperative, provide stability data for the PSS additions in SPS.
 - Provide available fault current amounts to be studied at the Point of Interconnection for the Harmonics Interaction Studies.

Available models will be:

2014 Light
2014 Summer
2014 Shoulder
2014 Winter
2015 Summer
2019 Light
2019 Summer
2019 Winter
2024 Summer

Decision needs to be made as to which ones to use – models won't be available until June 18, 2013 - JSF

Data Required (< 1month after NTP)

Models: PSS/E compatible dynamic data file for both PNM and SPP region.
Cases:

5. Dynamic Performance Study (PSCAD/EMTDC)

(6 to 7 months depending upon the number of study cases)

This is a very detailed study (and report) which demonstrates that the proposed converter controls and station design will meet the specified performance requirements. Using largely the reduced equivalent networks, simulated controls modelling is carried out to assist in controls design. The control functions assessed are:

- Quasi Steady State power transmission under weak system conditions
- Controls performance, steady state and transient
- Reactive power control
- TOV control
- Fault recovery performance
- Power runback
- Oscillation Damping
- *Frequency Control*
- Interaction with other nearby controllers

The full dynamic model of the VSC is employed here.

Data Required (< 1month after NTP)

Models: ABB Blackwater/BB Line PSCAD model
Cases:

6. Dynamic Interaction study (PSS/E)

This will be included with study 4 above. **Additional clarity of this task may be required after discussion with SPP - JSF**

7. Verification of Control System Performance (RTDS) (approx 4 months)

From the Dynamic Performance studies (7) below, the performance of the actual control and protection systems will be verified as a sub-set prior to shipment to site by specific performance tests, using the Real Time Digital Simulator. This is also classified as Factory System Tests (FST) and is usually internal.

8. Control System Dynamic Performance Study (RTDS) (approx 6 months)

The objective of this study is to optimise the control parameters to provide stable operation and good dynamic performance of the HVDC scheme. This study will be primarily carried out using physical controls and Alstom Real Time Digital Simulator (RTDS) located within the Simulator Laboratory, Stafford. It generally follows study 5 above.

9. Factory Acceptance Tests (approx 2 weeks)

Following the internal Factory RTDS tests the customer witness tests are carried out on chosen cases from the Control System Performance and Dynamic Performance Tests completed in 7 and 8 above. This is classified as Factory Acceptance Tests (FAT).

Data Required

Models:
Cases:

10. Subsynchronous Oscillations (SSO, RTDS)

(1 month for UIF calculations; a further 2 months for PSCAD verification if needed & 2 months for RTDS tuning if needed)

A simple calculation is initially done to assess the possibility of SSO occurring in a nearby radially connected steam turbine unit, by assessing the Unit Interaction Factor (UIF). Wherever this possibility is indicated, a more detailed analysis of any ensuing SSO is carried out on the Real Time Digital Simulator for machines on the rectifier side of the DC link. By this means, use of the ALSTOM sub-synchronous damping controller (SSDC) for the avoidance of SSO in nearby generators is demonstrated, to verify that the HVDC control system will not cause unacceptable sub-synchronous resonance.

Data Required (< 1month after NTP)

Models:
Cases:

11. Harmonic Interaction Studies

Harmonic interaction studies (per IEEE Std. 519)– part of final converter design study. Harmonic interaction studies shall be run for both summer peak conditions and light loading conditions.

Harmonic interaction studies for light loading conditions shall be based on an Available Fault Current at the Point of Interconnection of no more than 2700MVA.

11. DC Control & Protection Strategy & Specifications (2 months for Control Spec, 2 months for Protection Spec)

These specifications define the control system and DC side protections employed. The controls specification highlights with respect to ALSTOM's standard DC cable scheme controller, the following main aspects:

- Power Control, Current Control
- Q control, DC voltage control, Vac control
- Power Demand Override
- Switchgear Control
- Power balance methodology
- Capacitor balancing controls and IGBT firing

The objectives of the Protections Strategy and Specification are

1. Define the protection principles and strategies
2. Define the protection required in this project (Main protections represented are that DC Overcurrent, DC current differential, Valve current differential, DC Undervoltage, DC Overvoltage, AC Overcurrent, AC Overvoltage and AC Undervoltage)
3. Define the measurements used for each protection
4. Define the main and backup protection
5. Define the protection settings in each protection
6. Define the protective actions in each protection

12. Protection Coordination Study (2-3 mths for PSCAD study, 3-4 mths for RTDS)

The objective of this study to ensure that each credible fault shall be detected and acted upon by a main protection and a backup protection in the fault zone. It is performed to check that the DC protection scheme is graded with the AC system protections. The study will also involve checking that the protections are inert to faults outside its designated protection zone and is stable during normal operation. This study will further confirm that the converter is successfully blocked by the protective action within a short period of time without overstressing the equipment. This is generally prepared internally in PSCAD and presented externally on RTDS.

Digital Computer Models

Provision of computer models for scheme and above studies, using the software tools:

Power Systems Analysis (PSS/E) Version 32/33

PSCAD/EMTDC Version 4.2.1/4.5

Grain Belt Express Clean Line Criteria 3.5 Studies Update

SPP TWG Meeting
April 24, 2013



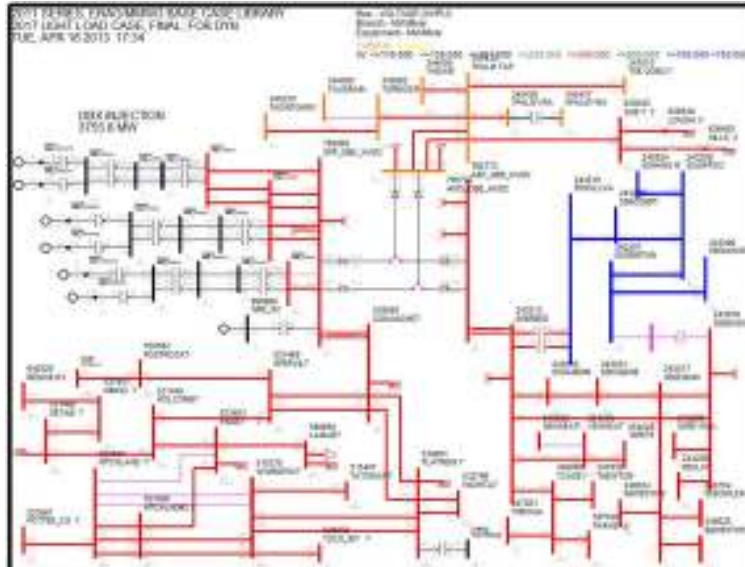
HVDC interconnection of western SPP near Dodge City and PJM near Terre Haute



CLEAN LINE ENERGY PARTNERS

2

One-Line



CLEAN LINE ENERGY PARTNERS

3

Criteria 3.5 process update

- Process to date to meet Criteria 3.5 studies
 - TWG Presentations/updates: 8/2010, 11/2012, 2/2013,
 - Four open meetings with affected parties and SPP Staff
 - Feb 13, 2013 – Oklahoma City, OK (Stability Results)
 - Feb 1, Feb 7, 2013 – webinars (Steady State Results)
 - November 1, 2011 – Oklahoma City, OK (Steady State Initial Results)
 - June 9, 2011 – (Steady State and Stability Scoping)
- Results to date
 - Draft reports on steady-state and stability analysis have been published and are being reviewed by affected parties.
 - Extensive analysis of multi-level contingencies (N-1, N-1-1, etc)
 - Few issues were found and those that do exist are easily addressed
 - Cumulative results of analyses and feedback from meetings

CLEAN LINE ENERGY PARTNERS

4

Criteria 3.5 Studies finalization proposal

- Clean Line proposes the following schedule for TWG approval of the Grain Belt Criteria 3.5 studies:
 - Steady-state and stability files are available on SPP Trueshare for review. Reports also published at http://www.grainbeltexpresscleanline.com/site/page/technical_studies
 - Steady-state/stability report will be circulated to complete TWG and re-circulated to affected parties by **April 26, 2013**
 - Formal request (completeness review) to staff to request full TWG review **May 6, 2013**.
 - Clean Line proposes that TWG ballot at **June 26, 2013** teleconference .

CLEAN LINE ENERGY PARTNERS

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April 2013