



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

Relationship-Based • Member-Driven • Independence Through Diversity

Evolutionary vs. Revolutionary • Reliability & Economics Inseparable

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

Daylight Time (Chicago, GMT-05:00)

Mail for 'PFTF Face to Face':

Participant	Name	Email	Date	Start time	End time	Duration
1	Debbie James	djames@spp.org	9/21/2016	7:54 AM	12:04 PM	251 mins
2	Jared Greenwalt	jgreenwalt@spp.org	9/21/2016	7:57 AM	12:04 PM	248 mins
3	Terry Wright (Empire)	twright@empiredistrict.com	9/21/2016	7:59 AM	11:11 AM	193 mins
4	Patti Kelly (SPP)	pkelly@spp.org	9/21/2016	8:00 AM	12:01 PM	241 mins
5	Matt Moore (GSEC)	mmoore@gsec.coop	9/21/2016	8:00 AM	12:01 PM	241 mins
6	John Tennyson (SPRM)	john.tennyson@cityutilities.net	9/21/2016	8:07 AM	11:36 AM	210 mins
7	Carrie Dixon (Xcel)	carrie.e.dixon@xcelenergy.com	9/21/2016	8:08 AM	11:27 AM	199 mins
8	Ron Chartier (SECI)	rchartier@sunflower.net	9/21/2016	8:09 AM	10:32 AM	144 mins
9	Mike Grimes	mike.grimes@edpr.com	9/21/2016	8:13 AM	9:41 AM	89 mins
10	michael mccann	mmccann@spp.org	9/21/2016	8:14 AM	11:15 AM	182 mins
11	Nick Parker (SPP MMU)	nparker@spp.org	9/21/2016	8:24 AM	12:01 PM	218 mins
12	Ricky Finkbeiner	rfinkbeiner@spp.org	9/21/2016	8:25 AM	12:04 PM	220 mins
13	Joe Dan Wilson (GSEC)	jwilson@gsec.coop	9/21/2016	8:26 AM	12:04 PM	218 mins
14	Shawnee Claiborn-Pinto	shawnee.claiborn-pinto@puc.texas.gov	9/21/2016	8:28 AM	12:04 PM	217 mins
15	John Luallen (SPP)	jluallen@spp.org	9/21/2016	8:32 AM	9:55 AM	84 mins
16	Brandon McCracken (WFEC)	b_mccracken@wfec.com	9/21/2016	8:37 AM	11:42 AM	186 mins
17	Rob Janssen (Dogwood Energy)	rob.janssen@kelsonenergy.com	9/21/2016	8:55 AM	12:04 PM	189 mins
18	Chris Giles	cgiles@tcec.coop	9/21/2016	8:58 AM	9:37 AM	40 mins
19	Will Tootle	wtootle@spp.org	9/21/2016	9:41 AM	12:04 PM	144 mins
20	Ishwar Saini	ishwar.saini@macquarie.com	9/21/2016	9:53 AM	12:04 PM	132 mins
21	Temper Williams (SPP)	trwilliams@spp.org	9/21/2016	10:16 AM	12:01 PM	106 mins
22	Ron Chartier (SECI)	rchartier@sunflower.net	9/21/2016	10:33 AM	12:03 PM	90 mins
23	Esat Guney (SPP MMU)	eguney@spp.org	9/21/2016	10:56 AM	10:59 AM	4 mins



PRICE FORMATION TASK FORCE

September 21, 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. August 20 2016 Minutes
3. Issue 13 – Intermittent Resources Management adds costs to the Market.....Ron Thompson
4. Issue 15 – Transmission/Resource Outage CoordinationRon Thompson
5. Issue 12 – Block Loaded Fast Start Resources Matt Moore
6. Issue 11 – Summary of DA Transparency..... Matt Moore
7. Issue 5 – Lack of Multi-Day Resource “Reliability Coordination” Rob Janssen
8. Issue 4 – Mitigation of Resource Offers to “Cost plus 10%” Rob Janssen
9. Issue 9 – Over Production in Real-Time Matt Moore
10. Real-Time Allocation of Regulation to Improve Pricing Matt Moore
11. Review PFTF Prioritized Task List.....Erin Cathey
12. Review of Motions, Action Items and Future Meetings.....Jared Greenwalt
13. Adjournment (12:00)..... Matt Moore

Southwest Power Pool
PRICE FORMATION TASK FORCE MEETING
August 24, 2016
AEP Offices – Dallas, TX
• S U M M A R Y O F M O T I O N S •

Motions:

Agenda Item 2 — Minutes Approval

Carrie Dixon (Xcel) motioned, and Jim Flucke (KCPL) seconded to approve the minutes for July 20, 2016. The motion passed with no oppositions and no abstentions.

Southwest Power Pool
PRICE FORMATION TASK FORCE MEETING

August 24, 2016
AEP Offices – Dallas, TX
• M I N U T E S •

Agenda Item 1 — Call to Order, Proxies, Agenda

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 August 24 2016 and Attachment 2 - PFTF Agenda for August 24 2016.

Agenda Item 2 — Minutes Approval

Carrie Dixon motioned, and Jim Flucke (KCPL) seconded to approve the minutes for July 20, 2016. The motion passed with no oppositions and no abstentions. See Attachment 3 – July 20 2016 Minutes.

Agenda Item 3 - Head-room and Head-room Transparency

Matt Moore facilitated discussion on Head-room and Head-room Transparency. Jim Flucke summarized the August 23, 2016 Market Working Group (MWG) discussion of RR173 Instantaneous Load Capacity for the group, stating Richard Ross planned to bring an RR to propose 50% in the Day-Ahead market. Jim noted he supports the 50% proposal.

Agenda Item 4 - MWP for DAMKT Cleared OR Not Cleared in RT

Topic deferred.

Agenda Item 5 - Multi-Day Economic Evaluation Review

Carrie Dixon (Xcel) presented her proposal to enhance the economic unit commitment and dispatch process by extending the current evaluation horizon. Carrie explained that economic unit commitments are not evaluated beyond the 24 hour period of the next operating day. Under the current SPP market design, long-lead time resources are likely to be committed only if a MP elects to self-commit or if it is needed for reliability reasons. Economic evaluation of resources with a startup time that is equal to or greater than 24 hours would allow the market to cycle resources more efficiently which is critical to further integration of renewables. Carrie also noted that the establishment of an economic de-commitment process could also help to alleviate prolonged periods of excess generation which creates severe depression on LMPs. Carrie believes extending the horizon of economic commitment and dispatch window beyond 24 hours of the next operating day will increase the overall efficiency of the market. The group discussed the proposal and voiced support to begin discussions to possibly develop this market design with the MWG. See Attachment 4 – PFTF Issue Submission-Xcel.

Agenda Item 6 - Over Production in Real-Time

Matt Moore explained the Over Production in Real-Time topic and noted that this is a concern GSEC brought to the PFTF. Matt explained there are often times a Resource may clear in the Day-Ahead market and is forced to run in Real-Time, even when LMPs are below their production cost due to forecast error. Further, if the Resource chooses to shut down, the Resource is assessed distribution charges. Matt requested that the group consider the question, if a Resource clears in the Day-Ahead

market and then sees negative prices in the Real-Time market, does it make sense for a Resource to continue to run, or should the Resource have the ability to buy-back its DA position? Matt stated he believes if a Resource clears in the Day-Ahead market and then sees low prices in the Real-Time market, that this should be an indication that the Resource should shut down. Matt clarified that GSEC is looking for the ability to buy-back the Day-Ahead position such that a Resource is not required to fulfill physical commitments in the Real-Time market. Moreover, Matt believes the Resource should be held harmless to Real-Time deviation charges. The group discussed the intent and possible solutions.

Agenda Item 8 - Ramp Product

Jared Greenwalt presented the Ramp Product presentation provided to the MWG in October, 2015. The group discussed whether or not this is something that should be revisited given FERC Order 825. See Attachment 5 – Ramp Product MWG 10202015.

Agenda Item 9 - Resource Unit Commitment in RUC Used for Rampable Capacity

Topic deferred.

Agenda Item 10 - Review PFTF Prioritized Task List

The group reviewed the PFTF Prioritized Task List and agreed to close the issue of connecting Day-Ahead and Real-Time clearing and the issue of make-whole distribution based on Real-Time deviations from a Day-Ahead Market position. See Attachment 6 – Concerns Matrix

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

Action Items:

- No action items were taken

Future Meetings:

September 21, 2016 (8:00 a.m. – 12:00 p.m.)

Location: AEP Office – Dallas, TX

Room: 8th Floor

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

Agenda Item 11 – Adjournment

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

Respectfully Submitted,

Debbie James
Secretary

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	

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

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.

Explain how the issue relates to price formation.

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.

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

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.

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.			