



**Southwest Power Pool**  
**TRANSMISSION WORKING GROUP MEETING**  
**March 27, 2013**  
**Net Conference**

**• Summary of Action Items •**

1. Approved BPR-033 - NTC Re-evaluation Review Business Practice.
2. Approved staff's recommendation of analysis for 2013 ITP20 Final Reliability Assessment.

**Southwest Power Pool**  
**TRANSMISSION WORKING GROUP MEETING**  
**March 27, 2013**  
**Net Conference**

• M I N U T E S •

**Agenda Item 1 – Administrative Items**

TWG Chair Noman Williams called the meeting to order at 9:02 a.m. The following members were in attendance:

Mo Awad, Westar Energy, Inc.  
Scott Benson, Lincoln Electric System  
John Boshears, City Utilities of Springfield  
John Fulton, Southwestern Public Service Co.  
Travis Hyde, Oklahoma Gas & Electric Co.  
Dan Lenihan, Omaha Public Power District  
Randy Lindstrom, Nebraska Public Power District  
Jim McAvoy, Oklahoma Municipal Power Authority  
Matt McGee, American Electric Power  
Nathan McNeil, Midwest Energy, Inc.  
Nate Morris, Empire District Electric Co.  
Alan Myers, ITC Great Plains  
John Payne, Kansas Electric Power Cooperative  
Jason Shook, GDS Associates representing ETEC  
Tim Smith, Western Farmers Electric Cooperative  
Mike Swearingen, Tri-County Electric Cooperative  
Noman Williams, Sunflower Electric Power Corporation  
Harold Wyble, Kansas City Power & Light

The following stakeholders and staff were also in attendance:

Jason Atwood, Ventyx  
Roy Boyer, Southwestern Public Service Co.  
Kevin Demeny, American Transmission Company  
Christin Domian, Mitsubishi Electric  
Ryan Einer, Oklahoma Gas & Electric Co.  
Juliano Freitas, Southwest Power Pool  
Noumvi Ghomsii, Missouri Public Service Commission  
Tony Gott, Associated Electric Cooperative, Inc.  
Kirk Hall, SPP Staff  
Daniel Hodges-Copple, Clean Line Energy  
Jody Holland, SPP Staff  
Rachel Hulett, SPP Staff  
Joe Lang, Lincoln Electric System  
Antoine Lucas, SPP Staff  
Bob Lux, SPP Staff  
Michael Mueller, Arkansas Electric Cooperative Corp  
Gimod Olapurayil, ITC Great Plains  
Charles Panicker, Oklahoma Corporation Commission  
Scott Rainbolt, American Electric Power

Kristen Rodriguez  
Jeff Rooker, SPP RE  
Roberto Rosner, Enel Green Power North America  
Kara Sidman, BP  
Al Tamimi, Sunflower Electric Power Corporation  
Pat Wilkins, Tres Amigas, LLC

Rachel Hulett, SPP staff, noted that there was a quorum to begin the meeting (Attachment 1 – Agenda).

Joe Lang, TWG representative on the Long-Term Congestion Rights Task Force, asked TWG for any suggestions or concerns with developing SPP policies for offering long term transmission congestion rights. TWG provided comments and noted they may need education on items related to this task force.

### **Agenda Item 2 – BPR-033 NTC Re-evaluation Business Practice**

Antoine Lucas, SPP staff, updated the group on the latest version of BPR-033 NTC Re-evaluation Review highlighting the PCWG revisions based off the joint TWG/PCWG discussion (Attachment 2a – BPR-033 Presentation). He then noted the conflicting items between the TWG and the PCWG. The group discussed whether lead times should be a criterion that triggers re-evaluation and decided the business practice's other criteria is sufficient without an additional lead time criterion. They also discussed whether MOPC should approve any NTC for re-evaluation but concluded staff needs the ability to automatically re-evaluate NTCs. TWG revised the business practice (Attachment 2b - BPR-033 NTC Review BP).

**Mo Awad made a motion to approve BPR-033 as modified in the meeting. Mike Swearingen seconded the motion, and the motion passed with 1 abstention.**

### **Agenda Item 3 – Final Reliability Assessment**

Jody Holland, SPP staff, updated the group on progress of the 2013 ITP20 and its final reliability assessment (Attachment 3a – 2013 ITP20 Final Reliability Analysis). He pointed out inconsistencies between the ITP Manual and the 2013 ITP20 Scope on the reliability analysis section. Staff recommends performing only DC analysis as outlined in the scope. Jody also mentioned that staff is in the process of updating the ITP manual and will update the ITP manual accordingly if the staff recommendation is accepted.

**Alan Myers motioned to approve staff's recommendation for the 2013 ITP20 final reliability analysis, recognizing changes to the ITP Manual. John Payne seconded the motion which passed unopposed.**

During discussion of the 2013 ITP20 status, members asked for details of three new metrics used in the 2013 ITP20. For more information, see the attached slides (Attachment 3b – ITP20 new metrics).

### **Agenda Item 4 – Comparison of MDWG models and ITPNT models**

Rachel Hulett presented staff's work on a TWG action item from the February 2013 face-to-face meeting for staff to compare the MDWG models and the ITPNT models to determine if the 2014 ITPNT models could be used for a portion of the Planning Coordinator's 2013 TPL Assessment (Attachment 4 – Comparison of models Presentation). She shared the analysis staff performed and asked the group for questions on the analysis. TWG discussed the results. Randy Lindstrom, Nebraska Public Power District, asked if other Transmission Planners are using the MDWG or ITP models for their TPL compliance, and the members stated they use the MDWG models. Randy asked the SPP RE's opinion on what, if any, issues may exist if the Planning Coordinator and Transmission Planners use different models and/or have different results.

**AI: SPP RE to provide interpretation on what, if any, issues exist if the Planning Coordinator's and Transmission Planner's TPL models and/or results differ.**

Based on the discussion, staff will not change its 2013 TPL Assessment process and will begin working on its assessment in April. TWG agreed discussion should continue on leveraging SPP processes for future TPL assessments.

**Agenda Item 5 – FAC-013-2 Methodology**

Rachel Hulett explained the SPP's draft FAC-013-2 Transfer Capability Methodology for the Near-Term Transmission Planning Horizon (Attachment 5a, b – FAC-13-2 Presentation, FAC-13-2 Methodology). Staff developed this for distribution by April 1, 2013, and Rachel noted TWG does not have to endorse it prior to distribution. Staff shared the methodology is different from the annual flowgate assessment methodology in that flowgates will not be identified through this process. A member suggested this Transfer Capability Assessment honor flowgate and/or stability limits. Staff stated it will consider this for future discussion as TWG continues review of the methodology. Rachel also shared staff's proposed analysis for the 2013 Transfer Capability Assessment and stated it must be performed by the end of 2013.

The next meeting will be a net conference on April 24 from 9-11 a.m. The meeting was adjourned at 11:02 a.m.

Respectfully Submitted,

Rachel Hulett  
Secretary



**Southwest Power Pool, Inc.**  
**TRANSMISSION WORKING GROUP MEETING**  
**March 27, 2013**  
**Conference Call**

**• A G E N D A •**

9:00-11:00 a.m.

1. BPR-033 NTC Re-evaluation (Action Item)..... Antoine Lucas
2. 2013 ITP20, Process for Final Reliability Analysis (Action Item) ..... Jody Holland/Antoine Lucas
3. 2013 TPL Proposal, MDWG and ITPNT model comparison ..... Rachel Hulett
4. FAC-013-2 Methodology ..... Rachel Hulett

## NTC Review Business Practice

TWG – March 2013



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### MOPC Action Item #181

- Direct the BPWG to examine the process for the re-evaluation of previously issued NTCs, including questions or requests for reconsideration by stakeholders, and the occasional self initiated reconsideration executed by Staff to ensure continued need for an NTC project. (January 17-18, 2012)

## Why Re-evaluate NTCs?

- **Assess the continued need for project(s) given the availability of new information**
  - material changes to modeling assumptions,
  - public policy,
  - project costs
- **Value created by**
  - modification or replacement of NTCs to construct more cost effective projects (and)
  - withdrawal of projects that are no longer needed.

## NTC Business Practice

- **Clarifies the conditions under which an NTC will undergo automatic re-evaluation (Staff Initiated)**
- **Identifies other initiators for NTC re-evaluations**
  - Business 7050 & 7060 Requirements (Includes PCWG)
  - Ad Hoc (Per Stakeholder Request)
- **Identifies closing dates to receive NTC re-evaluation requests**
- **Identifies the study process for NTC re-evaluations**

## Criteria for Staff Initiated Re-evaluation

- **Projects meeting at least one of the following**
  1. **Change in Public Policy relevant to a Policy Project OR;**
  2. **An event has occurred causing significant change to an area OR;**
  3. **Total estimated project cost exceeds \$20 Million AND;**
    - **NTC has been issued for at least one year**
    - **NTC has a Need Date greater than 48 months from the NTC issuance date**
    - **The DTO has not held public meetings to discuss proposed routes for a Project**
    - **Committed expenditures as of the date of completion of re-evaluation should not exceed 10% of the baseline NTC cost estimate.**

## BPR-033 Status

- **Joint PCWG and TWG call to collaborate on BPR-033 edits (2/12/13)**
- **PCWG provided language for inclusion in BPR-033 (3/1/13)**
- **TWG provided language for inclusion in BPR-033 (3/12/13)**
  - **Committed expenditures prior to vs. at completion of re-evaluation**
  - **Public meeting vs. project lead time limitation**
- **Staff seeking language clarification and approval for BPWG consideration**

## Business Practice

<b>BPR Number</b>	<b>BPR033</b>	<b>BPR Title</b>	<b>NTC Re-evaluation Review</b>
<b>Business Practice Section(s) Requiring Revision</b> (include Section No., Title, and Protocol Version)		New Business Practice	
<b>Impact Analysis Required</b> (Yes or No)		No	
<b>MMU Report Required</b> (Yes or No)		No	
<b>Requested Resolution</b> (Normal or Urgent)		Normal	
<b>Description</b>		To describe the criteria used to select ITP projects assigned an NTC for re-evaluation.	
<b>Reason</b>		To assess the continued need for previously issued NTCs as new information becomes available and is evaluated in current planning processes.	
<b>Tariff Implications or Changes (Yes or No; If yes include a summary of impact and/or specific changes)</b>		No	
<b>Criteria Implications or Changes (Yes or No; If yes include a summary of impact and/or specific changes)</b>		No	
<b>Credit Implications (Yes or No, and summary of impact)</b>		No	
<b>Sponsor</b>			
<b>Name</b>		Katherine Prewitt	
<b>E-mail Address</b>		kprewitt@spp.org	
<b>Company</b>		Southwest Power Pool	
<b>Company Address</b>		201 Worthen Drive, Little Rock, AR 72223	
<b>Phone Number</b>		(501) 614-3514	
<b>Fax Number</b>			

### NOTIFICATION TO CONSTRUCT

The process for issuing Notifications to Construct (NTCs) is fully described in Business Practices 7050 and 7060 as well as in Attachment O, Section VI of the Tariff. Projects assigned an NTC under the ITPNT or ITP10 processes will be reviewed to determine if the projects will be re-evaluated. The intent of NTC project re-evaluation is to assess the continued need for the project(s) and the project's required in-service date. This business practice is intended to clarify the criteria used to determine transmission projects assigned NTCs that will be re-evaluated.

# Business Practice

## DEFINITIONS

**BOD:** SPP Board of Directors.

**Designated Transmission Owner (DTO):** The Transmission Owner(s) or other entity designated to build and own a Network Upgrade in accordance with the Tariff.

**Notification to Construct (NTC):** A formal document specifying approval of and notification to build specific Network Upgrades in accordance with Business Practice 7060 and the Tariff.

**Notification to Construct with Conditions (NTC-C):** A formal document directing a DTO to further refine its Study Estimate for its Applicable Project. An NTC-C does not authorize the DTO to start construction or to order materials for the project.

**Need Date:** Date when a Network Upgrade needs to be in-service as identified in the applicable planning study process.

**Network Upgrade:** All or a portion of the modifications or additions to transmission-related facilities that are integrated with and support the Transmission Provider's overall Transmission System for the general benefit of all Users of such Transmission System.

**PCWG:** SPP Project Cost Working Group

**Project:** One or more Network Upgrades that together form a uniform upgrade on the network.

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## Business Practice

- **ITP Study Process**
    - 10-Year Assessment – ITP10
    - Near Term Assessment - ITPNT
- 

This Business Practice clarifies the conditions under which an NTC will be re-evaluated during the ITP study process. The need for a re-evaluation of an NTC may arise from the availability of new information such as material changes to modeling assumptions, public policy, and project costs. These changes may result in a need to modify or replace NTCs to construct a more cost effective project. This business practice is applicable to NTCs resulting from the ITP Study Process that are issued after 1/1/2012.

### Re-evaluation of an NTC will be initiated based on the following criteria:

- Any of the requirements for re-evaluation in Business Practices 7050 or 7060 are met, including a Project that has been determined for re-evaluation by the PCWG and approved by the BOD **OR**;
- There has been a change in Public Policy directly related to a project designated in the ITP study process as a Policy Project **OR**;
- An event has occurred causing significant change to an area and re-evaluation has been approved by TWG **OR**;

## Business Practice

- Upon DTO request to re-evaluate their assigned NTC **OR**;
- Total estimated project cost exceeds \$20 Million **AND**;
  - The NTC has been issued for at least one year **AND**;
  - The NTC has a Need Date greater than 48 months from the NTC issuance date **AND**;
  - The DTO has not held public meetings to discuss proposed routes for a Project **AND**;
  - Committed expenditures as of the date of end of re-evaluation should not exceed 10% of the baseline NTC cost estimate.

### Applicable ITP Study Process for NTC Re-evaluation:

- Reliability projects meeting the NTC re-evaluation criteria with Need Dates within the current ITPNT planning horizon will be re-evaluated during the current ITPNT.
- Reliability projects meeting the NTC re-evaluation criteria with Need Dates beyond the current ITPNT planning horizon will be re-evaluated during the subsequent ITPNT with a horizon including the project's need date.
- Economic and Public Policy projects meeting the NTC re-evaluation criteria will be reviewed during the next ITP10.
- A DTO request to re-evaluate their assigned NTC outside of the ITP Study Process will require BOD approval.
- Determinations for re-evaluations in addition to the initial re-evaluation will be based on project lead times necessary to allow the Need Dates of the projects to be met.

**A DTO who's NTC has been chosen for re-evaluation will be contacted by SPP and informed of the project's re-evaluation status.**

### NTC Review Closing Dates<sup>1</sup>:

- **ITPNT:** The closing date will be July 1<sup>st</sup> of the current cycle of the ITPNT for the performance of the NTC review and the receipt of DTO re-evaluation requests.
- **ITP10:** The closing date will be four (4) months following the start of the current ITP10 cycle for NTC review for the performance of the NTC review and the receipt DTO re-evaluation requests.

### The withdrawal or modification of an NTC Project must not:

- Cause adverse impact to existing Service Agreements or other contractually committed service under the Tariff.

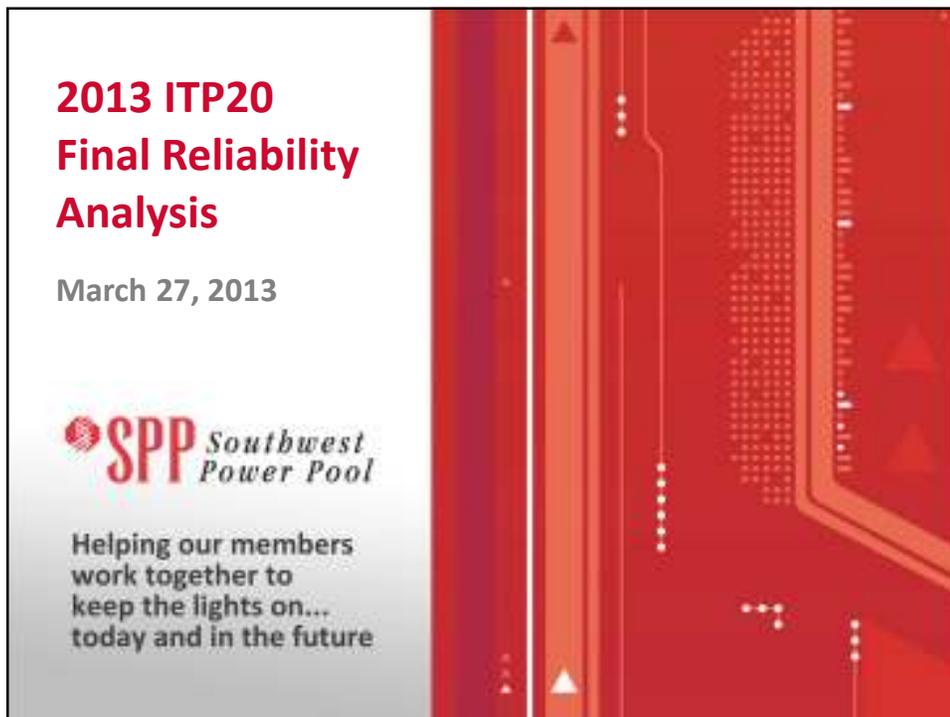
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<sup>1</sup>Consideration for re-evaluation will be given to an NTC based on the occurrence of unforeseen circumstances adversely affecting the project after the specified closing date.

## **Business Practice**

- Result in the inability to meet reliability standards.
- Render sold firm transmission service undeliverable.
- Render interregional studies or agreements invalid.

Upon the withdrawal of an NTC, the DTO which received the NTC will be notified of the change in status of the Project. The NTC Project will also be removed from all planning models including TS and GI models.

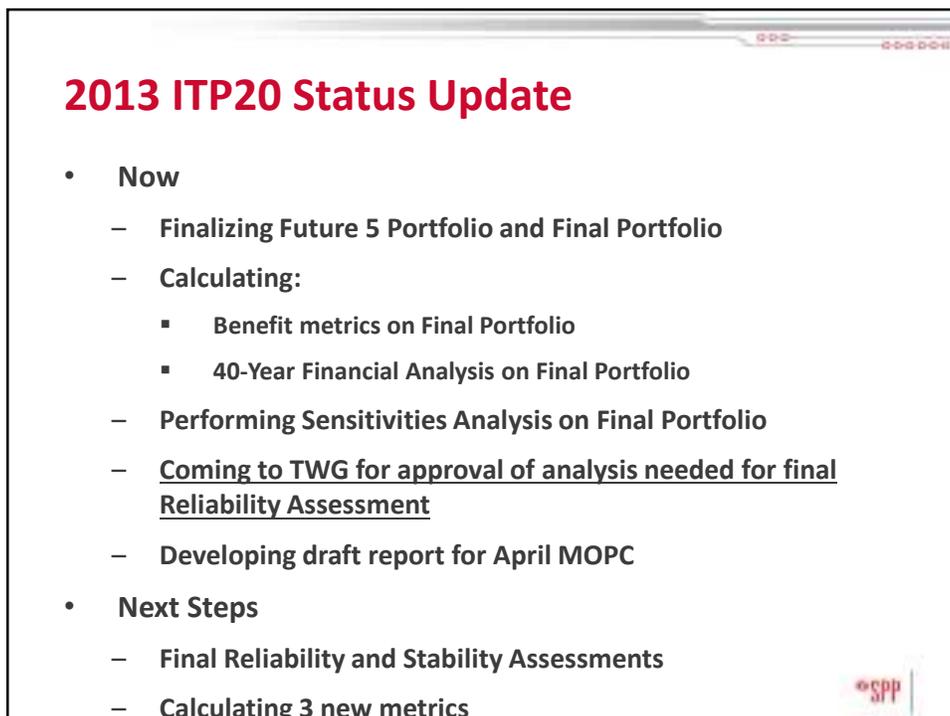


**2013 ITP20  
Final Reliability  
Analysis**

March 27, 2013

 **SPP** *Southwest  
Power Pool*

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**2013 ITP20 Status Update**

- **Now**
  - Finalizing Future 5 Portfolio and Final Portfolio
  - Calculating:
    - Benefit metrics on Final Portfolio
    - 40-Year Financial Analysis on Final Portfolio
  - Performing Sensitivities Analysis on Final Portfolio
  - Coming to TWG for approval of analysis needed for final Reliability Assessment
  - Developing draft report for April MOPC
- **Next Steps**
  - Final Reliability and Stability Assessments
  - Calculating 3 new metrics



## Final Reliability Analysis Process

- **Scope process:**
  - DC analysis on 20-year model
  - Performed on Future 1
  - 4 hours – summer peak, peak wind, winter peak, & low hydro
- **ITP Manual process:**
  - DC analysis on 20-year model
  - AC analysis on 10-year model
  - FCITC analysis on 10-year model

SPP

## Staff Recommendation

- **Approve staff performing only DC analysis for Final Reliability Assessment**
- **Recognize the ITP manual will be updated**
- **If the projects come into the ITP10 horizon, capture impacts of projects in 2015 ITP10 process**

SPP

4

**ITP20 New metrics  
Approval**

February 14, 2013

Antoine Lucas  
[alucas@spp.org](mailto:alucas@spp.org) · 501.688.1625



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## Purpose

- Approve the three new metrics proposed by the MTF/ESWG

## Recommended metrics for the 2013 ITP20

- **Five (5) metrics currently used by the ITP process**
  - all monetized, continue to use
- **Eight (8) new metrics developed by the MTF**
  - Leverage effort undergone for Regional Cost Allocation Review
  - Capture monetary value of transmission expansion
- **Six (6) metrics identified in the ITP20 scope**
  - Not monetized
  - Not represented by new metrics from the MTF

## Recommended metrics for the 2013 ITP20

- **Five (5) metrics currently used by the ITP process**
  - Adjusted Production Cost (APC) savings
  - Reduced losses on peak
  - Reduction of emissions rates and values
  - Value of replacing previously approved projects
  - Reduced capacity costs due to losses on peak
- **Three (3) new metrics developed by the MTF**
  - Mitigation of transmission outage costs
  - Assumed benefit of mandated reliability projects
  - Public policy benefits



### Metrics description:

**-Adjusted Production Cost (APC) Savings:** APC is a measure of the impact on production cost savings by Locational Marginal Price (LMP), accounting for purchases and sales of energy between each area of the transmission grid. APC captures the monetary cost associated with fuel prices, run times, grid congestion, ramp rates, energy purchases, energy sales, and other factors that directly relate to energy production by generating resources in the SPP footprint.

Tool to calculate the metric: PROMOD

**-Reduced Losses on Peak:** It is used to capture the change in total system losses due to the finalized portfolio. The losses are calculated for each hour of the DC simulation. The difference in production costs due to the change in losses are reflected in the APC calculation. The reduction in capacity capital costs associated with these losses are not captured by this metric or in the APC calculations. This value is captured through the use of Reduced Capacity Costs.

Tool to calculate the metric: PROMOD

**-Reduction of Emissions Rates and Values:** The APC calculation captures the cost savings associated with reduced SO<sub>2</sub>, NO<sub>x</sub>, and CO<sub>2</sub> emissions because the allowance prices for these pollutants are inputs to the production cost model simulations. The quantified changes in SO<sub>2</sub>, NO<sub>x</sub>, and CO<sub>2</sub> emissions are measured and reported in addition to the APC results in order to provide further insight into system expectations.

Tool to calculate the metric: PROMOD

**-Value of Replacing Previously Approved Projects (Part of Improvements in Reliability metric):** This metric monetizes (quantifies) the reliability benefit as the avoided cost (or additional cost) in dollars of delaying, canceling, or accelerating previously approved reliability projects.

Tool to calculate the metric: PROMOD

**-Reduced Capacity Costs due to Losses on Peak:** This metric is used to capture a value for the generation capacity that may no longer be required due to a reduction in losses and capacity margin. The reduced capacity could be reflected in reduced losses and the potential reduction in capacity margins. This value is monetized using the savings in capital attributed to the corresponding reduction in installed capacity requirements.

Tool to calculate the metric: PROMOD

**- Mitigation of Transmission Outage Costs:** Standard production cost simulations assume that transmission lines and facilities are available during all hours of the year and that no planned or unexpected outages of transmission facilities will occur. In practice, however, planned and unexpected transmission outages impose non-trivial additional congestion costs on the system. Thus, the benefit of reducing this additional congestion is not captured in the standard APC metric. The availability of new transmission projects decreases congestion and increases the operational flexibility of the system to mitigate the impacts of transmission outages.

Tool to calculate the metric: PROMOD

- Assumed Benefit of Mandated Reliability Projects: If part of the portfolio of transmission projects evaluated would be built to meet transmission reliability standards (i.e. classified as “reliability project” by the ITP Manual), then the starting point in evaluating the benefit of such reliability project portion of the evaluated portfolio would be to assume its benefit-to-cost (B/C) ratio is at least 1.0. In other words, the benefit of fixing the reliability violation through the reliability portion of the evaluated portfolio should be assumed to be equal to its cost. This benefit would only be considered for projects that received NTCs under the category of “regional reliability” and will be mutually exclusive from any other reliability benefit applied to those same projects.

Tool to calculate the metric: PROMOD

- Public Policy Benefits: At this time, the metric is limited to meeting public policy goals related to renewable energy supplies. Public policy can be met through state law, settlement agreement, or a regulatory determination made by a state regulatory authority. It does not include economic decisions made by individual utilities to acquire renewable energy supplies absent some form of legal requirement to do so. Note that for the purposes of this report, public policy mandates imposed by states and public policy goals announced by regulatory bodies or implemented by utilities may or may not be considered in the same manner. Any distinction should be addressed by the ESWG and/or MOPC.

## Recommended metrics for the 2013 ITP20

- Six (6) metrics identified in the ITP20 scope, not monetized metrics
  - Value of Improved Available Transfer Capabilities
  - Limited Export/Import Improvements
  - Ability to Serve New Load
  - Levelization of LMP's
  - Improved Competition in SPP Markets
  - Backstop to Catastrophic Events (superseded by MTF metric)
- Low priority metrics



### Metrics description:

- **Value of Improved Available Transfer Capabilities (Part of Improvements in Reliability metric):** This metric provided a non-monetized (qualitative) assessment of the added flexibility for the potential redirection of power flows within SPP made possible by ATC increases. The challenge in defining this metric was the development of a meaningful weighting structure of ATC defined for multiple combinations of points of receipt and points of delivery. Tool to calculate the metric: PSSE/MUST

- **Limited Export/Import Improvements:** Quantifies the change in available transfer capability (ATC) that corresponded to an alternative topology in the Cost-Effective Plan. Three categories of ATC changes were of interest and addressed by this metric:

- From major generation centers within SPP to key delivery points on the boundary of SPP. This category related to export capability improvements.
- From key external receipt points at the boundary of SPP to load centers within SPP. This category related to import capability improvements.
- From key external receipt points at the boundary of SPP to key delivery points on the boundary of SPP. This category related to improvements in the ability of SPP to accommodate wheel-through transactions.

Tool to calculate the metric: PSSE/MUST

- **Ability to Serve New Load:** It measures the ability of an alternative transmission topology to serve new load at levels that were different from those considered in the derivation APC. The metric tests two types of load changes: an overall incremental load in proportion to load forecast used in the development of each future and load shifts between major load centers.

Tool to calculate the metric: PSSE/MUST

- **Levelization of LMP's:** This metric provides SPP stakeholders a qualitative indicator of the impact an alternate transmission topology could make on regional generation owners' ability to compete on equal grounds. In the absence of congestion and losses in the system, any generator has the potential to serve any load, and there will be one single system price in each hour. A transmission system with no constraints and low losses makes the electricity market more competitive, as it provides an equal opportunity to all generators with similar costs to compete for loads. In such transmission systems, the market for new entry will also be more competitive. An increase in congestion and losses places generators at certain locations at a disadvantage relative to other similar-cost generators, making the market less competitive. This metric measures the levelization of LMPs for each transmission topology using the standard deviation of LMPs across locations for the SPP footprint. All else being equal, a decrease in the value of this metric indicates an improvement in the competitiveness of the SPP market.

Tool to calculate the metric: PROMOD

- **Improved Competition in SPP Markets:** Provides a qualitative measure of competitiveness across the SPP footprint. It analyzes a generating unit's ability to compete within its own technology type. Capacity-weighted LMPs are calculated for generating plants fueled by wind, steam coal, combined cycle, and combustion turbine on an hourly basis, then averaged across 25% of the largest hourly

standard deviations.

Tool to calculate the metric: PROMOD

- Backstop to Catastrophic Events (**Part of Improvements in Reliability metric**): Extreme Events (e.g. severe weather, natural catastrophes, sabotage, regulatory restrictions, and similar events) can result in significant restrictions to the power system or result in simultaneous outages of several power system elements (generation or transmission facilities) that disrupt the regional energy supply. As a result, spikes in energy supply costs, disruption of service, and other adverse events will materialize. The transmission system's ability to reduce the effect of such events upon the cost to supply energy (e.g., through high-cost emergency imports, lengthy outages, negative regional economic impacts) will tend to increase with transmission expansion.

Tool to calculate the metric: PROMOD

## Recommendation

Utilize the five (5) monetized metrics currently used in the ITP process and also the three (3) new metrics proposed by MTF.

## Comparison of MDWG and ITPNT models

March 27, 2013

Steady State Planning



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## Background

At February 2013 meeting

- Discussed leveraging ITPNT process for portions of SPP PC's TPL compliance
- Questions arose about modeling differences
- TWG Action Item: Staff to benchmark the 2012 series models, MDWG vs. ITPNT (Scenario 0 only), for differences.

## Model Differences

### MDWG

- **One scenario**
  - Projected transactions
- **Topology**
  - Includes NTCs, budgeted planned projects, and exploratory projects
- **Generation Dispatch**
  - TO-provided units
  - TO-provided dispatch

### ITP

- **Two scenarios**
  - Projected firm and All firm transactions
- **Topology**
  - Includes NTCs and budgeted planned projects
- **Generation Dispatch**
  - Units with long-term transmission service\*
  - Block dispatch

\*Exceptions go through process outlined in ITP Manual

## Action Item Analysis

- **Staff used two seasons for comparison**
  - 2013 and 2018 summer
  - MDWG vs. ITPNT Scenario 0
- **Performed comparison of cases**
  - Results show dispatch, topology, etc. differences\*
- **Focused on comparison of N-1 ACCC Results**
  - Did potential violations occur in only MDWG model? If so, did it occur in ITPNT Scenario 5 models? Etc.
  - Did potential violations occur in only ITPNT Scenario 0 model? If so, why?

\*Provided in meeting materials

## Comparison Results - Voltages

- For those issues\* unique to:
  - MDWG: Most differences were either invalid or identified in ITPNT Scenario 5
    - 3 exceptions
  - ITPNT: Most differences were invalid issues or voltages were usually just above voltage threshold in Scenario 0
    - 1 exception

\*Provided in meeting materials



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## Comparison Results - Overloads

- For those issues\* unique to:
  - MDWG: Differences were either invalid or identified in ITPNT Scenario 5
  - ITPNT: Loadings were usually between 95-100% in Scenario 0 if valid
    - 1 exception

\*Provided in meeting materials



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## Llano Wind – Low Voltage

- Low voltage at Llano Wind Farm
  - Root cause: topology difference
  - 2<sup>nd</sup> Bowers transformer not model



SPP 11

## Chamber Springs to Farmington 161 kV

- Overloads in only ITPNT models
  - Root cause: generation dispatch
  - Block dispatch different than MDWG dispatch
  - Turk vs. Mattison



SPP 12

## Summary

- There are model differences and N-1 analysis differences
- Some loadings/voltages were close to thresholds in other model
- “Larger” differences for two key reasons:
  - Generation dispatch
  - Topology



**FAC-013-2 – Assessment of Transfer Capability  
for the Near-Term Transmission Planning  
Horizon**

- Applicable to *only* Planning Coordinator (PC)
- PC needs Transfer Capability methodology
- Methodology include:
  - Criteria for transfers
  - Assumptions
- PC performs annual Transfer Capability assessment
  - For at least one year in Near-Term Planning Horizon

**SPP** 2

The image shows a presentation slide with a white background. The title is in bold red text. The bullet points are in black text. The SPP logo and the number 2 are in the bottom right corner.

## FAC-013-2 Cont.

- Approved by NERC and FERC
- Replaces FAC-012-1 and FAC-013-1
- Enforceable in April 2013
  - Methodology must be distributed by April 1st
- Few impacts to Transmission Planner
  - PC provides methodology to TP
  - PC provides annual Transfer Capability results to TP

## Draft Analysis Concepts

- Staff will perform FCITC analysis similar to FG Assessment
  - Use MDWG models
  - Use Year 1 Summer and Winter Case
    - Ex.: For this year, use 2014 Summer and 2014 Winter
- At a minimum
  - Use internal POR/PODs
  - Transfers to first tier POR/PODs
  - Con/Mon at 100+ kV



## **Transfer Capability Methodology for the Near-Term Planning Horizon**

Process Owner: Planning  
Approval Date: 3/27/2013

## Revision History

Version	Revision Date	Author	Comments
1	3/20/13	Staff	Initial Release

DRAFT

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## 1. Introduction

Pursuant to SPP's function as Planning Coordinator, SPP has developed this methodology to meet the requirements set forth in FAC-013-2.

During each calendar year, SPP will conduct an assessment for at least one year in the Near-Term Planning Horizon to establish the transfer capabilities within SPP's PC footprint **(R.4)**. As part of the assessment, SPP will perform a system intact and N-1 analysis based on the assumptions in more detail below. Once the transfer capabilities have been established, SPP will distribute its assessment results to respective entities within 45 calendar days.

## 2. Assessment Assumptions

For the annual assessment, SPP will use a POR/POD approach when selecting transfers. These transfers will include, but not be limited to, all internal PORs and PODs within SPP's PC footprint as well as all first tier PORs and PODs. **(R1.1)**

The assessment will use annual MDWG model(s) as its starting point. The MDWG develops its models in accordance with the [SPP MDWG Powerflow Procedure Manual](#), which takes into account anticipated load levels, generation dispatch, transmission topology, long-term planned outages, and projected long-term transmission service. Updates will be made to the models to reflect the most accurate system configuration, generation, and load representation for each pertinent individual modeling area for the study period. No adjustments will be made to model parallel path flow or loop flows in the load flow models used in the determination of transfer capability.. **(R1.4.1-5)**

To simulate a transfer across a path, SPP will increase generation in one POR and decrease generation in another POD. All combinations of the selected PORs and PODs will be simulated. **(R1.5)**

At a minimum the monitored elements and contingencies used in the assessment will include all non-radial BES transmission lines and transformers<sup>1</sup> 100 kV and above. Additional contingencies or monitored elements will be included as provided by TPs and/or TOs within the PC footprint. **(R1.4.6-7)**

SPP will respect all known System Operating Limits (SOLs) and will follow SPP Criteria in its assessment **(R1.2-3)**. SPP will determine transfer capability for each POR/POD combination based on the most limiting element under system intact or contingency conditions. The limiting element will have a minimum 3% outage transfer distribution factor or power transfer distribution factor.

## 3. Transfer Capability Assessment

Annually, SPP will perform a system intact and N-1 analysis simulating all combinations of selected PORs and PODs. The analysis will cover at least one year in the Near-Term Transmission Planning Horizon. The output of this analysis will be the maximum transfer capabilities based on most limiting elements under system intact and contingency conditions. Following the analysis, SPP will verify if the most limiting elements for each transfer path are valid limits and then establish the transfer capabilities.

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<sup>1</sup> Applies to lower voltage of transformers

#### 4. Transfer Capability Methodology Distribution

SPP will distribute this Transfer Capability methodology to all PCs with an adjacent or overlapping area and to each Transmission Planner (TP) within SPP **(R2.1)**. SPP will also distribute this Transfer Capability methodology within thirty (30) calendar days to all reliability-related entities that submit a request in writing. Requests should be sent to [Planning@spp.org](mailto:Planning@spp.org) **(R2.2)**.

If a recipient of this Transfer Capability methodology provides documented concerns with this methodology, the SPP will provide a documented response within 45 calendar days of receiving the documented concerns. SPP's response will indicate if any changes will be made. If no changes are made, SPP will provide a reason why no change is necessary **(R3)**. Documented concerns should be sent to [Planning@spp.org](mailto:Planning@spp.org).

#### 5. Transfer Capability Assessment Distribution

SPP will distribute the results of the annual Transfer Capability assessment within forty five (45) calendar days to the entities with which SPP is required to share its methodology and to those reliability-related entities which provide a documented request of the results **(R5)**. SPP will also provide data to support its annual Transfer Capability Assessment results within forty five (45) calendar days upon receiving a documented request for supporting data from a recipient of the annual Transfer Capability assessment **(R6)**. Requests for the assessment and supporting data should be sent to [Planning@spp.org](mailto:Planning@spp.org).