

Briefing Paper of Public Interest Organizations on PJM's Revised Capacity Performance Proposal

October 28, 2014

The undersigned Public Interest Organizations¹ (PIOs) appreciate this opportunity to comment on PJM's October 7, 2014 Capacity Performance Proposal (CP Proposal). PIOs agree that maintaining grid reliability is extremely important. However, the CP Proposal is a costly and unnecessary overhaul of the capacity market that will result in unjust and unreasonable rates and undue discrimination. PJM's revised proposal neither addresses most of the concerns raised in our September [comments](#) on PJM's initial proposal, nor explains why a less costly, tailored approach to reducing generator outages is insufficient to solve the reliability problems PJM stated it intended to target. Rather, the CP Proposal is based on unrealistic assumptions (including that 100% of Base Capacity (BC) is unavailable for one extreme weather peak week) and its own cost-benefit analysis shows that the proposal's costs outweigh its benefits. For these reasons, we continue to urge PJM to address specific causes of coal and gas power plant failures² and incent more participation from wind, solar, energy storage and demand-side resources.

As part of a targeted approach, we recommend that PJM directly address performance and reliability concerns that decrease outages by: resolving fuel and fuel delivery issues; implementing unit maintenance and/or design changes, winter testing and weatherization; clarifying/modifying penalties for non-performance; continuing to rely on flexible demand-side resources; resolving seam-related issues among neighboring markets for efficient power transactions; and introducing a winter demand response product.

Should PJM pursue its broader proposed overhaul of the capacity market, we recommend:

- Retaining the Base Capacity product (and increasing its cap);
- Appropriately valuing wind and solar energy to reflect their proven seasonal capacity values;
- Preserving demand response and energy efficiency (DR/EE) as supply-side resources in the capacity market;
- Allowing variable energy resources and DR/EE to participate in offsetting and joining with other non-Capacity Performance resources to offer as Capacity Performance.

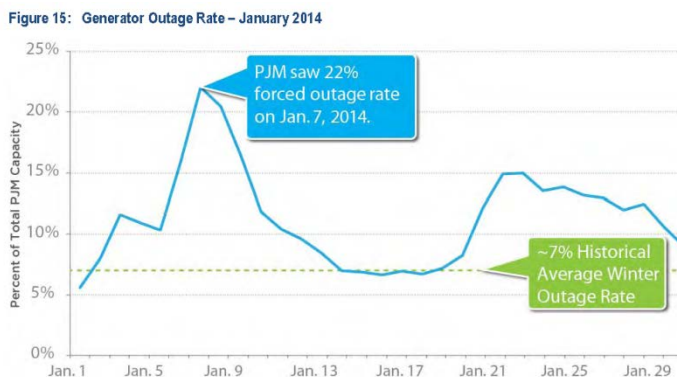
I. PJM Has Not Demonstrated the Need for the CP Proposal

PJM's CP Proposal is motivated in large part by the events occurring during the January 2014 Polar Vortex. On January 7, 2014, approximately 22% of PJM capacity was unavailable. The

¹ Environmental Defense Fund, Natural Resources Defense Council, Piedmont Environmental Council, Sierra Club, Southern Environmental Law Center, Sustainable FERC Project, and Union of Concerned Scientists.

² The North American Electric Reliability Corporation, in its recent [report assessing the Polar Vortex in different regions](#), takes a similar position in [recommending](#) solutions in PJM tailored to problematic generation.

peak demand on January 7, 2014 was at approximately the 96th percentile—that is, it was a once-in-24-year winter peak.³ While last winter’s record and prolonged cold was severe by any measure, it did not result in any load shedding, generators quickly adapted, and by the end of January, reduced forced outages from the 22% experienced on January 7 to levels that would ensure resource adequacy (15% and lower, which is lower than the 16.5% level that PJM does not want to exceed) according to PJM’s LOLE analysis.⁴



Thus, even if we experience another unusually cold winter, coupled with no available demand response and few imports (PJM assumptions used to craft the CP Proposal), generating resources should be available at acceptable forced outage rates.

We question why PJM now believes there is a capacity shortfall, when the RPM continues to clear with excess capacity. Indeed, according to PJM testimony at a FERC Technical conference in April regarding the winter events of January 2014, PJM has 6000 – 8000 or so of excess reserve capacity (above the target reserve numbers) for all of the delivery years for which auctions have taken place, and these results factor in expected coal plant retirements.⁵ To address the specific problems PJM encountered in winter 2014, *including gas supply issues*, PJM is working to reduce forced outages and procure additional capacity before the winter of 2015/2016. These efforts include better alignment of gas and electric markets, new winter reliability testing requirements, altering the Variable Resources Requirement curve to procure more generation, and lifting energy market offer caps. Collectively, they will assure that PJM has sufficient available capacity at much lower rates.

³ Based on the forecast 50/50 and 90/10 winter peak load levels, and employing the assumption, commonly used by PJM, that such peak loads are approximately normally distributed around the median value.

⁴ PJM’s May 8, 2014 Analysis of Operational Events and Market Impacts During the January 2014 Cold Weather Events (“PJM’s Analysis of January 2014 Cold Weather Events”) at 24, Figure 15, available at <http://www.pjm.com/~media/documents/reports/20140509-analysis-of-operational-events-and-market-impacts-during-the-jan-2014-cold-weather-events.ashx>. See also Problem Statement at 17, Figure 8 and at 15.

⁵ See Mike Kormos Presentation at the FERC Technical Conference April 1, 2014 (“Kormos Presentation”) at 13 (indicating that the 22% of forced outages on January 7th was much higher than the 7% historical average), <http://www.pjm.com/~media/documents/reports/20140331-presentation-of-michael-kormos-regarding-polar-vortex-ferc-20140401.ashx>.

A. The CP Proposal fails PJM’s cost-benefit test and will result in unjust and unreasonable rates

Imposing year-long CP requirements to address seasonal needs on capacity market resources likely will result in overbuilding capacity. Essentially, the CP Proposal would allow generators to overinvest and recover the associated costs through customers. Overinvesting and recovering costs associated with overinvestment through rates is a textbook case of unjust and unreasonable rates.

PJM itself has verified that its CP Proposal fails a cost-benefit test. PJM/IMM [cost-benefit analysis](#)⁶ states that costs will exceed the benefits by between \$1.4 and \$4.0 billion during each of the next three delivery years – during the precise time PJM is most concerned about reliability. PJM’s analysis implies that it is less costly to pay uplift during extreme weather conditions instead of overinvesting in all-year-round reliability that is only needed during rare winter events. Further, an approach targeted to addressing the source of these uplift and load payments would likely reap a similar benefit as the CP Proposal at much lower cost and not discriminate against sub-annual or variable renewable resources.

We also question how PJM and the IMM can conclude that the CP Proposal will “provide enhanced reliability at the lowest feasible cost” when neither PJM nor the IMM looked at any alternatives to reduce forced outages other than the CP proposal.⁷ PJM’s Operating Committee has approved changes to “improve the performance of resources during extreme cold weather events” by performance verification or testing of certain resources during and before cold weather, requiring a cold-weather preparedness checklist to be completed, and testing dual-fuel capability.⁸ These changes should enhance unit performance during cold weather conditions *starting this upcoming winter*, and adequately schedule units to meet system conditions “reliability and economically.”⁹ PJM has estimated the costs for the winter test measures to be in the \$5 to \$22 million range, instead of hundreds of millions or billions of dollars annually.¹⁰ PJM has not proven that it needs to do anything beyond the winter testing and other measures already underway to reduce forced outages, or that the CP proposal must be implemented.

The CP Proposal’s elimination of the 2.5% Short-Term Resource Procurement Target Reduction (~4.1 GW), known as the “Holdback”, also will unnecessarily increase costs. The Holdback,

⁶ PJM, Monitoring Analytics, Capacity Performance Initiative, (Oct. 23, 2014)

<http://www.pjm.com/~media/committees-groups/committees/elc/postings/capacity-performance-cost-benefit-analysis.ashx>.

⁷ *Id.* at 1.

⁸ See Cold Weather Recommendation Status at 2, <http://www.pjm.com/~media/committees-groups/committees/mc/20140915-webinar/20140915-item-02-hot-and-cold-weather-recommendations-update.ashx> (“Cold Weather Recommendation Status”) and 10/27/14 Hot and Cold Weather Recommendation Update (“10/27/14 Hot and Cold Weather Recommendation Update”) at 1 <http://www.pjm.com/~media/committees-groups/committees/mc/20141027-webinar/20141027-item-02-hot-and-cold-weather-recommendation-update.ashx>.

⁹ *Id.*

¹⁰ See Winter Test Cost Analysis at 6, <http://www.pjm.com/~media/committees-groups/committees/oc/20140917/20140917-item-03-winter-test-cost-analysis.ashx>

along with DR and EE, plays an important role in establishing just and reasonable rates.¹¹ In recent years, it has been effective at providing partial mitigation of PJM load over-forecasting in the RPM capacity auction process. Load forecast error inflates the amount of capacity committed in the capacity auction when compared with the actual load measured right before the delivery year. Although PJM has worked to improve its load forecast, a gap continues to exist at the time of the BRA and the load forecast developed at the start of the Delivery Year.¹² The Holdback, an important component of ensuring that PJM's capacity market produces just and reasonable rates, should be retained.

B. Extending a lifeline to coal plants is more costly than strengthening current capacity

In order to replace the perceived capacity shortfall in 2015/2016, PJM will procure up to 10 GW of additional capacity resources through an incremental auction. Among the potential sources of capacity, PJM contemplates encouraging coal plants scheduled to retire before 2016 to postpone their retirements, seek MATS compliance extensions, and bid into the incremental auctions. Rather than seeking compliance extensions (especially considering that many of them likely have taken concrete steps to retire), PJM should focus on improving the performance of the already-available capacity as they already are planning to do to reduce forced outage rates. (See the Appendix to these comments.)

C. A targeted approach to ensuring winter reliability will keep costs down while reaping similar benefits

As discussed in our first set of comments, and reinforced here, improved performance since last winter and efforts outside of this proposal to further reduce outages should be enough to ensure winter reliability. These efforts are summarized in the Appendix. PJM typically procures more capacity than it needs (6,187 MW above the reliability requirement 2017/2018 RPM BRA¹³) and implementing measures tailored to the core problem of last winter – generator outages during extreme cold weather – should ensure system reliability at more reasonable cost by focusing on a small fraction of non-performing resources.

¹¹ The IMM finds that eliminating the Holdback plus sub-annual DR/EE will drive up costs by \$3.4 billion per year and eliminating the Holdback and all DR/EE will drive up costs by about \$16.4 billion per year (more than triple the 2017/2018 RPM BRA auction result). Of course, PJM's CP Proposal is not seeking to completely eliminate DR/EE, but UBS estimates that PJM's CP plan will unravel up to 70% of the currently committed 11 GW of DR. UBS, *US Electric Utilities & IPPs Framing the PJM Upside*, Oct. 10, 2014. By removing the Holdback and up to 70% of DR/EE, capacity costs could approach something closer to \$16.4 billion *per year* rather than the lower end of the expected increase. These numbers are *much* higher than those used in PJM's CP cost-benefit analysis.

¹² For example, a recent study by the Brattle Group indicates that PJM's load forecast, unlike New York ISO's and ISO New England's, does not account for all existing and planned energy efficiency programs. The Brattle Group, *Quantifying the Amount and Economic Impacts of Missing Energy Efficiency in PJM's Load Forecast*. (September 2014).

¹³ IMM Analysis of the 2017/2018 RPM Base Residual Auction at 47.

PJM indicates that a 6% improvement in forced outage rates in the winter period and a 3% reduction in forced outage rates in the summer period are achievable (and impliedly sufficient) given the incentives and potential penalties outlined in the CP Proposal. A targeted approach can reduce forced outage rates by 3% to 6% at lower cost.

In summary, PIOs recommend that PJM develop an interim and more focused proposal to further address any perceived reliability concerns during the 2015/2016 and 2016/2017 delivery years that may not be completely addressed by prior RPM auctions, and consolidate the various reforms and initiatives currently underway:

- Improving electric-gas market coordination and gas trading transparency;¹⁴
- Decreasing outages through maintenance and/or design changes, winter testing and weatherization;
- Modifying penalties for non-performance (such as increasing penalties for failing to arrange for adequate fuel delivery);
- Continuing to rely on flexible demand-side resources;
- Resolving seam-related issues among neighboring markets for efficient power transactions; and
- Introducing a winter demand response product to help meet winter resource adequacy needs.

Concurrently, PIOs recommend that PJM initiate a stakeholder process to more thoroughly evaluate the need for a complete restructuring of RPM. Any filing should depend both on the outcome of that process and the effects of the other reforms discussed above.

II. PIOs' Recommended Improvements to the CP Proposal: Value the Reliability Attributes of Renewable Energy and Demand Side Resources

Should PJM pursue the CP Proposal despite many good reasons in favor of a more targeted approach, we make the following recommendations to improve the CP Proposal's effectiveness.

A. The CP Proposal should preserve Base Capacity and increase its cap

PJM proposes to determine the maximum quantity of the Base Capacity product that it will allow to clear in RPM base residual auctions (and the minimum amount of the CP Product it will attempt to acquire) using a new reliability study.¹⁵ Although PJM's precise methodology has not been revealed to stakeholders, the study will use PJM's PRISM model. As pointed out in the Consumer Coalition's brief, the PRISM model uses various conservative assumptions that increase the identified requirements. For example, PJM assumes that assistance from neighboring RTO and non-RTO regions is limited to 3,500 MW. That number is far below the

¹⁴ See Environmental Defense Fund et al. comments in Docket No. AD14-19-000 in support of more transparency in gas trading.

¹⁵ See brief description in Section IV of PJM's CP Proposal and Whitepaper Frequently Asked Questions #59.

existing transfer capacity - and far below the levels actually seen during the January 2014 winter events.

As a result of this and other overly conservative assumptions underlying the cap calculations, the transition period caps Base Capacity (BC) resources at 20% (including DR/EE at 8.3%). In calculating these caps, the CP Proposal assumes BC is 100% available until the winter peak reaches the 1 in 10 year peak, when it drops to 100% *unavailable*. The CP Proposal also assumes that BC DR and EE are completely unavailable October through May. Both of these assumptions ignore the fact that many DR/EE resources were available and performed well at winter peak in January 2014.¹⁶

We support the Consumer Coalition's recommendation that a more plausible and still conservative estimate is to assume BC is 50% available during winter peak. Together with PJM's requirement that 80% of total capacity must be available during winter peak and PJM's assumption that BC DR/EE at 8% of the market is completely unavailable, assuming that BC is 50% available at winter peak reduces the CP product requirement from 80% to 68%.¹⁷ Lowering this requirement and raising the cap on BC would substantially reduce consumer costs and preserve the ability for developing resources (storage, new technologies,) not ready to be considered CP to participate in the market. Increasing the BC cap also would significantly mitigate the potential for difficult-to-enforce market power that PIOs and the Load Coalition have identified in comments to PJM. A similar argument could be made for the cap on BC DR/EE.¹⁸

PJM intends to phase BC out of the capacity market, reducing the 20% cap to zero. If the rationale for this plan is to further ensure reliability, winter or otherwise, it amounts to the assumption that all of BC is unavailable all year long, which is highly unlikely. For that reason, we recommend retaining base capacity beyond the transition period into the future and raising the caps on BC (including DR/EE) to at least 32%.

B. Wind and solar energy capacity factors should reflect their seasonal capacity value.

As PIOs explained in their comments on PJM's August 2014 Capacity Performance proposal, PJM's year-long unforced capacity values for wind and solar are based on their summer peak capacity. This approach does not accurately reflect the reliability contributions of wind and solar generation to the system. According to PJM's March 2014 Renewable Integration Study (PRIS), the generation adequacy values for solar ranged from 55% to 66% of nameplate capacity, and

¹⁶ For example, about 25% of PJM's registered DR responded voluntarily during the worst of the January 2014 polar vortex, delivering maximum hourly load reductions of 2,379 MW and 1,179 MW on January 7th and 8th respectively. [PJM Demand Response Activity January 7-8](#), (March 2014) at 2, 3.

¹⁷ From solving the following two equations with the two unknowns, BC and CP: $8\% \text{ (DR/EE)} + \text{BC} + \text{CP} = 100\%$ and $0.5 * \text{BC} + \text{CP} = 80\%$; we get $\text{BC} = 24\%$ and $\text{CP} = 68\%$.

¹⁸ Other As pointed out in the Consumer Coalition's brief, the PRISM model uses various conservative assumptions that increase the identified requirements, including the assumption that assistance from neighboring RTO and non-RTO regions is limited to 3,500 MW. That number is far below the existing transfer capacity - and far below the levels actually seen during the January 2014 winter events.

14% to 29% for wind. PJM has also reported that the wind generation performance during the Polar Vortex was well in excess of the capacity values expected and compensated in the existing RPM construct. PIOs urge PJM to determine independent capacity values for both the winter and summer time periods for all generation and incorporate them into the CP Proposal, thereby more accurately capturing a resource's reliability contribution.

C. Preserve DR and EE in the supply side of the RPM

PJM has proposed to change how DR and EE are bid into the capacity market, shifting them from supply side to the demand side. This could make participation difficult for those other than LSEs, which threatens up to 70% of DR/EE participation currently provided by non-LSE third parties during the transition period.¹⁹ Lowering their compensation and complicating their participation unquestionably will significantly reduce their load-reducing and market-disciplining values, and increase overall clearing prices.

Moving DR/EE to the demand side of the market also prevents or makes it more difficult for these resources to participate in the non-performance penalty offset or enable them to "co-locate" with other resources, like variable renewable resources, in order to offer into the market as CP. Specifically, the non-performance penalty offset allows capacity market *sellers* to offset penalties applied to capacity resources via *energy production* (with no mention of energy curtailment) from uncommitted resources on a megawatt-for-megawatt basis (CP Proposal at 27). While the CP Proposal does not explicitly prohibit demand-side resources from participating in offsetting, we assume that shifting demand-side resources to the demand side under the control of LSEs precludes their performance as uncommitted resources. But there is no reason to prevent these demand-side resources from participating in a megawatt-for-megawatt offset as long as they satisfy the other requirements of offsetting, such as being located in the same constrained LDA as the under-performing resource to be offset.

PJM also cites the D.C. Circuit's decision in *Electric Power Supply Association v. FERC (EPSA)* and the FirstEnergy amended complaint pending at FERC in Docket No. EL14-55 as reasons to eliminate the opportunity for demand response and energy efficiency to offer their resources directly into the RPM as supply-side resources. This approach is at best unreasonably conservative and, more likely, undermines PJM's obligation to ensure just and reasonable rates and the avoidance of undue discrimination in the capacity market.

First, PJM's proposal is premature. *EPSA* remains unsettled law; the D.C. Circuit will not issue an enforceable mandate until at least December 16, 2014, and perhaps well beyond that time should parties seek Supreme Court review of the decision. Second, the CP Proposal fails to distinguish FERC's relationship to capacity markets from its relationship to energy markets. In contrast to the energy market, the capacity market is a means of ensuring transmission system reliability through resource adequacy. It is designed to provide revenues sufficient to cover costs for existing resources and to incentivize the investment in new resources necessary to ensure reliability several years in advance. Participants in the capacity market commit to being available and are paid for this commitment, not for the provision of electricity. Courts have upheld

¹⁹ UBS, *US Electric Utilities & IPPs Framing the PJM Upside*, Oct. 10, 2014 at 3.

FERC's primary jurisdiction over capacity markets and the resources that participate in it.²⁰ Balanced against the primacy of FERC's jurisdiction over resources in the uniquely federal capacity market, PJM concludes that litigation risk warrants jettisoning DR and EE from the supply side of the market.²¹ More is required – at the least, an adverse FERC decision in the *FirstEnergy* complaint – before PJM changes course so dramatically.²²

C. The CP Proposal should allow combinations of non-CP resources to meet CP requirements.

The CP Proposal allows variable renewable generation to co-locate or join capacity with energy storage to meet the requirements of CP or BC products. However, there is no provision to allow for DR/EE to couple with renewable generation to do the same. PJM should confirm that DR/EE are allowed to couple with renewable generation. If it is not allowed for these resources to bilaterally contract with each other, PJM should remove that barrier. If there are problems associated with DR/EE being offered in on the demand side of the market from the suppliers, a mechanism to allow for that should be devised.²³

D. The CP Proposal should incent energy storage development as a capacity resource

Energy storage can rapidly respond to unit outages, manage multiple-peak days, reduce uplift costs, and facilitate renewable energy integration. For these reasons PIOs support the Storage Coalition briefing paper urging PJM to preserve base capacity for newer storage resources and ensure rules regarding coupling with renewables, dispatch, recharging, and penalties will not impede storage investment, development and deployment.

Conclusion

PJM's proposed overhaul of its capacity market will increase cost and risk to ratepayers and restrict renewable and demand-side resource participation, resulting in undue discrimination and unjust and unreasonable rates. Rather than implementing a monolithic CP product at significant consumer cost, we encourage PJM to establish rules that will enable the capacity market to more nimbly respond to significant upcoming changes in grid needs. Clean energy policies, new technology and customer preferences are driving significant investment in renewable energy,

²⁰ *PPL EnergyPlus, LLC v. Solomon*, 44 ELR 20207, No. 13-4330, 13-4501 (3rd Cir., Sept. 11, 2014); *PPL EnergyPlus, LLC v. Nazarian*, No. 13-2419 (4th Cir., June 2, 2014).

²¹ It is worthwhile noting that the potential reach of *EPSA* is even more far removed for EE, which does not participate in the energy market.

²² PJM has answered the *FirstEnergy* complaint, stating its position that *ESPA*: is still not final, does not pertain to capacity markets, no reasonable interpretation of *EPSA* requires abrogating the commitments of the demand response capacity resources that PJM procured in RPM auctions held prior to *EPSA*, and FERC has remedial discretion and precedents for declining to require regional market operators to re-run settled markets after the fact. Answer of PJM, *FirstEnergy* Complaint Docket No. EL14-55, Oct. 22 2014 at 4-7.

²³ Note however that resources should not *have* to couple through bilateral contracts in order to meet availability requirements – a well-functioning market (with the relevant barriers removed) should be able to take care of that most efficiently.

distributed generation and energy efficiency. A more granular approach offering a range of products to meet resource adequacy and reliability needs will better meet both short and long term grid needs, including in the winter of 2015/16.

Appendix: Efforts underway to reduce forced outages in time for Winter 2015/16 and into the future

As mentioned by PJM in its joint cost benefit analysis with its IMM, it is sufficient to address winter reliability issues by reducing its forced outages by 6%. This can be accomplished with the efforts currently underway to reduce forced outage rates at generating plants, including the following:

- PJM’s Operating Committee has approved changes to “improve the performance of resources during extreme cold weather events” by performance verification or testing of certain resources during and before cold weather, requiring a cold-weather preparedness checklist to be completed, and testing dual-fuel capability.²⁴ These changes should enhance unit performance during cold weather conditions *starting this upcoming winter*, and adequately schedule units to meet system conditions “reliability and economically”.
Id.
- The Operating Committee has recommended significant changes to improve gas unit commitment, communication and coordination starting the winter of 2014/15 - to improve the clarity, transparency and standardization of handling long-lead gas unit

²⁴ See Cold Weather Recommendation Status at 2, <http://www.pjm.com/~media/committees-groups/committees/mc/20140915-webinar/20140915-item-02-hot-and-cold-weather-recommendations-update.ashx> (“Cold Weather Recommendation Status”) and 10/27/14 Hot and Cold Weather Recommendation Update (“10/27/14 Hot and Cold Weather Recommendation Update”) at 1 <http://www.pjm.com/~media/committees-groups/committees/mc/20141027-webinar/20141027-item-02-hot-and-cold-weather-recommendation-update.ashx>. The Operating Committee’s “two part proposal focuses on enhancing unit performance during cold weather conditions and adequately scheduling units to meet systems conditions *reliability and economically*” as follows:

1. Generation Resource Cold Weather Checklist to be added as Attachment N to Manual 14D. The checklist, or a similar one developed and maintained by the generation owner, should be used annually prior to the winter season to prepare generation resources for extreme cold weather operations. Section 7.5.2 of M14D details the procedures.
2. Generation Resource Operational Exercise. A new section 7.5 will be added to Manual 14D. The exercise will be conducted prior to the onset of cold weather with the purpose of identifying and correcting start-up, operational and fuel switching problems. Not every unit will be exercised. Nuclear, wind and hydro units are excluded. PJM will provide a list of units to resources owners that have not run recently on either the primary or backup fuels. Section 7.5.1 of M 14D details the procedures.”

See Operating Committee – Special Cold Weather Resource Improvement Final Proposal Report September 4, 2014 at 2, <http://www.pjm.com/~media/committees-groups/committees/oc/20140917/20140917-cold-weather-resource-improvement-proposal-report.ashx> (emphasis added). PJM’s Operating Committee “**approved the solution package and endorsed the manual language with 0 objections and 0 abstentions**”. See <http://www.pjm.com/~media/committees-groups/committees/mc/20141027-webinar/20141027-item-12c-oc-report.ashx> (emphasis in original).

commitment due to fuel restrictions and consider tools, processes, market construct, as well as communication and notification protocols.²⁵

- Pursuant to a FERC Notice of Proposed Rulemaking, PJM and others are working on gas/electric industry coordination.²⁶
- The Operating Committee is working with the generation owners to identify opportunities to create or improve information sharing such as fuel source and limitations, emission limitations, as well as use and validation of outage types.²⁷
- PJM is analyzing and reviewing energy market offer caps, and is expected to shortly file with FERC a request to lift energy market offer caps.²⁸
- PJM is working on improving data sharing with the gas industry and interregional coordination.²⁹
- PJM developed a tool (which is now in the testing phase) to confirm external capacity resources availability, day-ahead and real-time market commitments, and actual performance.³⁰
- PJM has reviewed and enhanced the tools and processes for accepting Emergency Energy Bids.³¹
- The PJM Planning Committee has started to perform a new winter-focused transmission reliability study.³²
- On September 25, 2014, PJM filed at FERC a request to alter the Variable Resource Requirement (VRR) curve, which will procure more capacity.³³

²⁵ See Cold Weather Recommendation Status at 2 and 10/27/14 Hot and Cold Weather Recommendation Update at 1 *supra* and “Gas Unit Commitment Coordination 2014/2015 Winter Scope Proposal Review 10/22/14 v2”, <http://www.pjm.com/~media/committees-groups/committees/oc/20141022-gas/20141022-winter-2014-2015.ashx>

²⁶ See Cold Weather Recommendation Status at 7 and 10/27/14 Hot and Cold Weather Recommendation Update at 1 *supra*.

²⁷ See Cold Weather Recommendation Status at 6 and 10/27/14 Hot and Cold Weather Recommendation Update at 1 *supra*.

²⁸ See Cold Weather Recommendation Status at 8 and 10/27/14 Hot and Cold Weather Recommendation Update at 2 *supra*.

²⁹ *Id.*

³⁰ See Cold Weather Recommendation Status at 11 and 10/27/14 Hot and Cold Weather Recommendation Update at 3 *supra*.

³¹ See, e.g., See Cold Weather Recommendation Status at 15 and 10/27/14 Hot and Cold Weather Recommendation Update at 4 *supra*.

³² See, e.g., Winter Peak Study Update at pages 100-108, <http://www.pjm.com/~media/committees-groups/committees/teac/20140807/20140807-teac-reliability-analysis-update.ashx>

³³ See PJM's September 25, 2014 filing at Docket No. ER14-2940-000 to modify the PJM Open Access Transmission Tariff, <http://www.pjm.com/~media/documents/ferc/2014-filings/20140925-er14-2940-000.ashx> .