



Southwest Power Pool
FINANCE COMMITTEE MEETING
November 14, 2011
Teleconference

• Summary of Action Items •

1. Approved use of OD+4 settlement data to the estimation of Day-Ahead exposure as described in Section 5.2.1 of Attachment X of the SPP Tariff

• Schedule of Follow-up Items •

1. SPP President to review metering in SPP region and suggest opportunities for improvement
2. Impact of depreciation schedules on property taxes and balance sheet.
3. Perform full review of Integrated Marketplace project at December 12, 2011 meeting including:
 - a. Basis for \$105MM capex budget
 - b. Comparison with most recent cost/benefit study results
 - c. Structure of major contracts executed to complete project



Southwest Power Pool
FINANCE COMMITTEE MEETING
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• M I N U T E S •

Agenda Item 1 – Administrative Items

SPP Chair Harry Skilton called the meeting to order at 2:30 p.m. The following members of the Finance Committee were in attendance:

Harry Skilton	SPP Director
Trudy Harper	Tenaska
Sandra Bennett	Southwestern Power Company
Tom Dunn	SPP

The following members of the Credit Practices Working Group were in attendance:

Jayne Clarke	Sunflower
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Others attending included:

Michael Henderson	Arkansas Electric
Carol Shoemake	OG&E
Bruce Cude	SPS
Nick Brown	SPP
Philip Bruich	SPP
Bruce Rew	SPP

Credit Exposure Calculation Enhancements

SPP summarized the discussion from the November 9, 2011 joint meeting of the Finance Committee and the Credit Practices Working Group. SPP staff presented new information covering settlement calibration error statistics and summary of credit exposure calculations used at RTOs for virtual, day-ahead, and congestion rights transactions.

Sandra Bennett motioned to approve the Credit Practices Working Group recommendation to use OD+4 data in the estimation of day-ahead market exposure as described in Section 5.2.1 of Attachment X to the SPP Tariff. The motion was seconded by Trudy Harper and approved by unanimous voice vote.

Other Business

The Committee discussed potential SPP responses in its compliance filing related to FERC's Order 741 directives as it relates to RTOs having responsibility to verify and audit a customer's risk management processes, policies, and programs.

Future Meetings

The next meeting of the SPP Finance Committee is scheduled for December 12, 2011 beginning at 12 noon central time and finishing at 5:30 pm central.

There being no further business, Harry Skilton adjourned the meeting at 3:40 p.m.

Finance Committee
October 14, 2011

Respectfully Submitted,

Thomas P. Dunn
Secretary



Southwest Power Pool, Inc.
FINANCE COMMITTEE MEETING

November 14, 2011

Teleconference

Dial In: 866-727-4079

Pass Code: 5753688

• A G E N D A •

2:30 p.m. – 3:30 p.m.

- 1. Administrative Items (5 minutes)..... Harry Skilton
- 2. SPP Credit Practices Working Group (50 minutes)..... Tom Dunn
 - a. Questions regarding November 9, 2011 CPWG presentation/discussion
 - b. Summary of November 9, 2011 meeting
 - c. OD+4 Accuracy versus OD+7
 - d. **Approval of exposure calculation language **Action Item****
- 3. SPP Director of Treasury and Risk Management Tom Dunn
- 4. Future Meeting..... All
- 5. Adjourn Harry Skilton

*Relationship-Based • Member-Driven • Independence Through Diversity
Evolutionary vs. Revolutionary • Reliability & Economics Inseparable*

Memorandum

To: SPP Finance Committee
From: Thomas P. Dunn
CC:
Date: November 14, 2011
Re: Summary of CPWG/FC Call November 9, 2011

The SPP Finance Committee and the SPP Credit Practices Working Group (“CPWG”) held a joint teleconference meeting on November 9, 2011 to review the recommendation of the Credit Practices Working Group on the use of Day-Ahead market data to determine potential exposure to Day-Ahead market customers. The course of the discussion also touched on SPP’s credit methodology, the operating environment in the SPP region, changes in credit administration expected once the Integrated Marketplace is implemented, potential exposure calculations for Virtual transactions and Transmission Congestion Rights (“TCR”) positions.

The SPP region differs from the other RTO/ISO regions by virtue of not having any retail open access. This difference is important in that it limits participants in the SPP Day-Ahead market to only those entities recognized as electric utilities. Additionally, the utilities in the SPP region are generally integrated utilities meaning the utility serves load and also possesses generation. Integration serves to help reduce the potential for a participant in the Day-Ahead market to be fully exposed to real-time prices.

SPP’s administration of credit will remain fairly consistent with its existing practices. In summary, the credit administration process follows the following steps:

1. Customer registers for service with SPP
2. SPP performs a credit analysis on the customer
 - a. Reviews both qualitative and quantitative aspects to determine credit score
 - b. Credit score determines level of unsecured credit the customer is eligible to utilize
 - c. Analysis update frequency dependent on amount of unsecured credit granted and credit score
3. SPP determines Total Potential Exposure of customer (initial based on expectations; ongoing based on calculation)
4. Total Potential Exposure compared to unsecured credit limit determines amount of Financial Security required (TCR exposure will always be secured)
5. Total Credit Limit established which is sum of Financial Security and unsecured credit limit
6. Potential Exposure continuously compared to Total Credit Limit.
 - a. When Total Potential Exposure equals or exceeds 90% of Total Credit Limit, system creates a flag alerting SPP Credit Dept. Customer is contacted and advised of status
 - b. When Total Potential Exposure equals 100% of Total Credit Limit:
 - i. Virtual bids/offers will not be accepted by system
 - ii. New TCR positions creating exposure will not be accepted by system
 - c. When Total Potential Exposure exceeds 100% of Total Credit Limit:
 - i. Customer notified of potential default,
 - ii. Request made for additional Financial Security and/or early payment of outstanding invoices



- iii. Must cure potential default within two business days
 7. Default occurs when cure period expires without being cured. No ability to transact in Virtual and TCR markets. Filing at FERC to terminate transmission service agreements and activity in Day-Ahead and Real Time markets

Potential Exposure is an estimate of how much customer may owe SPP before SPP can terminate service. The calculation varies depending on specific product, however, calculation based on three distinct subsets: i) amounts invoiced but not paid; ii) amounts settled but not invoiced; iii) amounts estimated but not settled. The first two subsets are amounts that are known by SPP and by the customer. The third amount, estimated but not settled, is an estimate of the exposure expected to accrue based on prior activity and market pricing/volatility. The calculation of estimated but not settled is summarized below by new product type:

- Virtual: MWs bid or offered multiplied by the 97th percentile worst outcome experience during the same quarter of the previous year.
- TCR: MWs multiplied by reference price. The reference price is the weighted two year mean price minus a stress test price. Stress test price for positive TCR mean is 75th percentile and for negative (counterflow) TCR mean is 90th percentile.
- Day-Ahead Greater of the average daily settlement over past 365 days or the average daily settlement (or pre-settlement OD+4 data) over the past 7 days multiplied by the number of days through cure period

The CPWG recommends calculation of Day-Ahead exposure for the 7 day average by averaging the most recent pre-settlement runs generated 4 days after each operating day (OD+4), without validation along with the remainder of the 7 days being initial settlement statements generated 7 days after each operating day (OD+7). The accuracy of the OD+4 settlements is very close to that of the initial settlement statement (see memo attached). The CPWG was not compelled that using a settlement run one day after the operating day provided meaningful information to the level of exposure due to only have 4 of the 20 day-ahead charges available (calculation would not have real-time meter data or complete bilateral settlement schedules).

Virtual Energy

SPP	MISO	PJM	CAISO
Credit check at the time of the bid/offer. Based on Reference Prices and maximum MWs of the bid/offer. Updated following publication of Day-Ahead Awards. Updated at the time settlements are calculated.	Transact on a daily MW limit as set by the market participant. A portion of credit limit is allocated for virtuals. The amount allocated is the MW limit * 2 days * the reference price listed below. Credit check at the time of the bid/offer to ensure bid/offer does not exceed daily MW limit.	Assumes MP exposure is included in invoiced amounts so generally no additional credit is required. Subject to further screening if Day Ahead requirements exceed credit available for more than two consecutive days.	Credit check at the time of the bid/offer. Based on Reference Prices and maximum MWs of the bid/offer. Updated following publication of Day-Ahead Awards. Updated following the publication of Real-Time prices. Updated at the time settlements are calculated.

Reference Prices

97 th Percentile Day-Ahead to Real-Time differential in the same quarter of the previous year.	50 th Percentile Day-Ahead to Real-Time differential over the previous year.	In further screening the 97 th Percentile Day-Ahead to Real Time differential. Year divided into six two-month periods.	95 th Percentile Real-Time to Day-Ahead differential for each eligible Pnode or Eligible Aggregated Pnode for three-month periods of each year using the hourly actual LMPs for the same period of the previous year.
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Day Ahead & Real-Time Markets

The highest of the seven day rolling average or 365 day rolling average of the best available settlement statements, times number of operating days that have not been settled plus two to cover the cure period.	The highest of the seven day rolling average of initial settlement statements or 365 day rolling average of final settlement statements, times 6.	Long term credit requirement calculated based on three highest consecutive weeks of billings in a six month period. Also have a concurrent short-term credit requirement stating that current exposure cannot exceed 75% of the credit that is not used for FTRs.	Based on published settlements data. In addition, the time between Trade Date and published settlements data (TD+ 3 business days) is extrapolated by using 61 days of historical, published Settlement activity to derive a daily average of each Charge Code. That amount is then adjusted by daily and/or monthly Trade Date factors.
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Transmission Congestion Rights

SPP	MISO	PJM	CAISO
<p>Credit check at the time of the bid/offer. Based on Reference Prices and each MW point on the submitted curve. Both acquisition / disposal costs and hold period are evaluated. Updated following publication of TCR Awards. Updated at the time settlements are calculated.</p>	<p>Establish credit limit specifically for FTRs. Credit check at the time of the bid/offer. Based on Reference Prices and each MW point on the submitted curve. Use a minimum bid price for positive FTRs and another minimum bid price for zero and negative value FTRs.</p>	<p>Establish credit limit specifically for FTRs. Based on historical Reference Prices and bid/offer or cleared MWs. Additional credit requirement equal to twice the cleared portfolio price for portfolios with negative aggregate price; if geographically undiversified, the multiplier is increased to three.</p>	<p>Credit check at the time of the bid/offer (maximum bid exposure) is the maximum value of the highest credit exposure of all bid segments. The credit exposure of each bid segment is the sum of the linear bid price and the credit margin multiplied by the MWs. This credit check will be updated when winning bids are awarded and published on a settlement statement. The holding requirements are calculated and updated daily over the term of the CRR based on the auction price, three year historical average price and the credit margins.</p>
Reference Prices			
<p>Final Reference Price is the Mean Price minus the Stress Test Price. Mean Price based on two-year weighted average with most recent year a 75% weighting and the more distant year a 25% weighting. Stress test Price for positive means use 75th percentile and negative means use 90th percentile opposite flow direction.</p>	<p>The greater of the 50th or 75th Percentile Source/Sink MCC differential April 1 of prior year to March 31 of current year. Percentile values taken for source and sink locations before subtraction.</p>	<p>Weighted average based on three years historical values. Weighted 50% last year, 30% prior year, 20% two years prior. Adjusted upward by 10% for positive historical values and downward 10% for negative historical values.</p>	<p>The credit margin is defined as the difference between the expected congestion revenue and the fifth percentile value of the congestion revenue generated by one MW of CRR. The calculation is based on the most current 36 months of data.</p>

A nighttime photograph of a city skyline with several illuminated skyscrapers and buildings. The lights are reflected in a body of water in the foreground. A bridge is visible on the left side of the image.

Helping our members work together to keep the lights on...
today and in the future

 **SPP** *Southwest
Power Pool*

Finance Committee Credit Exposure Calculation Enhancements

Richard Dillon

November 9, 2011



Objective

- Reduce the SPP corporate exposure to defaults by accelerating the estimate for Day-Ahead energy and operating reserves in order to request more collateral

SPP Region: Business Environment

- **SPP regional load is regulated by the states**
 - **Load Serving Entities generally also have generation**
 - **Speculative entities serving load is not prevalent**
- **SPP exposure to Market Participant non-payment is based on the net of payments and charges for all services**

SPP Region: Business Environment (con't)

- **Products and market functions are interrelated in Integrated Marketplace**
 - **Load cannot be removed from the Marketplace**
 - **Impact of excluding/blocking participation in the Day-Ahead Market would increase SPP credit exposure from higher real-time prices**

Credit Approach

- Total Credit Limit (TCL) is composed of both unsecured and secured credit
 - FERC orders a minimum level of secured credit based on congestion rights exposure
- Credit is not distinguished by Trading Group (*e.g.* Transmission, EIS Market)
- Exposure is based on Total Potential Exposure (TPE) of all Trading Groups (*e.g.* Transmission, EIS Market)
- Exposure in excess of credit results in a request for additional collateral
- Default is based on all products and total credit

Total Potential Exposure

- **Total Potential Exposure (TPE) per credit holder, across all Trading Groups is based on three time horizons:**
 - **Invoiced Not Paid (INP)**
 - **Settled Not Invoiced (SNI)**
 - **Estimated Not Settled (ENS)**
- **Trading Groups are defined as a grouping of SPP products which have a common credit treatment**

Total Potential Exposure

- **Total Potential Exposure (TPE) is calculated based on many different factors depending on the Trading Group considered**
 - **At a summary level, there are 17 components**
 - **ENS time horizon is not applied to EIS Resettlement**
 - **TCR ENS + Day-Ahead ENS + ...+ Virtual SNI + ... + Transmission INP**

TPE: Day-Ahead ENS Timing Constraints

- **Day-Ahead Trading Group ENS is a function of historical settlement of market activity and an exposure window**
- **Some key data needed to estimate “pre-settlement” values for Day-Ahead Market participation are:**
 - **Prices – Available prior to OD+4 (but uncorrected)**
 - **Meter Data – Not Available prior to OD+4**
 - **Bilateral Settlement Schedules – Not complete prior to OD+4**
- **Validation and resubmission is not complete until OD+7**

Credit Event

- **A Potential Credit Event is defined whenever:**
 - **Credit Limit Available < 0 or,**
 - **Secured Credit Limit Available < 0**
- **It is upon review by SPP's Credit Staff that a Potential Credit Event could be declared a Credit Event**
- **When Credit Event is called, the credit holder is given a time period to respond. This time period is known as the Cure Period**
 - **The Cure Period is defined as two full business days from the time that a Credit Event is declared**

Credit Default

- A potential Default occurs if the Credit Event is not remedied during the Cure Period
- It is upon review by SPP's Credit Staff that a Potential Default could be declared a Default
- When a Default occurs:
 - Any new TCR bid/offer or Virtual bid/offer submitted by any MP attached to the Credit Holder is Disapproved
 - TCR portfolio could be seized and liquidated by SPP in Monthly Auction or Special Auction, subject to Credit Department Approval

TPE Calculation: Day-Ahead ENS Portion

- **Main Points**
 - Use the greater of the average settled exposure for Day-Ahead charges over the past 7 and 365 days
 - Multiply the average by an exposure window (Generally 9 days: 7 days + 2 business days of cure period)
- **Benefits**
 - Aligns Day-Ahead and Real-Time ENS calculations
 - Transparent to Market Participants
- **Drawbacks**
 - Credit implications are not recognized until a Settlement Statement is prepared (OD+7)

CPWG Alternatives discussed for Day-Ahead

- It may be possible to leverage the Settlements System to create a back-of-the-envelope Day-Ahead “pre-settlement” estimate sooner than OD+7
- On October 14, the Finance Committee instructed SPP and the CPWG to consider three options
 1. Use OD+1 “pre-settlement”
 2. Use OD+4 “pre-settlement”
 3. Use OD+4 “pre-settlement” with “advisory” OD+1 data

Alternative 1: OD+1 Day-Ahead ENS Calculation

- **Main Points**
 - **Only 4 of 20 “Day-Ahead” charges rely solely on inputs produced by the Day-Ahead Market**
 - **Energy Settlements rely on Bilateral Settlement Schedules**
 - **Reserves Obligation rely on meter data (or State Estimator)**
 - **Prices have not been validated; gaps may exist**
 - **Day-Ahead and Real-Time calculation disconnect**
 - **Non-transparent to Market Participants**

Alternative 1: OD+1 Day-Ahead ENS Calculation

- **Benefits**
 - Fastest incorporation of new information
- **Drawbacks**
 - Significant problems with data accuracy
 - Values not binding in Settlements

Alternative 2: OD+4 Day-Ahead ENS Calculation

- **Main Points**
 - **The inputs to determine most “big-dollar” Day-Ahead charges will be reasonably available**
 - **Bilateral Settlements Schedules received**
 - **State Estimator should be fairly reliable at OD+4**
 - **Prices have not been validated; gaps may exist**
 - **Day-Ahead and Real-Time calculation disconnect**
 - **Not transparent to Market Participants**

Alternative 2: OD+4 Day-Ahead ENS Calculation

- **Benefits**
 - **Faster incorporation of new information**
- **Drawbacks**
 - **Problems with data accuracy**
 - **Values not binding in Settlements**

Alternative 3: OD+4 with Advisory OD+1 Day-Ahead ENS

- **Main Points**
 - OD+4 considerations
 - OD+1 data is insufficiently reliable to use in calculations so advisory value is diminished
 - Actions to take in response to OD+1 information unclear

Alternative 3: OD+4 with Advisory OD+1 Day-Ahead ENS

- **Benefits**
 - OD+4 with additional OD+1 information
- **Drawbacks**
 - Additional cost and effort (including resources) for the OD+1 calculation
 - Cost and complexity justification if OD+1 is not actionable data

Marketplace Impacts: ENS Alternatives

- Any of the alternative “pre-settlement” calculations does impact the Program and SPP’s on-going operations
 - Additional business processes / validations are needed
 - Additional test cases and failure condition logic
 - Potential system design / interface changes
 - Extra Settlement runs and validation of runs
 - Impact on cost/schedule
 - In process

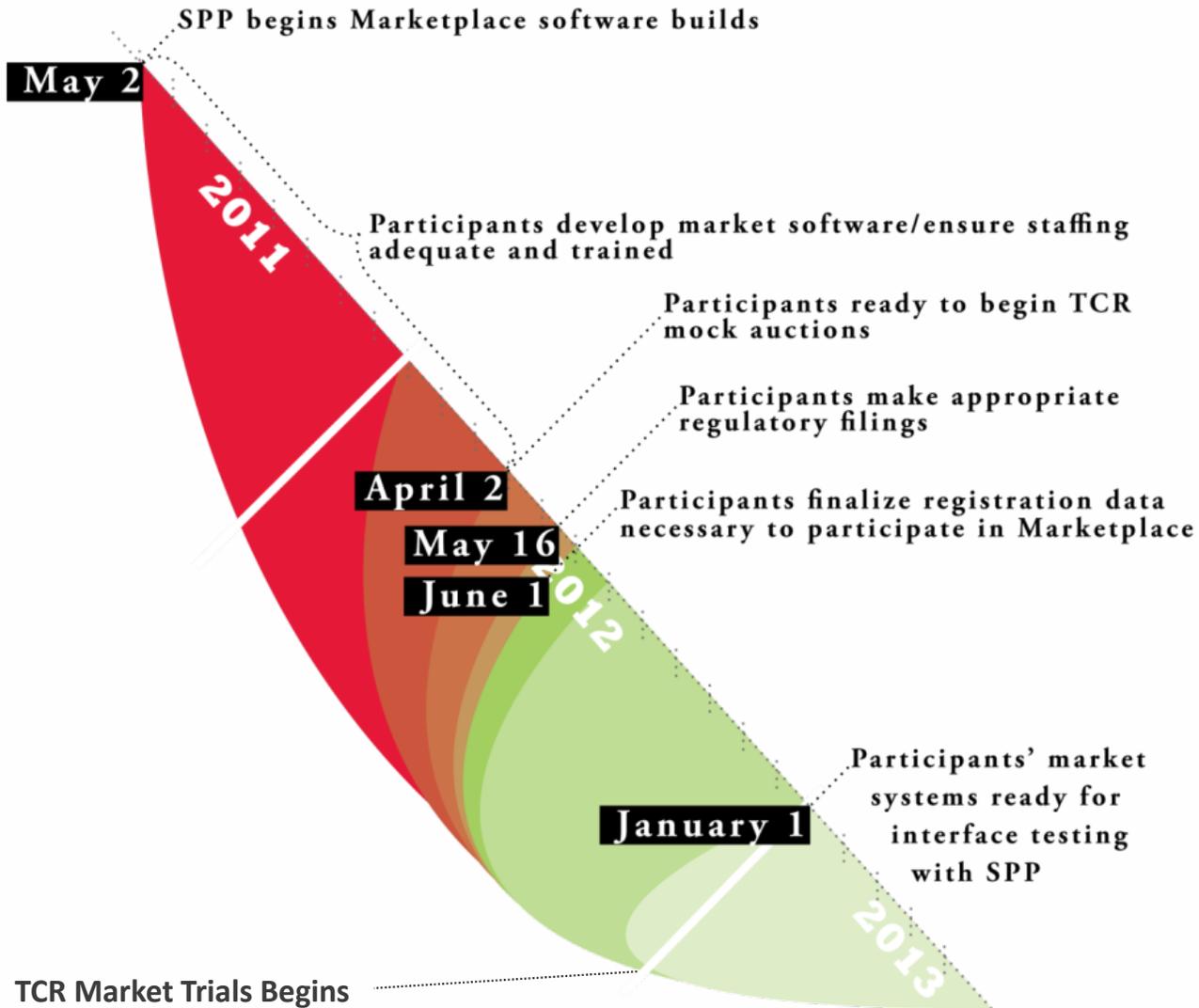
CPWG Recommendation

- **CPWG recommends using the OD+4 “pre-settlement” to update the Day-Ahead 7-day average for energy and reserves**
 - **If no OD+4 “pre-settlement” is received, Day-Ahead ENS calculations will be based on the data available**
 - **The results will be binding on MPs from a credit perspective, regardless of OD+4 data accuracy**

Recommendation

- **Finance Committee accepts the CPWG recommendation for inclusion in the Credit Policy.**

Market Participant Milestones



MAY 15, 2013
PARTICIPANTS READY
FOR SYSTEM INTEGRATION

APPENDIX

Credit in EIS

- **SPP requires that Market Participants hold enough credit in order to participate in the EIS Market**
- **The credit exposure is designed around 2 Trading Groups:**
 - **Transmission**
 - **Energy Imbalance services**

Credit in Integrated Marketplace

- A similar requirement will exist for the Integrated Marketplace:
 - Credit Exposure is defined around 6 Trading Groups:
 - Transmission
 - Real-Time Energy
 - Day-Ahead Energy
 - Virtual Energy
 - Transmission Congestion Rights
 - EIS Resettlements (does not include estimated component)

Total Credit Limit

- **Total Credit Limit (TCL) per credit holder consists of:**
 - **Unsecured Credit**
 - **Secured Credit**
 - **Mandatory for activity in TCR Market**

Total Potential Exposure

- **Total Potential Exposure (TPE) per credit holder [total liability as computed across all time horizons and all Trading Groups for each Market Participant mapped to that credit holder]:**
 - **Consists of:**
 - **Unsecured TPE**
 - **Secured TPE**
 - Based on TCR Trading Group activities and other activities for which the Credit Holder has insufficient Unsecured Credit

Credit Limit Available

- **Credit Limit Available (CLA) per credit holder [total amount of credit available to the MPs mapped to that credit holder]:**
 - **Will consist of:**
 - Unsecured CLA
 - Secured CLA
 - **Transactions coverage:**
 - Transactions that can be covered by either Secured or Unsecured credit will always be covered by Unsecured Credit first until unavailable

CPWG Alternatives Marketplace Impact Rating

Effort Impact: High, Medium, Low

	OD+1	OD+4	OD+4 with OD+1 advisory	OD+7
Additional business processes / validations are needed	High	Medium	High	Low
Additional test cases and failure condition logic	High	Medium	High	Low
Potential system design / interface changes	High	Medium	High	Low
Extra Settlement runs and validation of runs	High	Medium	High	Low
Impact on cost/schedule	In Process	In Process	In Process	None



Southwest Power Pool, Inc.

FINANCE COMMITTEE

Recommendation from the Credit Practices Working Group

November 14, 2011

Day-Ahead Market Exposure Calculation

Organizational Roster

The following persons are members of the Finance Committee:

Harry Skilton	Director
Larry Altenbaumer	Director
Gary Voigt	Arkansas Electric Cooperatives Corp.
Trudy Harper	Tenaska
Sandra Bennett	American Electric Power
Kelly Harrison	Westar Energy

Background

Section 6.5 of the SPP Bylaws identifies establishment of annual and long-term budgets as a primary duty of the Finance Committee.

Analysis

The CPWG reviewed the benefits and implications of estimating Day-Ahead market exposure using the following potential data sets:

Initial Settlement Statement	OD+7
Pre-settlement Statement	OD+4
Pre-settlement Statement	OD+1
Pre-settlement Statement	OD+4 with advisory based on OD+1

The CPWG determined the OD+1 data set is sufficiently incomplete to not provide useful data for determination of credit exposure or to serve as a flag of potential credit exposure. This determination is based primarily on the lack of real-time meter data necessary to determine the true extent of exposure and the absence of bilateral settlement schedules used to offset Day-Ahead exposure. The CPWG determined the OD+4 data was sufficiently accurate to utilize in the estimation and found significant variance between OD+4 and OD+7 is relatively infrequent.

The following language will document utilization of the OD+4 data in the calculation of Day-Ahead market exposure and will reside in section 5.2.1 of the SPP Credit Policy.

MEMEDA = Maximum Estimated Market Exposure for Day-Ahead Market activity shall be the greater of:

(a) The average of the last three hundred sixty five (365) days of most recently calculated Settlement Statements for Day-Ahead Market activity (or if settlement activity occurred for a lesser period, the average settlement activity during such lesser period), or

(b) The average of the seven (7) most recent Operating Days for which SPP has calculated either (i) updated estimated Day-Ahead Market activity results calculated four days after the Operating Day; or (ii) initial Settlement Statements for Day Ahead Market activity (or if



updated estimated activity results or settlement activity occurred for a lesser period, the average updated estimated activity and settlement activity resulting during such lesser period). The initial Settlement Statements are created at the end of the 7th calendar day following the Operating Day. As initial Settlement Statements become available such statements will be used instead of the updated estimated activity results calculated four days after the Operating Day.

For the time period prior to commencement of the Day-Ahead Market for which there are no calculated initial Settlement Statements for Day-Ahead Market activity for use in the determination of the MEMEDA for a Credit Customer, SPP shall use data representative of the expected Day-Ahead Market activity for the Credit Customer based on simulations of the Day-Ahead Market or other available information.

Once the greater value is determined that value is multiplied by the number of days remaining in the Potential Exposure Window. Inasmuch as the Potential Exposure Window refers to "days before service can be terminated," the time period for purposes of calculating the MEMEDA does not include additional time for service termination.

Recommendation

The Credit Practices Working Group recommends approval of the use of OD+4 data in the calculation of Day-Ahead market exposure.

Approved: Credit Practices Working Group October 19, 2011

Action Requested: Approve Recommendation