



Southwest Power Pool
PRICE FORMATION TASK FORCE MEETING
October 18, 2016
AEP Offices – Dallas, TX
• SUMMARY OF MOTIONS •

Motions:

Agenda Item 2 — Minutes Approval

Valerie Weigel (Basin) motioned, and Jim Flucke (KCPL) seconded to approve the minutes for September 21, 2016. The motion passed with no oppositions and no abstentions.



**Southwest Power Pool
PRICE FORMATION TASK FORCE MEETING**

October 18, 2016

AEP Offices – Dallas, TX

• Minutes •

Agenda Item 1 - Call to Order, Proxies, Agenda Discussion

Matt Moore (GSEC) called the meeting to order at 8:00 a.m. The attendance was recorded and the group reviewed the agenda. See Attachment 1 - PFTF Attendance October 19 2016 and Attachment 2 - PFTF Agenda 20161019.

Agenda Item 2a – Minutes Approval, September 21 2016 Minutes

Valerie Weigel (Basin) motioned, and Jim Flucke (KCPL) provided the second to approve the minutes for September 21, 2016. The motion passed with no oppositions and no abstentions. See Attachment 3 – September 21 2016 Minutes.

Agenda Item 3 - De-commit RR Update

Topic deferred.

Agenda Item 4 - RR116 Education

Jim Gonzalez (SPP) provided an overview of the changes to be implemented with RR116 – Quick-Start Real-Time Commitment. The group discussed the changes in comparison to MISO's ELMP. For details of the presentation see Attachment 4 – RR116 Overview.

Agenda Item 5 - Public Data Discussion

The group viewed the list of public data additions over the previous six months. SPP staff detailed the process in place for stakeholders to submit requests for public data. See Attachment 5 – SPP Markets Public Data Guide Revision History.

Agenda Item 6 - Operating Reserve Demand Curve

Gary Cate (SPP) led a discussion of SPP's proposal to implement a variable demand curve in response to Order 825 to address FERC concerns with RTO/ISO application of scarcity pricing. The group discussed a concern that the demand curve design may result in suppressed prices and cautioned staff to ensure the curve does not undermine what was intended with Order 825. See Attachment 6 - 10132016 Scarcity Pricing Impact_v1.

Agenda Item 7 - Issue 4 – Mitigation of Resource Offers to “Cost plus 10%”

Topic deferred.

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Agenda Item 8 - Issue 9 – Over Production in Real-Time

Topic deferred. Matt Moore (GSEC) stated Golden Spread will initiate a Revision Request.

Agenda Item 9 - Real-Time Allocation of Regulation to Improve Pricing

Topic deferred.

Agenda Item 10 - Review PFTF Prioritized Task List

The group discussed the PFTF Charter and the group's plans to draft a recommendation to the MWG of what PFTF issues should be address in the future. See Attachment 7 – List of Concerns and Attachment 7a - PFTF Issues Compiled.

Agenda Item 11 - Review of Motions, Action Items and Future Meetings

Action Items:

No new actions recorded. See Attachment 8 – PFTF Action Items.

November 16, 2016 (8:00 a.m. – 12:00 p.m.)

Location: AEP Office – Dallas, TX

Room: 8th Floor

Future Meetings:

December 14, 2016 (8:00 a.m. – 12:00 p.m.)

Location: AEP Office – Dallas, TX

Room: 8th Floor

Adjournment

Matt Moore (GSEC) adjourned the meeting at 12:00 p.m. CPT.

Respectfully Submitted – Erin Cathey

All sessions in Central Standard Time (Chicago, GMT-06:00)

Session detail for 'PFTF Face to Face':

Participant Name	Email
Ishwar Saini	ishwar.saini@macquarie.com
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PRICE FORMATION TASK FORCE

October 19, 2016

• A G E N D A •

8:00 a.m. – 12:00 p.m.

- 1. Call to Order, Proxies, Agenda Discussion (8:00) Matt Moore
- 2. Minutes Approval (8:05)..... Matt Moore
 - a. September 21 2016 Minutes
- 3. De-commit RR updateRichard Ross
- 4. RR116 Education Jim Gonzales
- 5. Public Data Discussion..... Matt Moore
- 6. Operating Reserve Demand Curve Gary Cate
- 7. Issue 4 – Mitigation of Resource Offers to “Cost plus 10%” Rob Janssen
- 8. Issue 9 – Over Production in Real-Time Matt Moore
- 9. Real-Time Allocation of Regulation to Improve Pricing Matt Moore
- 10. Review PFTF Prioritized Task List.....Erin Cathey
- 11. Review of Motions, Action Items and Future Meetings.....Jared Greenwalt
- 12. Adjournment (12:00)..... Matt Moore



Southwest Power Pool
PRICE FORMATION TASK FORCE MEETING
September 21, 2016
AEP Offices – Dallas, TX
• SUMMARY OF MOTIONS •

Motions:

Agenda Item 2 — Minutes Approval

Valerie Weigel (Basin) motioned, and Jim Flucke (KCPL) seconded to approve the minutes for August 24, 2016. The motion passed with no oppositions and no abstentions.



Southwest Power Pool
PRICE FORMATION TASK FORCE
AEP Offices, Dallas
September 21, 2016
• Minutes •

Agenda Item 1 - Call to Order, Proxies, Agenda Discussion

Matt Moore (GSEC) called the meeting to order at 8:00 a.m. The attendance was recorded and the group reviewed the agenda. See Attachment 1 - PFTF Attendance September 21 2016 and Attachment 2 - PFTF Agenda for September 21 2016.

Agenda Item 2a - Minutes Approval

Valerie Weigel (Basin) motioned, and Jim Flucke (KCPL) provided the second to approve the minutes for August 24, 2016. The motion passed with no oppositions and no abstentions. See Attachment 3 – August 24 2016 Minutes.

Agenda Item 3 - Issue 13 – Intermittent Resources Management adds costs to the Market

Ron Thompson (NPPD) introduced the Issue 13 – Intermittent Resources management adds costs to the Market stating he would like to understand how SPP might incent Non-Dispatchable Variable Energy Resources (NDVER) to become Dispatchable Variable Energy Resources (DVER), taking into account that these Resources have contracts requiring they are made whole. Ron explained some of NPPD's NDVERs are able to dispatch with a phone call and offered to notify SPP of any dispatch changes. SPP staff noted that if a change was going to take place for an extended period time and SPP was notified 30 minutes to an hour in advance that a notification may be helpful, however, the end result would be very similar to the current practice of echoing or issuing an OOME. The group discussed whether negative pricing indicates an economic or reliability signal. Ron Thompson noted NPPD treats negative pricing as an economic signal. Gary stated that in circumstances where a low Energy price occurs but the MCC is non-zero, the low price is likely due to congestion on a constraint. This indicates that SPP is lowering the LMP for reliability reasons. SPP staff will discuss this with SPP Legal Counsel to determine if SPP is able to state officially whether certain conditions indicate an economic or a reliability signal. Carrie Dixon (Xcel) asked SPP if there is any opposition to economic decommitment. SPP stated it would be important to understand the implementation and that the Market Participants are not privy to all of the information SPP has. SPP stated that could lead to non-optimal decision making from the participants potentially burdening the Marketplace with further Make Whole Payments. Matt Moore stated if Market Participants were able to decommit, this could help mitigate the negative pricing issue. Richard Ross (AEP) noted Market Participants did not allow SPP to take a position to decommit Resources from an economics perspective during development of the Integrated Marketplace Protocols. Richard offered to develop a Revision Request for review. Carrie Dixon (Xcel) also continued her discussion with regards to long lead

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economic commitment decisions. SPP stated the largest hurdle was the same as Richard Ross stated; the protocols do not currently allow it. The group agreed this discussion was valuable and should be discussed further at the MWG. SPP also mentioned that there might be types of data that could be included in the SPP Public Data offerings that would help participants with long lead decisions such as 7 Day Available Capacity and Optimal Commitment Capacity.

Action Item: SPP staff to discuss with SPP Legal Counsel to determine if SPP is able to state officially whether certain circumstances indicate an economic or a reliability signal.

Agenda Item 4 - Issue 15 – Transmission/Resource Outage Coordination

Ron Thompson described Issue 15 – Transmission/Resource Outage Coordination. NPPD feels unscheduled transmission and generation outages increases the risk of more congested flowgates and the volatile prices that tend to follow in the RT Market. Gary stated SPP staff is performing research currently to determine if value could be added by SPP scheduling outages from an economic perspective as well as from a reliability perspective. Shawn McBroom suggested SPP staff coordinate an ORWG and MWG joint meeting to discuss. SPP staff stated research results will be presented to the MWG in early 2017 to determine if it is something SPP should pursue.

Agenda Item 5 - Issue 12 – Block Loaded Fast Start Resources

Matt Moore described Issue 12 – Block Loaded Fast Start Resources. GSEC feels Block Loaded fast start Resources should have the ability to set LMP in the SPP market. The group discussed the possibility of SPP developing an Extended LMP (ELMP) similar to MISO’s ELMP. SPP staff noted RR116 addresses some of the concerns noted that an ELMP concept may address, and suggested SPP staff provide a refresher on RR116 during the October PFTF. The group also discussed doing a deep dive to understand better the basics of ELMPs.

Action Item: SPP staff will provide an overview of RR116 during the October PFTF.

Agenda Item 6 - Issue 11 – Summary of DA Transparency

Matt Moore described Issue 11 – Summary of DA Transparency. The group discussed reviewing the list of new public data SPP has made available in the last 6 months. Gary noted the the Marketplace Public Data User Guide Revision History provides a list of the data made publicly available in the last 6 months. Matt Moore requested the group review the data

Agenda Item 7 - Issue 5 – Lack of Multi-Day Resource “Reliability Coordination”

Rob Janssen (Dogwood) described Issue 5 – Lack of Multi-Day Resource “Reliability Coordination”. Temper Williams (SPP) discussed the accuracy of Multi-Day Reliability Results with the group. The group



discussed the value of the data and decided to revisit this issue with the MWG during the discussion regarding long lead economic commitment decisions.

Agenda Item 8 - Issue 4 – Mitigation of Resource Offers to “Cost plus 10%”

Topic deferred.

Agenda Item 9 - Issue 9 – Over Production in Real-Time

Topic deferred.

Agenda Item 10 - Real-Time Allocation of Regulation to Improve Pricing

Topic deferred.

Agenda Item 11 - Review PFTF Prioritized Task List

Topic deferred. See Attachment 4 – List of Concerns and Attachment 4a - PFTF Issues Compiled.

Agenda Item 12 - Review of Motions, Action Items and Future Meetings

Action Items:

- Agenda Item 3: SPP staff to discuss with SPP Legal Counsel to determine if SPP is able to state officially whether certain circumstances indicate an economic or a reliability signal.
- Agenda Item 5: SPP staff will provide an overview of RR116 during the October PFTF.

Future Meetings:

October 19, 2016 (8:00 a.m. – 12:00 p.m.)

Location: AEP Office – Dallas, TX

Room: 8th Floor

November 16, 2016 (8:00 a.m. – 12:00 p.m.)

Location: AEP Office – Dallas, TX

Room: 8th Floor

Adjournment

Matt Moore (GSEC) adjourned the meeting at 12:00 p.m. CPT.

Respectfully Submitted – Debbie James, Staff Secretary



RR116 Overview

Overview of RR 116

- Create new optional Resource Flag in Registration
 - Quick Start Resource (QSR)
- RTBM estimated economic need for QSR
- QSRs will receive commitment instructions at time of initial dispatch
 - Real-time Commitment

Registration Details

- Resource must be capable of:
 - Cold Start-Up \leq 10 minutes
 - Minimum Run Time \leq 1 hour
 - Effective Minimum Down Time \leq 1 hour
 - Min Down Time + Sync-To-Min + Min-To-Off

Process changes

- **DAMKT**
 - No Changes
- **DA-RUC / ID-RUC**
 - No Changes
- **ST-RUC**
 - Determines if QSR must be committed for Reliability or if it can progress to RTBM
- **RTBM**
 - Issues dispatch and commitment instruction at same time if QSR is economic

ST-RUC Decision: Reliability or Wait?

- If needed to address reliability, QSRs are physically committed out of ST-RUC
 - Reliability includes VRLs or OR Shortage, including...
 - System-wide capacity shortage
 - Transmission constraint
 - Operating Reserve Shortage
- If selected for economics, QSRs do not receive a commitment from ST-RUC
 - ST-RUC flags QSR as eligible for dispatch in Real-Time
- Otherwise, QSR is not eligible for dispatch in Real-Time
 - QSR will not be economical for Min Run Time

RTBM QSR Eligibility

- RTBM will use QSR logic to dispatch when:
 - Registered as QSR
 - Cold Start-Up Time \leq 10 minutes
 - Minimum Run Time \leq 1 hour
 - Effective Minimum Down Time \leq 1 hour
 - Control Mode = 1 or 2 (regulating, nonregulating)
 - Minimum Down Time is met
 - QSR is not in COP for current interval
 - When in COP, QSR is treated like any other resource

RTBM QSR Economic Evaluation

- RTBM evaluates the Effective Energy Offer Curve (EOC)
 - Start-Up and No-Load for non-QSRs have already be evaluated in their unit commitment decision
 - Effective EOC equitably compares QSRs to other Resources
 - Used only to bring QSR online or to extend commitment
 - Effective EOC will not set price
- Effective EOC = EOC + Start-Up adder + No-Load adder
 - EOC: \$/MWh
 - SU offer: \$
 - NL offer: \$/h

QSR Failure to Perform

- If a QSR fails to properly respond to dispatch
 - SPP will contact the MP
 - If MP reports a problem, QSR flag will be overwritten until problem is resolved
 - If the QSR continues to fail to properly respond to dispatch
 - QSR registration will be removed
 - MP may re-register at next model update

SPP Markets Public Data Guide – Revision History as of 10-12-2016

Version No.	Date	Author	Revision Description
1	4/22/2013	Ben Hefner	Initial Draft
2	6/19/2013	Ben Hefner, Jacob Pannell	Added STLF, MTLF, DA LMP by Bus Modified DA Clearing to include OR, NSI and Total Demand columns Modified DA and RTBM MCP to display MCP values by reserve zone and include product types as columns instead of rows.
3	8/27/2013	Ben Hefner, Jacob Pannell	Added Operational Data Short Term Wind Forecast and DA Wind Forecast Modified RTBM and DA Binding Constraints to include Constraint Type and Contingent Facility columns
4	3/25/2014	Ben Hefner, Jacob Pannell	Added "Data Locations Summary" table Modified LMP, MLC, MCC and MEC attributes for RTBM and DA LMP by Settlement Location and LMP by Bus to reflect ten-thousandths precision Modified RegUP, RegDN, Spin and Supp attributes for RTBM and DA MCP to reflect ten-thousandths precision Modified Shadow Price attribute for RTBM and DA Binding Limits to reflect ten-thousandths precision Added "GMTIntervalEnd" column to RTBM LMP by Settlement Location, RTBM LMP by Bus, RTBM MCP, RTBM Binding Constraints, DA LMP by Settlement Location, DA LMP by BUS, DA MCP, DA Binding Constraints, DA Market Clearing, OD Hourly Load Forecast, and OD Day Ahead Wind Forecast Added "GMTInterval" column to OD System-Wide Short-term Wind Forecast (STWF) and OD System-Wide Short-term Load Forecast (STLF) vs. Actual Added "Description" to all public data files
5	6/23/2013	Jacob Pannell	Added ITE URLs
6	7/23/2014	Jacob Pannell	Added cleared RTBM OR
7	11/7/2014	Amber Collins	Added MTE URLs Updated RTBM MCP – Updates effective 3/1/2015 Added Mileage Factor – Updates effective 3/1/2015 Added Historical Offers – Updates effective 3/1/2015
10	5/13/2015	Amber Collins, Nikki Eason	Changing version number to correspond to release number Added Ramp Sharing – Updates effective 7/1/2015 Added Fuel On Margin – Updates effective 7/1/2015 Added DA Virtual Clearing – Updates effective 7/1/2015 Update Historical Offer files to include an indicator for Offers and Bids

SPP Markets Public Data Guide – Revision History as of 10-12-2016

Version No.	Date	Author	Revision Description
			Updated DA Market Clearing – Updates effective 7/1/2015 Updated datatypes to reflect correct precision to ten-thousandths Added MP Regulation Performance – Updates effective 7/1/2015 Removed reference to ITE
11	8/6/2015	Amber Collins	Added M2M – Updates effective 10/1/2015
11.1	8/27/2015	Amber Collins	Added DST description and examples Updated Fuel on Margin file to include GMTIntervalEnd column Add Forecast Graph description and examples to guide Updated Forecast Graph file to include GMTIntervalEnd column
11.2	8/31/2015	Amber Collins	Updated .csv file examples in zip file for Fuel On Margin, Forecast Summary, RTBM MCP, RTBM OR, DA MCP & MP Regulation Performance
12	12/11/2015	Rick Cummins	Added Historical Tie Flow Data Added TCR Funding by Constraint Added RTBM LMP Trend Added State Estimator raw data (<i>NDA required for viewing</i>) data only available in PROD environment
13	3/22/2016	Rick Cummins	Add FTP access information (user / password) Add Historical Load Data at the Hourly Level Add Copy of TCR Funding by Constraint (by Market Day) Add LMP Annual Roll-Up
14	6/2/2016	Rick Cummins	Add LMP data roll-ups for RTBM & DA Add Day Ahead Total Congestion Dollars by Month and Constraint Revised file folder structure for RTBM and DA LMP Price Contour Map (Graphic Display) to include RTBM / DA delta info SLMP and SMCP Repricing folder added
15	8/19/2016	Rick Cummins	Modified Gen Mix display (Coal Mkt / Coal Self) Earlier publish time for Gen Mix data Add Report Gen Station Fuel Type by FTR case & PSS/E bus number Add Capacity of Generation on Outage



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SEVENTY-FIVE YEARS OF
RELIABILITY THROUGH RELATIONSHIPS



Scarcity Pricing Impact

Objective

- Fulfill MWG action item to staff to quantify impact of implementing RR175 to comply with FERC Order 825
- The analysis performed is an estimate based on calculations performed by SPP staff

Analysis Overview

- RTBM intervals were identified that had either: Regulation Up Shortage, Regulation Down Shortage, or Operating Reserve Shortage.
- The Approved DAMKT hour that corresponded to the RTBM interval was compared to the RTBM interval for: Resource Dispatch, Demand Bid, Virtual Offer and Bid, Regulation Up, Regulation Down, Operating Reserves cleared, and Transactions cleared.
- For bids, the amount of MW over-hedged in the DAMKT were considered to be paid back to the participant. The amount of MW under-hedged in the DAMKT as a withdraw were considered to be owed by the participant.
- For offers, the amount of MW over-generated in the DAMKT were considered to be owed by the participant. The amount of MW under-generated in the DAMKT were considered to be paid to the participant.
- The cost/revenue to the market was determined by multiplying the MW difference between DAMKT and RTBM by the increased LMP/MCP the market would have seen from Scarcity Pricing. Regulation Up and Regulation Down would increase to \$600. Operating Reserves would increase to \$1,100. Loss of opportunity component between Regulation Up, Operating Reserves and Energy was also considered, in which case LMP's would reflect the increased MCP of the product.
- A net Positive value means the market needs to be paid through uplift. A net negative values means SPP has over collected.

Analysis Results

Timeframe 03/01/2015 -03/01/2016

- The Impacts are as follows:

Regulation Up Scarcity				
Resource Impact due to MCP	Resource Impact due to LMP	Demand Impact due to LMP	Virtual Impact due to LMP	Transaction Impact due to LMP
-\$1,088,809.78	-\$1,886,742.16	\$2,762,929.70	\$2,868,271.08	\$1,387,537.18
Total			\$4,043,186.02	

Regulation Down Scarcity				
Resource Impact due to MCP	Resource Impact due to LMP	Demand Impact due to LMP	Virtual Impact due to LMP	Transaction Impact due to LMP
-\$963,142.54	Assumed No Impact	Assumed No Impact	Assumed No Impact	Assumed No Impact
Total			-\$963,142.54	

Operating Reserve Scarcity				
Resource Impact due to MCP	Resource Impact due to LMP	Demand Impact due to LMP	Virtual Impact due to LMP	Transaction Impact due to LMP
\$399,988.73	-\$1,534,571.07	\$1,369,314.28	\$1,629,461.96	\$99,678.50
Total			\$1,963,872.40	

- Grand Total = \$5,043,915.88

** Production cost analysis during same timeframe showed an increase of **\$206.5M**. This amount, unlike the ones shown above, does not consider DAMKT settlements but may give an appreciation for the impact of the change proposed in RR175.

UID	#	Issue	Submitted By	Market Concern	Proposed Solution	Regulation Deployment	Real-Time Price Volatility	Mitigated Offers	Over-Commitment of Resources	Scarcity Pricing	Violation Relaxation Limits (VRL)	Headroom	Start-Up and No-Load Costs	Over-production	Transparency (VERs)	Variable Energy Resources	Transmission Outage	Level of Effort (1 = Easy)	Importance (1 = Most Important)	Overall Rank	SPP Comment	PFTF		
1	8	Headroom processes should be examined to determine if the existing process for Headroom commitment is being properly reflected in the LMP's while reducing the uplift charges to the market. In addition, the commitment of Headroom should not mask the need for the development of what could be other market based products such as ramping, a 30-60 minute contingency reserve product, redefining and expanding the supplemental time frame or market based primary frequency response.	GSEC	Resources are committed for Headroom which is used for rampable capacity. These commitments create uplift when these Resources are not profitable and make pricing non-transparent.	Make headroom a market-based solution instead of a RUC-based solution so that the need is reflected in LMP.						X									High	1	3.33	Headroom/Floorroom is currently part of the SCUC and used to commit enough rampable capacity to meet the instantaneous load above/below the average load. It must be added to the SCED for pricing.	
4	3	Proper Pricing and Deployment of Regulation Services and Energy in Real Time	Dogwood	Resource can clear Regulation in the Day-Ahead Market, then, in Real-Time, not be cleared for Regulation. When MCPs are higher, the Resource must buy back its Day-Ahead position at a higher price.	Create a make-whole payment for a Resource that is cleared for Regulation in the Day-Ahead Market but does not get cleared for Regulation in Real-Time.	X	X													High	4	4.67	Significant effort to define the market rules around another MWP.	Need to determine value of doing this. What is the benefit. Discussion needed to further clarify concern and solution
7	5	Lack of Multi-Day Resource "Reliability Coordination" Activity by SPP Leading to Over-Commitment of Resources by Market Participants	Dogwood	High wind generator output and high levels of self-commitment cause an un-optimized, over-commitment, and thus too many Resources to be on-line.	SPP or the Market Monitor should publish a forecast describing the predicted mix of generation types that will provide the optimal solution.				X											Medium	7	9.67	Use SPP public information request process and monitor Stakeholder Prioritization Quarterly Meeting (SPQM) process.	Follow-up needed. Does staff agree to publish forecasted generation mix?
8	10	Over production in the real-time market should be examined. Resources should not be required to meet a Day Ahead commitment when the LMP is below production cost in real-time. This should hold true for all Resources but especially Quick Start Resources.	GSEC	Over-production of Energy as a result of over commitment or a needless requirement can lead to depressed, inefficient price signals.	Allow some committed Resources to be dispatched to zero MWs if LMPs do not merit running the Resource.								X							High	8	9.67	Day-Ahead committed QSRs are allowed a zero dispatch without MWP penalties. Settlement could be significant.	Is this something the group will recommend to MWG
9	10	Over production in the real-time market should be examined. Resources should not be required to meet a Day Ahead commitment when the LMP is below production cost in real-time. This should hold true for all Resources but especially Quick Start Resources.	GSEC	Over-production of Energy as a result of over commitment or a needless requirement can lead to depressed, inefficient price signals.	Allow Resources to buy back its Day-Ahead position without being charged MWP distribution.								X							High	9	9.67	Day-Ahead committed resources are exempt from MWP distribution charges.	Is this something the group will recommend to MWG
10	1	Excessive Volatility of SPP IM Real Time Energy Pricing	Dogwood	Real-Time LMPs vary from Day-Ahead LMPs such that the Day-Ahead Market does not provide a sufficient hedge for RTBM.	Lower scarcity pricing demand curves.		X			X										Medium	10	10.00	There is significant effort to determine the appropriate demand curve price, and to incorporate demand curves in software and business processes. If the demand curve is set too low, violations become more frequent, and if it is set to high it could have a significant price impact.	MWG will cover as part fo Demand Curve conversation
12	15	Transmission/Resource Outages Coordination	NPPD	The current coordination of scheduled transmission outages increases the risk of more congested flowgates and the volatile prices that tend to follow in RTBM.	Improve the process for coordinating transmission outages so that flowgate congestion is reduced, and thus, price volatility is reduced.											X				High	12	10.00	Already discussed with ORWG as part of the TCR Outage Sub-Group	Believe Casey's team is working on this
13	6	Scarcity pricing should be examined to determine if participants are being compensated for the services they are providing in the interval they are providing it.	GSEC	Scarcity Pricing should occur during the interval in which the product was scarce. The scarcity price should value the provided product properly. Scarcity prices should not be reduced or avoided by over-commitment.	Develop an Operating Reserve Demand Curve (ORDC).				X											Medium	13	10.33	There is significant effort to determine the appropriate demand curve price, and to incorporate demand curves in software and business processes. If the demand curve is set too low, violations become more frequent, and if it is set to high it could have a significant price impact.	Addressed as follow-up item to Order 825
14	15	Transmission/Resource Outages Coordination	NPPD	The current coordination of scheduled transmission outages increases the risk of more congested flowgates and the volatile prices that tend to follow in RTBM.	Possibly apply penalties when a planned, scheduled outage is not followed.											X				High	14	11.33	Already discussed with ORWG as part of the TCR Outage Sub-Group	Believe Casey's team is working on this
15	4	Mitigation of Resource Offers to "Cost plus 10%" Rather than "Cost" as a Reasonable Proxy for Cost Recovery in FERC-Regulated Energy Markets	Dogwood	When offers are mitigated to short-run marginal cost, Resources cannot recover their necessary costs.	Change mitigated offer rules to reduce the offer to cost plus ten percent.			X												Medium	15	11.67	MMU and FERC hurdle could be high.	Not yet discussed
16	7	Violation Relaxation Limit Process – The existing VRL process should be examined to determine if the protocols and related process are distorting LMP's during any circumstance.	GSEC	VRLs relax constraints to allow economic dispatch to solve. By relaxing the very need for these available services and technologies, the pricing and the very need for these services are diminished.	Do not relax constraints related to VRLs. Allow the price to reflect the VRL.					X										High	16	12.00	Current VRLs are used to encourage the MCE to respect system constraints until it reaches the VRL price threshold while allowing MCE to find a solution. The alternative to VRLs is demand curves. There is significant effort to determine the appropriate demand curve price, and to incorporate demand curves in software and business processes. If the demand curve is set too low, violations become more frequent, and if it is set to high it could have a significant price impact.	Not yet discussed

UID

#	Issue	Submitted By	Market Concern	Proposed Solution	SPP Comment														PFTF		
					Regulation Deployment	Real-Time Price Volatility	Mitigated Offers	Over-Commitment of Resources	Scarcity Pricing	Violation Relaxation Limits (VRL)	Headroom	Start-Up and No-Load Costs	Over-production	Transparency	Variable Energy Resources (VERs)	Transmission Outage	Level of Effort (1 = Easy)	Importance (1 = Most Important)		Overall Rank	
17	11 Transparency related to manual commitments, RUC's and Headroom should be posted for the Market Participant on a more frequent basis to ensure the Resource owner knows why the Resource was committed beyond normal market processes. In addition, the number of manual and RUC instances should be posted.	GSEC	Resource owners are not sufficiently aware of why their Resource is committed and how often market Resources are committed manually and by RUC.	The number of manual commitments and RUCs should be posted.									X				Low	17	12.00	Use SPP public information request process and monitor Stakeholder Prioritization Quarterly Meeting (SPQM) process.	Not yet discussed
18	11 Transparency related to manual commitments, RUC's and Headroom should be posted for the Market Participant on a more frequent basis to ensure the Resource owner knows why the Resource was committed beyond normal market processes. In addition, the number of manual and RUC instances should be posted.	GSEC	Resource owners are not sufficiently aware of why their Resource is committed and how often market Resources are committed manually and by RUC.	Post the reason for a Resource's manual commitment or RUC for the Market Participant (e.g., Regulation, additional Operating Reserve, Headroom, rampable capacity, etc.).									X				Low	18	12.67	Manual commitment reasons could be identified. The reason for RUCs is not available since there is no single reason identified in the SCUC for the unit commitment. All resources are committed economically to meet the input requirements. Use SPP public information request process and monitor Stakeholder Prioritization Quarterly Meeting (SPQM) process.	Not yet discussed
19	9 The unit commitment process should be reflected in the LMP to properly reflect the value for a particular unit and particular need while also reducing uplift to the market.	GSEC	Start-up and no-load costs are not included in LMP. Therefore the LMP does not reflect these costs and thus the value of certain Resource types. This also increases uplift charges.	Incorporate start-up and no-load costs into LMP by developing extended LMP.						X							High	19	13.67	Significant effort to define the market rules around ELMP eligibility rules and evaluate the impact.	Not yet discussed
20	16 Improved coordination between slower and faster ramping units where faster ramping units are compensated	NPPD	When wind Resources do not produce as forecasted, scarcity prices can occur and create price volatility in Real-Time.	Create a process where slower ramping Resources are used in the early stages of operation needs, and faster ramping resources are available for use later and are compensated accordingly.		X				X							Medium	20	17.67	Leverage ramp product market design work performed by the Ramp Product Focus Group.	Not yet discussed
21	12 The ability of Block Loaded fast start Resources to set LMP should be examined.	GSEC	Anytime a Resource is not allowed to set LMP then there is a clear direct connection with price formation. Block loaded Fast Start Resources should be allowed to set LMP. Other markets are taking steps to ensure this is the case.	Block loaded Fast Start Resources could be allowed to set LMP through mechanisms such as ELMP which had been addressed in MISO.									X				High	21	18.33	Significant effort to define the market rules around ELMP eligibility rules and evaluate the impact.	Not yet discussed
22	13 Intermittent Resources Management adds costs to the Market	NPPD	VERs increase the production cost of the market by increasing the Operating Reserve (OR) requirement and by causing scarcity, which leads to scarcity pricing.	Make VERs more accountable in scarcity pricing events.		X				X					X		High	22	19.33	Requires development of cost allocation methodology and could require significant Settlement changes.	Not yet discussed
23	13 Intermittent Resources Management adds costs to the Market	NPPD	VERs increase the production cost of the market by increasing the Operating Reserve (OR) requirement and by causing scarcity, which leads to scarcity pricing.	Make VERs more accountable for the additional Operating Reserve they require to reliably operate.	X										X		High	23	19.67	Requires development of cost allocation methodology and could require significant Settlement changes.	Not yet discussed
24	13 Intermittent Resources Management adds costs to the Market	NPPD	VERs increase the production cost of the market by increasing the Operating Reserve (OR) requirement and by causing scarcity, which leads to scarcity pricing.	Develop a process where the AO is made whole if the generation unit is harmed by deployment levels in the Real Time Market.	X										X		High	24	20.00	Combine with Dogwood Energy Issue #1.	Not yet discussed
	17 Scarcity Pricing appropriate for SPP Market based upon relaxation of Reserve Requirements	Westar	The current scarcity curve is too steep and does not correctly reflect the cost of BTM generators and off-line fast start peaking generation.	Create an Operating Reserve scarcity demand curve based upon the top of the SPP fast-start resource stack and BTM resource costs which pricing will be applied when SPP has to relax either VRL or Operating Reserve Requirements. The curve would be based on a Heat Rate gas price generated daily based on both daily gas prices and the costs of the heat rate demand curve (top of supply stack + BTM generation costs).						X											Not yet discussed

Issue to Be Addressed by the Price Formation Task Force

Issue	1	Title	Excessive Volatility of SPP IM Real Time Energy Pricing
Submitter Name: Rob Janssen			Company: Dogwood Energy
Email: rob.janssen@kelsonenergy.com			Phone: 443-542-5125
<p><i>Describe in detail the price formation issue that you would like the PFTF to address. It may be helpful to provide examples.</i></p> <p>As documented by SPP in various reports and substantiated by our own review of Day Ahead and Real Time energy pricing, the volatility of Real Time energy prices is significantly greater than that of Day Ahead prices. As a result, since increased volatility equals increased risk, active participation in the Real Time energy market is significantly riskier than the Day Ahead market prices would indicate. Dogwood Energy believes that Market Participants have few viable options for mitigating the risk of financial losses due to increased price volatility in the Real Time market, other than restricting their economic operations to more closely follow their Day Ahead award schedules. Following this course of action would result in less dispatch range and ramping capability being made available to the SPP system, thereby resulting in a less reliable system. Further, Dogwood Energy believes that reduction of the dispatch range of Resources in Real Time versus Day Ahead would also further depress Real Time energy prices leading to less efficient price formation in the market.</p>			
<p><i>Explain how the issue relates to price formation.</i></p> <p>Described above.</p>			
<p><i>(Optional) Describe a proposed solution(s) that is acceptable or that is unacceptable and explain why. It may be helpful to provide examples.</i></p> <p>One potential solution could be reduction of appropriate VRL dollar values established for the market. VRL dollar values establish the limit of price excursions resulting from scarcity of market products. While Dogwood Energy firmly believes that product scarcity events should result in price impacts in the market, the current level of the pricing excursions is a significant contributor to the increased volatility of Real Time prices. The key question is whether and why we would need a \$1,000/mwh real time price spike if a \$200/mwh price spike at current market and fuel price levels would accomplish the objective of moving Resource output in the right direction and reduce the risk of excessive financial losses. Reduction of the appropriate VRL dollar values to a more appropriate level could both reduce pricing volatility and lead to increased system reliability.</p>			

Issue	2	Title	Make Whole Payment Allocation Based on Real Time Imbalance Deviation from Day Ahead Schedule Rather than Deviation from Deployment Signal
Submitter Name: Rob Janssen			Company: Dogwood Energy
Email: rob.janssen@kelsonenergy.com			Phone: 443-542-5125
<p><i>Describe in detail the price formation issue that you would like the PFTF to address. It may be helpful to provide examples.</i></p> <p>Currently, Resources are allocated a share of Make Whole Payments based on their Real Time energy output deviation from their Day Ahead award schedule. However, this effectively penalizes dispatchable Resources for correctly and accurately following SPP's Real Time deployment signals. Theoretically, Make Whole Payments should be allocated to the Load and Resources that caused the Make Whole Payments to be incurred. However, online, committed, dispatchable Resources following SPP's Real Time deployment signals cannot reasonably be viewed as causing Make Whole Payments to be incurred. Instead, if a portion of Make Whole Payments are going to be allocated to dispatchable Resources, they should only be allocated to dispatchable Resources that fail to meet their commitment and dispatch obligations, including meeting Real Time deployment signals.</p>			

Explain how the issue relates to price formation.

If this mechanism is not changed, it should be expected that Market Participants will include estimated Make Whole Payment costs in their Real Time energy offers, if they are not doing so already. This would result in inefficient price formation in Real Time market prices.

(Optional) Describe a proposed solution(s) that is acceptable or that is unacceptable and explain why. It may be helpful to provide examples.

Change Make Whole Payment allocations to dispatchable Resources to be based on failed commitments and deviations from Real Time deployment signals rather than just deviations from Day Ahead award schedules. Alternatively, eliminate allocation of Make Whole Payments to dispatchable Resources and allow deployment failure penalties to adequately incent Resources to follow deployment signals.

Issue	3	Title	Proper Pricing and Deployment of Regulation Services and Energy in Real Time
Submitter Name: Rob Janssen		Company: Dogwood Energy	
Email: rob.janssen@kelsonenergy.com		Phone: 443-542-5125	
<i>Describe in detail the price formation issue that you would like the PFTF to address. It may be helpful to provide examples.</i>			
Dogwood Energy has observed significant pricing discrepancies between Regulation services and Energy in Real Time. For example, SPP frequently revokes Day Ahead Reg Down awards in Real Time, which often corresponds with price spikes in Reg Down service. However, at the same time, Real Time Energy prices are much lower than the price spike that occurs in the Reg Down service, resulting in a financial loss to the Resource that has its Day Ahead Reg Down award revoked.			
<i>Explain how the issue relates to price formation.</i>			
The Real Time Regulation deployment decisions being made by SPP's systems and operators result in price spikes and financial losses to Resources. This directly discourages Resources from supplying Ancillary Services, thereby increasing market prices and reducing system reliability. Dogwood Energy believes that Regulation should be priced such that an economic incentive is provided to Market Participants to provide regulation. Currently, our experience has been that the mechanisms currently in place in the SPP IM result in net negative incentives to provide Reg Down Service, when both the Day Ahead and Real Time results are considered.			
<i>(Optional) Describe a proposed solution(s) that is acceptable or that is unacceptable and explain why. It may be helpful to provide examples.</i>			
SPP could change its decision-making parameters for revoking Day Ahead Regulation Services awards to include consideration of Real Time Energy and Regulation prices. Alternatively, Resources could be made whole when SPP revokes their Day Ahead Regulation awards, presumably in order to supply Energy instead, and suffer financial losses in Real Time when Regulation prices spike and Real Time Energy prices do not increase in a similar manner.			
Issue	4	Title	Mitigation of Resource Offers to "Cost plus 10%" Rather than "Cost" as a Reasonable Proxy for Cost Recovery in FERC-Regulated Energy Markets
Submitter Name: Rob Janssen		Company: Dogwood Energy	
Email: rob.janssen@kelsonenergy.com		Phone: 443-542-5125	

Describe in detail the price formation issue that you would like the PFTF to address. It may be helpful to provide examples.

Due to the risk involved in the operation of generation facilities, (generator trips, wear and tear on equipment, equipment failure, firm LD pricing commitment of participating in the Day Ahead market, etc.) no Resource should reasonably be committed “at cost” based on a mitigated offer. Mitigation of Resource offers should drop offers to the historical FERC standard of “cost plus 10%” as reasonable level of cost recovery when mitigation occurs rather than only the cost calculated in mitigated offer curves.

Explain how the issue relates to price formation.

In many cases, this issue will have little or no impact on the broad price formation of the SPP market. SPP has reported that very few Resources are now being mitigated. Presumably, that is because Resources are offering at levels lower than their applicable mitigation levels or congestion is not present in the market such that mitigation would be activated. In any event, this proposal would provide a better “safety net” for Market Participants that believe they need to offer their Resources at levels that are higher than the applicable mitigation levels for those Resources. This may result in Market Participants seeing less financial risk in offering their Resources at levels above applicable mitigation levels, which in turn could result in impacts on price formation in the SPP IM.

(Optional) Describe a proposed solution(s) that is acceptable or that is unacceptable and explain why. It may be helpful to provide examples.

Mitigation of offers should drop offers to the historical FERC standard of cost plus 10% as a reasonable proxy for cost recovery rather than to the approved mitigated offer without any adder.

Issue	5	Title	Lack of Multi-Day Resource “Reliability Coordination” Activity by SPP Leading to Over-Commitment of Resources by Market Participants
Submitter Name: Rob Janssen		Company: Dogwood Energy	
Email: rob.janssen@kelsonenergy.com		Phone: 443-542-5125	
<i>Describe in detail the price formation issue that you would like the PFTF to address. It may be helpful to provide examples.</i>			
SPP Staff presented to the MWG in March 2016 that recent depressed Day Ahead Energy prices have been the result of increased wind resource generation and higher than optimal levels of self-commitment of dispatchable Resources given the level of load in SPP during low-load period shoulder months. Assuming that wind generation output and load levels are fixed and not reasonably changeable, artificially depressed pricing due to self-commitment of Resources results in inefficient price formation in the market. According to SPP Staff, it also leads to reduced system reliability.			
<i>Explain how the issue relates to price formation.</i>			
See above.			
<i>(Optional) Describe a proposed solution(s) that is acceptable or that is unacceptable and explain why. It may be helpful to provide examples.</i>			
One potential solution could be more transparency regarding forecasted levels of various types of generation SPP or the Market Monitor believes would result in efficient price formation. This could assist Market Participants in making decisions regarding whether to self-commit Resources with multi-day start-up and online operating time requirements. This advance Resource “Reliability Coordination” process, updated daily and optimally forecasting up to one week in advance, could lead to more informed and economically efficient Resource self-commitment choices by Market Participants.			

Issue	6	Title	Scarcity Pricing
Submitter Name: Matt Moore		Company: GSEC	

Email: mmoore@gsec.coop	Phone: 806-349-6557
<p><i>Describe in detail the price formation issue that you would like the PFTF to address. It may be helpful to provide examples.</i></p> <p>Scarcity pricing should be examined to determine if participants are being compensated for the services they are providing in the interval they are providing it.</p>	
<p><i>Explain how the issue relates to price formation.</i></p> <p>Scarcity pricing is related to price formation in that if scarcity pricing isn't properly designed then a) the value the Resource provides is not properly reflected; b) Resources won't be encouraged to follow dispatch instructions; and c) there could be unwarranted uplift payments. Furthermore, if not properly designed it could discourage certain technologies.</p>	
<p><i>(Optional) Describe a proposed solution(s) that is acceptable or that is unacceptable and explain why. It may be helpful to provide examples.</i></p> <p>A solution to scarcity pricing concerns related to price formation could be change the market rules to disallow SPP's temporary use of operating reserves to meet energy requirements. Scarcity pricing should be allowed and observed. This includes during transient events that might not be viewed as a reliability event by SPP. Operating reserve requirements should not be compromised to benefit energy demands, even during transient events. In addition, scarcity pricing events should not be masked or muted by manual or RUC commitments. Any unit commitment need should be accounted for and indicated in the LMP. Otherwise, capacity shortages are masked and therefore scarcity pricing can be muted. A possible solution could be the establishment of an ORDC type structure. The type of ORDC structure or other solutions could be up for discussion.</p>	

Issue	7	Title	VRL
Submitter Name: Matt Moore		Company: GSEC	
Email: mmoore@gsec.coop		Phone: 806-349-6557	
<p><i>Describe in detail the price formation issue that you would like the PFTF to address. It may be helpful to provide examples.</i></p> <p>Violation Relaxation Limit Process – The existing VRL process should be examined to determine if the protocols and related process are distorting LMP's during any circumstance.</p>			
<p><i>Explain how the issue relates to price formation.</i></p> <p>Related to scarcity pricing are Violation Relaxation Limits which have a direct impact on LMP's and price formation. Currently a process exist in which constraints are "relaxed" to allow economic dispatch to solve when there is a Resource capacity constraint, global power balance constraint, resource ramp constraint or operating constraint. By relaxing the very need for the available services and technologies it diminishes the pricing and the very need for these services now and in the future. In addition, there is an existing process that diminishes and eliminates that price transparency and price value associated with operating reserve shortages as a result of insufficient ramp capability among other things. Currently insufficient ramping capability is not be subject to scarcity pricing. Fast Ramping resources, including resources that can go from zero output to full output quickly, can be greatly impacted by the aforementioned methodology which directly masks the value of these newer and faster technologies.</p>			
<p><i>(Optional) Describe a proposed solution(s) that is acceptable or that is unacceptable and explain why. It may be helpful to provide examples.</i></p> <p>Specifically address the protocols as it relates to VRL with potential elimination of VRL. Similar to item 1, there should not be a scenario in which constraints are relaxed that mutes or masks the value of resource capacity constraint, global power balance constraint, resource ramp constraint or operating constraints. The price should be allowed to indicate the true need for these services.</p>			

Issue	8	Title	Headroom
Submitter Name: Matt Moore		Company: GSEC	
Email: mmoore@gsec.coop		Phone: 806-349-6557	
<p><i>Describe in detail the price formation issue that you would like the PFTF to address. It may be helpful to provide examples.</i></p> <p>Headroom processes should be examined to determine if the existing process for Headroom commitment is being properly reflected in the LMP's while reducing the uplift charges to the market. In addition, the commitment of Headroom should not mask the need for the development of what could be other market based products such as ramping, a 30-60 minute contingency reserve product, redefining and expanding the supplemental time frame or market based primary frequency response.</p>			
<p><i>Explain how the issue relates to price formation.</i></p> <p>Headroom is defined as the additional committed capacity required above the average load for the hour due to the uncertainty of the real-time instantaneous load, hourly load forecast and Variable Energy Resource output. Real-time instantaneous load variation, hourly load forecast and Variable Energy Resource output are all areas in which a market needs fast rampable capacity. This is evident even in the SPP Protocols section 4.1.3.2 "Head-room and Floor-room Requirements" in which it describes the need for resources during the "morning load pickup" etc. This sections also states that the "SPP may include up to 0% of the calculated Head-room and Floor-room requirements as an input into the Day-Ahead Market and may include 100% of the calculated Head-room and Floor-room requirements in all RUC processes." Not factoring rampable capacity in the Locational Marginal Price impacts proper price formation and transparency. In addition, it is creating market uplifts. This rampable capacity should be part of the Locational Marginal Price and could include the creation of a ramping product in combination with an operating reserve product such as a 30-60 minute product among other products.</p>			
<p><i>(Optional) Describe a proposed solution(s) that is acceptable or that is unacceptable and explain why. It may be helpful to provide examples.</i></p> <p>Headroom should be a market based solution vs. a RUC solution. Alternative product development should be considered to replace Headroom while at the same time examining the placement of Headroom in the Day Ahead Market vs. RUC.</p>			

Issue	9	Title	Unit Commitment Reflected in LMP
Submitter Name: Matt Moore		Company: GSEC	
Email: mmoore@gsec.coop		Phone: 806-349-6557	
<p><i>Describe in detail the price formation issue that you would like the PFTF to address. It may be helpful to provide examples.</i></p> <p>The unit commitment process should be reflected in the LMP to properly reflect the value for a particular unit and particular need while also reducing uplift to the market.</p>			

Explain how the issue relates to price formation.

The lack of **unit commitment** in the LMP has a direct impact on price formation. Manual commitments and RUC should not be used to ensure the market has capacity synchronized and in place for the upcoming intervals to provide regulation and other services. Often times it can be the faster technology that is receiving a RUC. There are two inherent issues as it relates to price formation in this area. Many newer technologies can respond very rapidly to a 5 minute dispatch. In fact, they can go from zero to full output in 5 minutes in some cases. In many other cases the Resource can be on in 20-30 minutes and most assuredly, less than an hour. These units should not be receiving a RUC or manual commitment in advance of the interval to avoid scarcity events which in turn eliminates scarcity prices. This action extinguishes any price signal that would value the services. In other words, the Locational Marginal Price is dampened prior to the 5 minute interval. If the synchronization of a Fast Resource is needed to provide Operating Reserves then the need for the actual synchronization of that resource should be included in the LMP. If capacity is needed in 30 minutes for example, then a product should be developed for such technology and service. The RUCs also lead to direct market uplift. There should be proper pricing incentives and products to include the unit commitments in the Locational Marginal Price rather than “keep whole” payments which create uplift.

(Optional) Describe a proposed solution(s) that is acceptable or that is unacceptable and explain why. It may be helpful to provide examples.

Unit Commitment could be incorporated into the LMP by leveraging and automating the Look Ahead tools or developing an extended LMP model.

Issue	10	Title	Over-Production
Submitter Name: Matt Moore		Company: GSEC	
Email: mmoore@gsec.coop		Phone: 806-349-6557	
<i>Describe in detail the price formation issue that you would like the PFTF to address. It may be helpful to provide examples.</i>			
<p>Over production in the real-time market should be examined. Resources should not be required to meet a Day Ahead commitment when the LMP is below production cost in real-time. This should hold true for all Resources but especially Quick Start Resources.</p>			
<i>Explain how the issue relates to price formation.</i>			
<p>Over production of energy as a result of over commitment or as a requirement in protocols can create depressed energy markets and lead to inefficient and depressed price signals. As mentioned previously, manual commitments or RUCs can lead to over commitment of Resources. In addition, the protocols and regulations can require that Resources meet a Day Ahead position even when the real-time prices are below production cost. Resources should be allowed to buy back their Day Ahead position from the market without being assessed URD or other Make Whole Distribution charges. There are some technologies that are intended to be used in a rapid fashion and take advantage of any market admirations that might present themselves such as low prices.</p>			
<i>(Optional) Describe a proposed solution(s) that is acceptable or that is unacceptable and explain why. It may be helpful to provide examples.</i>			
<p>Over production could partly be addressed by changing the market design to send dispatch signals of zero to Resource that cleared Day Ahead when the LMP is below the production cost of that Resource in RT.</p>			

Issue	11	Title	Transparency
Submitter Name: Matt Moore		Company: GSEC	
Email: mmoore@gsec.coop		Phone: 806-349-6557	

Describe in detail the price formation issue that you would like the PFTF to address. It may be helpful to provide examples.

Transparency related to manual commitments, RUC's and Headroom should be posted for the Market Participant on a more frequent basis to ensure the Resource owner knows why the Resource was committed beyond normal market processes. In addition, the number of manual and RUC instances should be posted.

Explain how the issue relates to price formation.

A lack of transparency can prohibit and preclude the proper perspective of actual happenings that could be impacting price formation. For example, the market and specifically a Resource owner should be aware of what their units are being used for exactly. For example, manual commitments and RUC's should be very few and far between in a properly designed market with efficient price formation. To the extent there is a manual commitment or RUC, the Resource owner should know on a timely basis what the unit was being used for exactly. It should be noted that the unit was used for Regulation, additional reserve, Headroom, the need for rampable capacity, etc.

(Optional) Describe a proposed solution(s) that is acceptable or that is unacceptable and explain why. It may be helpful to provide examples.

Transparency can be partly addressed through market design changes. Each Resource and unit commitment should be eligible to set LMP. Each manual commitment and RUC along with the reason for each instance should be posted no later than two days after each occurrence to the market. In addition, each Resource owner should be made aware of why their particular unit was manually committed or RUCed.

Issue	12	Title	Block Loaded fast start Resources
Submitter Name: Matt Moore			Company: GSEC
Email: mmoore@gsec.coop			Phone: 806-349-6557
<i>Describe in detail the price formation issue that you would like the PFTF to address. It may be helpful to provide examples.</i>			
The ability of Block Loaded fast start Resources to set LMP should be examined.			
<i>Explain how the issue relates to price formation.</i>			
Anytime a Resource is not allowed to set LMP then there is a clear direct connection with price formation. Block loaded Fast Start Resources should be allowed to set LMP. Other markets are taking steps to ensure this is the case.			
<i>(Optional) Describe a proposed solution(s) that is acceptable or that is unacceptable and explain why. It may be helpful to provide examples.</i>			
Block loaded Fast Start Resources could be allowed to set LMP through mechanisms such as ELMP which had been addressed in MISO.			

Issue	13	Title	Intermittent Resources Management adds costs to the Market
Submitter Name: Ronald Thompson			Company: Nebraska Public Power District
Email: rjpick@nppd.com			Phone: 402-465- 3510

Describe in detail the price formation issue that you would like the PFTF to address. It may be helpful to provide examples.

Intermittent and variable resources increase the cost to the Market. These types of generation do not take into account the additional head room that is needed for Ancillary Services, especially in RegDn for which the load pays. When scarcity events occur, the cause is usually reflected in this type of generation not being available as projected. There is additional risk of moving base load resources and tripping the unit off-line to follow variable and intermittent resources. Moving base load units also cause continued maintenance cost and operational risk.

Explain how the issue relates to price formation.

Scarcity pricing causes the market to become inefficient and will make the RT market more volatile compared to the price consistency seen in the DA clearing prices. Stable resources and loads have risk and cost in forecasting. However, variable and intermittent resources seem to have a larger share of the additional costs to the market when forecasting is incorrect.

(Optional) Describe a proposed solution(s) that is acceptable or that is unacceptable and explain why. It may be helpful to provide examples.

Discuss methods of having variable and intermittent resources be more accountable (likely should include all units) for price scarcity events.

Issue	14	Title	Impacts of volatile Real Time Market
Submitter Name: Ronald Thompson		Company: Nebraska Public Power District	
Email: rfthomp@nppd.com		Phone: 402-631-8823	
<i>Describe in detail the price formation issue that you would like the PFTF to address. It may be helpful to provide examples.</i>			
Asset Owners are seeing impacts of how SPP Deploy Resources due to volatility in the Real Time LMP and the same resources are not clearing the Day Ahead LMP. This results in the AO having to buy back the energy in the RT market at much higher prices.			
<i>Explain how the issue relates to price formation.</i>			
The SPP Market should want the resources not to be harmed by following DA deployment signals and buying back in the RT higher volatile market price.			
<i>(Optional) Describe a proposed solution(s) that is acceptable or that is unacceptable and explain why. It may be helpful to provide examples.</i>			
Develop a process where the AO is made whole if the generation unit is harmed by deployment levels in the Real Time Market.			

Issue	15	Title	Transmission/Resource Outages Coordination
Submitter Name: Robert Pick		Company: Nebraska Public Power District	
Email: rjpick@nppd.com		Phone: 402-465- 3510	

Describe in detail the price formation issue that you would like the PFTF to address. It may be helpful to provide examples.

Unscheduled transmission and generation outages impact the market. If better planning took place on outages, minimal impact to the market would occur... Usually on a daily basis a new "Temporary Flowgate" is created and has an impact on the market. Better process on transmission scheduled outage vs unscheduled outage would relieve the volatility in the market.

Explain how the issue relates to price formation.

Current coordination of schedule outages does increase the risk of more congested flowgates and the volatile prices that tend to follow in the RT Market.

(Optional) Describe a proposed solution(s) that is acceptable or that is unacceptable and explain why. It may be helpful to provide examples.

Discuss methods of improving the coordination of scheduled outages to reduce flowgate congestion thus reducing the risk of volatile periods in RT. Should there be penalties for not following planned scheduled transmission outages?

Issue	16	Title	Improved coordination between slower and faster ramping units where faster ramping units are compensated
Submitter Name: Ronald Thompson		Company: Nebraska Public Power District	
Email: rfthomp@nppd.com		Phone: 402-631-8823	
<i>Describe in detail the price formation issue that you would like the PFTF to address. It may be helpful to provide examples.</i>			
Scarcity prices occur when wind production does not come in as forecasted. This results in a large price separation between the Day Ahead and Real Time market.			
<i>Explain how the issue relates to price formation.</i>			
The SPP Market needs to reduce the volatile Real Time market with wind resources. This volatility will be reduced with the correct Head room, getting the right price signals in place, and using the resources that are available.			
<i>(Optional) Describe a proposed solution(s) that is acceptable or that is unacceptable and explain why. It may be helpful to provide examples.</i>			
When determining Head room, develop a confidence factor matrix. Create a process where longer ramping resources are used in the early stages of operation needs and make sure resources that have cleared (compensated accordingly) have a faster ramp response and can be used later.			

Working Group Action Items

Action Item	Org Group	Date Originated	Action Item	Update Summary	Status (Not Started, In Progress, Closure Pending, On Hold, Closed)	Owner	Comments	Date Closed
7	PFTF	18-Apr-16	SPP Ops to provide MWP distribution by Resource	6/22/2016 Gary Cate presented this to PFTF (agenda item 4).	Closure Pending	Gary Cate		
8	PFTF	2-Jun-16	Matt Moore requested an action item for SPP staff to explain the need in the Day-Ahead Market that headroom fulfills.	6/22/2016 Jared Greenwalt presented this to the PFTF (agenda item 3a).	Closure Pending	Jared Greenwalt		
9	PFTF	2-Jun-16	The PFTF requested for SPP staff to bring a pros/cons list to the PFTF regarding the inclusion of headroom in the Day-Ahead Market.	6/22/2016 Jared Greenwalt presented this to the PFTF (agenda item 3a).	Closure Pending	Jared Greenwalt		
10	PFTF	09/21/16	<ul style="list-style-type: none"> Agenda Item 3: SPP staff to discuss with SPP Legal Counsel to determine if SPP is able to state officially whether certain circumstances indicate an economic or a reliability signal. 		New			
11	PFTF	09/21/16	<ul style="list-style-type: none"> Agenda Item 5: SPP staff will provide an overview of RR116 during the October PFTF. 		New			

Comments	Date Closed