PJM’s Response
to the
2013 State of the Market Report

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PJM Interconnection
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Introduction

The 2013 State of the Market Report issued by PJM’s Independent Market Monitor (IMM) provides an assessment of market performance and recommendations aimed at enhancing PJM’s market design or market performance.1 The Market Monitor performs an important role in providing an independent assessment of market performance and provides valuable insights in its conclusions and recommendations. The purpose of this document is to provide to stakeholders PJM’s observations on the market and evaluations of each substantive recommendation offered by the IMM.

In the 2013 State of the Market Report, the IMM concludes that the state of PJM’s markets is good.2 The IMM concludes that the PJM Energy, Capacity, Regulation, Synchronized Reserve, Day-Ahead Scheduling Reserve and Financial Transmission Rights (FTR) markets were competitive. PJM believes the observed market results support these conclusions.

In the 2013 State of the Market Report, the data, information, analysis, and recommendations are organized by market type (Energy, Capacity, Ancillary Services and FTRs) and by specific topic area that touches on PJM markets (Operating Reserves, Demand Response, Generator Net Revenue, Environmental and Renewable Energy Regulation, Interchange Transactions, and Congestion and Marginal Losses). In 2012, the IMM assigned a priority to each of its recommendations; however in 2013 the IMM only assigned a priority to new recommendations. Given the scope of issues to be considered in the stakeholder process, evaluation of priority and materiality of recommendations is an important consideration. PJM encourages the IMM to include consideration of priority and materiality in discussion and development of all recommendations along with associated detailed rationales for suggested changes to market rules.

First, and foremost, PJM maintains reliability through its markets, and competitiveness means reliability is achieved in the most efficient, cost-effective manner possible. In 2013 the results of PJM’s markets were competitive with offer behavior consistent with marginal cost offers, and market prices consistent with the marginal cost of delivering one more megawatt (MW) or megawatt-hour (MWh) to the market. Further, observed entry and exit taking place from the PJM market is consistent with fundamental market competitiveness from both an efficiency and innovation perspective.

Given that power markets do not always mirror the characteristics of textbook competitive markets, the fact that the wholesale power markets in PJM are able to achieve competitive results (which PJM and the IMM agree on) year after year is a good indication that the fundamental design of the energy, ancillary services, and capacity market mechanisms are sound, and together with the market power mitigation in place, they incentivize or enforce the “truthful” revelation of marginal or incremental costs.

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2 2013 SoM Report at 1.
A Broader Context for the Competitiveness of PJM Markets to Achieve Reliability Objectives

Economic theory states that perfectly competitive markets are characterized by 1) a large number of suppliers none of which can unilaterally affect the market price; 2) perfect information; 3) free entry and exit from the market; 4) cost and production functions that are smooth and well-behaved in a mathematical sense; and 5) capacity additions are perfectly divisible rather than “lumpy” (e.g. 0 or 1, but nothing in between). The discussion of competitive markets assumes the goods being traded are “private goods,” or goods in which consumption by one party precludes consumption by another party, and those parties who do not pay for these goods can be easily excluded from consuming them.

The results of a competitive market are 1) supply offer behavior at marginal cost; 2) a market price is equal to the marginal or incremental cost of supplying one more unit of product to the market; and 3) so-called “economic profits” (e.g. returns greater than the cost of capital) are driven to zero. Firms that make lower profits will exit from the market while those making higher profit may enter the market. Competitive markets maximize the so-called “gains from trade” between buyers and sellers. Who accrues the greater share of the gains from trade depends on the specific interactions between supply and demand in the market being examined, but it is important to understand that maximizing the gains implies nothing regarding the distribution of those gains.

Power markets do not inherently match all the characteristics of textbook competitive markets. First, many suppliers are of sufficient size to affect market prices. Second, there is not perfect information regarding market conditions and outcomes. Third, because of the inherent reliability issues regarding transmission, entry and exit are not as “free” as would be assumed in a textbook market. Fourth, operation of power generation is not smooth or continuous, and capacity additions can generally only be made in large, lumpy increments. As a consequence, good market design and market power mitigation rules are essential to ensure competitive outcomes where revelation of marginal costs are incentivized, market prices equal marginal or incremental costs, and there is free entry and exit from the market.

Finally, because power markets must also achieve reliability objectives such as resource adequacy, all the goods in question are not purely private goods, but also have elements of public goods in which enjoyment by one party in no way prevents the enjoyment of the public good by another party, and it is difficult to exclude anyone connected to the grid from enjoying it. The classic example of a public good is national defense, but power system reliability also exhibits the qualities of public goods. Due to the public goods nature of reliability, there is a tendency for market participants to want to “free-ride” and not pay for reliability hoping that other market participants will do so. Such a situation will inevitably lead to the under-provision of reliability without careful attention to the market design to offset free-riding incentives.

Factors Influencing Continued PJM Market Competitiveness and Achievement of Reliability Objectives

Below is a short discussion of ten items that will continue influence competitive outcomes in PJM’s markets, what the near term trend seems to be, and how PJM or the IMM have addressed or can continue to address these challenges.

Market Structure

Market structure refers to the concentration of resource ownership for a particular product (e.g. energy, capacity, reserves) relative to the demand. Where high concentrations exist such as in local markets for congestion relief in the energy market or the RPM capacity market, it is possible for suppliers to artificially raise the market price. However, market power mitigation administered by PJM in coordination with the Independent Market Monitor (IMM) to enforce marginal or incremental cost offer behavior has proven effective to eliminate the potential impacts of structural market power. Going forward retirements of facilities from fleets under single ownership, and dispersed new entry from private entities on the horizon, seem to offset the consolidation of ownership of publicly traded companies through mergers and acquisitions.
**Market Behavior**

While market power mitigation to marginal or incremental cost is one way to enforce competitive behavior, both the IMM and PJM observe that offers into the energy and capacity markets are often below mitigated cost-based offers which include adders to account for imperfect information. The fact that offer behavior is below mitigated offers in both the energy and capacity markets is a strong indication that market mechanisms are also providing the correct incentives for accurate revelation of costs from market competitors.

**Access to Standardized, Liquidly Traded Financial Products to Hedge Price Uncertainty**

The competitiveness of the market design, along with the scale of the market participation, promotes the creation of, and liquidity in standardized financial products that allow market participants to hedge price uncertainty. PJM Western Hub Peak Futures are one of the most liquidly traded electricity products in the world, and standardized financial products can now be traded at a variety of hubs and zones across the PJM footprint for both peak and off-peak power. As of May 2, 2014, there are 113 separate PJM products listed by CME Group that could be traded with an open interest in nearly 7.4 million contracts translating to approximately 88 million MWh.

**Market/Mechanism Design**

A good power market design not only maps operational realities into markets, but also creates conditions for competitive behavior. The prime example of this in 2013 was the PJM Regulation Market which underwent a wholesale redesign to incentivize resources that can respond quickly and accurately to regulation signals. Resources that responded would be rewarded with greater compensation while slower moving steam units would not be able to enjoy such compensation. The new market has been highly successful in attracting only quick and accurate facilities (often storage resources) and moved older steam units out. As a consequence, PJM has been able to reduce the overall demand for regulation service which also reduces the structural market power that previously existed, all else equal.

**Markets Driving Innovation**

Innovation can be technical or financial. Clearly, the new regulation market design has driven the introduction of innovative storage technologies into the PJM market. The figure below shows the increasing trend in the number of new technology-based fast-response resources in the regulation market since the new design was implemented.
There have also been technological improvements in demand response that have resulted in considerable competition and savings for consumers. Additionally, improvements in combined cycle gas technology are providing competition in the capacity market. In less than a decade, an improvement in thermal efficiency in excess of 10 percent has driven running costs for combined cycle gas from $31.50/MWh to $27.90/MWh\(^3\).

Moreover, private investors are using innovative ideas to raise equity for new power plant investments by structuring payments to equity investors that look like high yield debt or dividend instruments to keep the cost of capital competitive relative to incumbent, investor owned generation companies.

**Reflecting Operating Discontinuities and Lumpy Investment Decisions**

Investments to retain existing resources, or attract new resources into commercial operation are inherently lumpy, discrete decisions that do not fit well within a textbook market construct. The RPM Capacity Market is a way to address these lumpy and discrete decisions. RPM continues to retain or attract sufficient resources to ensure reliability during summer peak periods, and over 13,000 MW of capacity interested in entering the market is a sign the capacity market is working as intended.

Generator operation in the energy market also exhibits this lumpy operational nature with examples such as minimum run levels, minimum run hours, and limited operational flexibility. These lumpy operational characteristics lead to uplift payments highly non-transparent in terms of location and individual payments. To the extent that further operational constraints can be modeled, some of this uplift can be moved into locational energy prices which would enhance transparency, something the IMM has noted, and could incentivize new entry in locations where it is most valuable, or provide more flexible operations for existing resources. To the extent that uplift exists after all potential operational constraints are modeled, the payment of uplift, while unhedgable, does constitute an efficient pricing mechanism that is consistent with reliability in system operations.

**Reflecting Risks in the Market Design to Ensure Reliability**

The ability of the market design to allow market participants, primarily generation resources, to manage risks that cannot be standardized is essential. Generators, especially gas-fired generators, face risks associated with the uncertainty of short-term gas costs, such as cost that change on a daily, intra-day, or an hourly basis. Generators can submit multiple cost-based offers, and those cost-based offers include a ten percent adder designed to capture hard to quantify costs, to partially manage this risk. However, there is no ability, once committed, to change market-based offers to reflect these changing input costs.

All generators face the risk of tripping off-line once they have satisfied their obligations as a Capacity Resource by offering in the Day-Ahead Energy Market and being committed to run in that market. Offers should be able to reflect the expected cost associated with buying back its position in the Real-Time Energy Market in the case of a unit trip. And while the resource could simply take a forced outage if it believes the probability of tripping is high, its ability to perform in the short-term provides greater reliability value to the system and holds closer to its obligation as a Capacity Resource than being unavailable.

Generators of all types may face risks associated with run time limitations and from a reliability perspective, PJM would want to run these resources when they are needed most for reliable operations which should also coincide with the

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\(^3\) This assumes a $4.50/MMBtu price for natural gas.
greatest financial incentive for operation. PJM has implemented an energy and environmentally limited opportunity cost to reflect such limitations in the energy market. While this has been rarely utilized to date, such limitations are likely to be more prominent in the future.

In all cases, the inability to reflect expected or changing costs resulting from risks on short-term costs, unit trips, or run-time limits leaves resources with reduced or no incentive to operate if requested to do so at an expected loss, or simply running out of allowed run-time hours or output as governed by their respective operating permits, before they are needed most for reliability. The PJM market design already includes some features to managing these risks but there may be others that are needed going forward especially in light of initiatives to better coordinate the gas and electric industries.

**Fuel and Technology Neutrality Subject to Reliability Needs**

In principle competitive markets should reward the most cost-effective technologies. However, power markets are different in that reliability must always be maintained which means there may be limits on what some might deem as the most cost-effective technology. This commitment is evidenced in PJM’s recent filing following the 2016/2017 RPM base residual auction held in 2013 that showed the capacity market design was permitting more low availability, lower cost demand resources than was reliable. The resistance by some market participants to the changes filed by PJM, and ultimately accepted by the FERC, show the incentives to “free-ride”, and under provide reliability through mechanisms that artificially drive down prices and limit resources with greater availability. PJM and the IMM are in agreement directionally that this change to the method by which limits are applied on Limited Demand Response products will result in more efficient and reliable capacity market results.

Neither PJM nor the IMM are rejecting Demand Resources in general, but rather the market design now encourages Demand Resources to offer into the capacity market as Annual Resources, available all year around, something both PJM and the IMM believe is more efficient and reliable.

**Accounting for the Prominence of Natural Gas to Ensure Market Efficiency and Reliability**

At the time PJM’s wholesale power markets developed and evolved, natural gas played a more limited role in power generation and as late as 2008, natural gas only provided seven percent of total MWh. But natural gas, unlike coal or nuclear fuel, is not “stored” on-site, but is delivered “just-in-time” by the natural gas pipeline system. Gas transportation can either be “firm” or “interruptible” with the cost of firm being much higher than interruptible. Traditionally, gas-fired resources relied on interruptible transportation, and PJM’s market rules have accounted for this, as well as the cost of dual fuel capability to “firm up” gas resources, but not for the cost of firm transportation on the pipeline system.

A good market design should allow for the costs of all options, whether they are dual fuel or firm transportation options to be included in both the energy and capacity markets. Failure to do so has the effect of reducing overall system reliability. Many generation owners, with no place to reflect costs for firm gas transportation in the energy or capacity markets, will continue to rely on the transportation service that can be reflected in the energy market (interruptible transportation).

However, because of competitive forces in the capacity market, generation owners in an attempt to be committed as a Capacity Resource may forego taking firm transportation or even dual fuel capability to reduce costs and obtain that commitment even if the costs of firm transportation, as well as dual fuel, were permitted to be reflected in capacity market offers. An effective market design should also enforce strict penalties for failure to deliver as a Capacity Resource, as the IMM has recommended, to incentivize generation resources to “firm up” the resource to provide the required level of reliability service that is expected from the Capacity Resource. Absent the pairing of reflecting the costs of firming up
resources with commensurate penalties for non-performance, the suppliers of reliability service will treat resource adequacy as a private good and under-provide the reliability service that is needed as a public good.

**Capacity Interconnection Rights and Barriers to Free Entry and Exit**

Generation resources once interconnected to the PJM system and considered Capacity Resources, have been allocated Capacity Interconnections Rights (CIRs) which permit them to inject power up to the level of CIRs. Effectively these CIRs have been paid for by the generation resource at the time they interconnected to the system, and are rights that are transferred with the generation facility if there is a change of ownership.

However, the owner of a generator with CIRs that also owns generation within the same zone or region may wish to keep a generator uneconomically in service rather than retire it. Alternatively they may retire the unit but immediately transfer the CIRs to another interconnection queue position as the CIRs could force a potential new entrant to pay for expensive transmission upgrades to enter the market. This would effectively create a barrier to entry to the benefit of the larger portfolio. The IMM has identified this problem and recommend it be addressed. PJM agrees this issue should be addressed to allow freer entry and exit while also recognizing the value of the CIRs to the holders who paid for them.
PJM Response to IMM Recommendations from the 2013 State of the Market Report

Some recommendations made by the IMM have been repeated in each of the past three State of the Market Reports. Some of these recommendations have already been addressed or are in discussions within the stakeholder process. Several of the recommendations have been discussed by stakeholders in the past and have not been adopted or have been decided in a different direction by the FERC. A more detailed PJM response to the conclusions and recommendations from 2013 State of the Market Report is provided below.

Energy Market and Energy Market Uplift Recommendations

The IMM has offered recommendations regarding the Energy Market and Energy Market Uplift. Many of the recommendations regarding Energy Market Uplift are under discussion in the Energy Market Uplift Senior Task Force.

IMM Recommendation: Elimination of Frequently Mitigated Unit and Associated Unit adders.

PJM Response – PJM does not agree that FMU adders should be eliminated in all instances, as they may still be appropriate for some generators that are not covering their going-forward costs. However, PJM and the IMM have discussed the issue and developed a compromise proposal. This issue is currently under discussion in the PJM stakeholder process. PJM and the IMM have jointly proposed a package that would retain these adders in cases where a frequently mitigated unit is not covering that unit’s going forward costs, consistent with the original intention of this adder. PJM is hopeful that this solution will receive stakeholder support.

IMM Recommendation: Revision of the definition of maximum emergency status for generating units.

PJM Response – PJM believes this recommendation is addressed by the implementation of shortage pricing rules on October 1, 2012. The impact and importance of Maximum Emergency as an event impacting pricing has been superseded by shortage pricing.

IMM Recommendation: The MMU recommends that PJM not use the ATSI Interface or create similar interfaces to set zonal prices to accommodate the inadequacies of the demand side resource capacity product.

PJM Response – PJM does not agree with the IMM’s assessment of the use of zonal interfaces. PJM establishes interfaces such as the ATSI interface to ensure the correct pricing signal is sent to the market and to have the price of the marginal resource properly reflected. PJM believes it is critical for appropriate prices to be reflected in the market outcomes. PJM does not view the creation of closed loop interfaces as a means of mitigating the impacts of demand side response resources, nor does it view the demand side resource capacity product an inherently flawed product.

IMM Recommendation: Routinely review all transmission facility ratings and any changes to those ratings to ensure that the ratings used in modeling the transmission system are accurate and reflect standard ratings practice.

PJM Response – PJM reviews and approves all changes to transmission facility ratings. These practices are consistent with FERC orders on this topic. It would be extremely challenging to review all transmission facility ratings on a frequent basis due to the level of effort it would entail.

IMM Recommendation: Update the outage impact studies, the reliability analyses used in RPM for capacity deliverability and the reliability analyses used in RTEP for transmission upgrades to be consistent with the more conservative
emergency operations (post contingency load dump limit exceedance analysis) in the energy market that were implemented in June 2013.

**PJM Response** – PJM believes each of these analyses is being handled appropriately for its purpose. The different types of studies and analyses discussed in this recommendation differ in their intended purpose, input assumptions, and ultimate uses. Each analysis is constructed to serve its intended purpose. In addition, Manual 13 changes were approved at the MRC on April 24, 2014 to update the “post contingency load dump limit exceedance analysis.” These updates will be reviewed for any needed changes to the outage impact studies, the reliability analyses used in RPM for capacity deliverability and the reliability analyses used in RTEP for transmission upgrades.

**IMM Recommendation:** The MMU recommends that the roles of PJM and the transmission owners in the decision-making process to control for local contingencies be clarified, that PJM's role be strengthened, and that the process be made transparent.

**PJM Response** – PJM and the Transmission Owners have a defined and well-practiced process for committing generation at the expense of the Transmission Owner for local facility control or late outages as described in Manual 3, Section 1.5.10, and Manual 12, Section B.3. PJM believes that the current process is effective.

**IMM Recommendation:** The MMU recommends that PJM explore an interchange optimization solution with its neighboring balancing authorities that removes the need for market participants to schedule physical power.

**PJM Response** – PJM agrees and has been working with NYISO for the past year to develop and approach to implement interchange optimization. A solution is expected to be implemented late in 2014. Interchange optimization is in discussion with MISO currently in the Joint and Common Market stakeholder process.

**IMM Recommendation:** Include in the appropriate manual an explanation of the initial creation of hubs, the process for modifying hub definitions and a description of how hub definitions have changed.

**PJM Response** – In order to provide certainty for forward markets, PJM does not alter hub definitions, so they are not changed. Therefore PJM does not believe there is a need to expend the effort to document methodology in this area.

**IMM Recommendation:** During hours when a generation bus shows a net withdrawal, the energy withdrawal be treated as load, not negative generation, for purposes of calculating load and load weighted LMP. During hours when a load bus shows a net injection, the energy injection be treated as generation, not negative load, for purposes of calculating generation and load weighted LMP.

**PJM Response** – PJM disagrees with the first part of this recommendation and believes that when a generation bus is showing a net withdrawal, the payment should be the responsibility of the generation owner rather than shown as an impact to load serving entities. PJM believes the second portion of this recommendation relates to certain modelling issues and that the resolution suggested by this recommendation would not correctly represent the distribution of load in a transmission zone.

**IMM Recommendation:** PJM should identify and collect data on available behind the meter generation resources, including nodal location information and relevant operating parameters.
**PJM Response** – PJM currently does not have the enforceable ability to require information from behind the meter generation resources. Such resources, by definition, do not participate in the wholesale market, and therefore have no obligations to PJM. While such information is desirable, PJM does not have unilateral authority to collect this information universally. PJM has requested assistance from transmission owners and states to identify such information for significant resources.

**IMM Recommendation:** Reallocate the operating reserve credits paid to units supporting the Con Edison – PSEG wheeling contracts.

**PJM Response** – PJM agrees with this recommendation but stresses the importance that any change in this area needs to be coordinated as part of a larger review of operating reserve credits to ensure that any changes to the operating reserve cost allocation is considered holistically. This topic is currently under discussion at the EMUSTF.

**IMM Recommendation:** Clearly identify, classify all reasons for incurring operating reserves in the Day-Ahead and the Real-Time Energy Markets and the associated operating reserve charges in order for all market participants be aware of the reason of these costs and to help ensure a long term solution to the issue of how to allocate the costs of operating reserves.

**PJM Response** – This topic is under discussion in the Energy Market Uplift Senior Task Force. PJM agrees with this recommendation but feels that PJM already achieves the needed detail with regard to classifying, “All the reasons for incurring operating reserves in the Day-Ahead and Real-Time Energy Markets…” PJM currently logs why resources are called upon to comply with current rules for operating reserve cost allocation.

**IMM Recommendation:** The lost opportunity cost in the Energy and Ancillary Services Markets should be calculated using the schedule on which the unit was scheduled to run in the Energy Market.

**PJM Response** – PJM agrees with this recommendation. Making this change will create better consistency between the Real-Time Energy Market and Ancillary Service Markets. This issue has been discussed by stakeholders in the past and they have not been supportive making the IMM’s proposed change. PJM does not believe this ongoing recommendation provides enough material benefit to override stakeholder concerns with the recommendation.

**IMM Recommendation:** Include no load and startup costs as part of the total avoided costs in the calculation of lost opportunity cost credits paid to combustion turbines and diesels scheduled in the Day-Ahead Energy Market but not committed in real time.

**PJM Response** – PJM agrees with this recommendation. PJM has proposed this as a change to the calculation and it is currently being discussed at the EMUSTF.

**IMM Recommendation:** Eliminate the use of the day-ahead LMP to calculate lost opportunity cost credits paid to combustion turbines and diesels scheduled in the Day-Ahead Energy Market, but not committed in real time.

**PJM Response** – PJM is working with the IMM to better understand this recommendation. This type of change is in-scope for the EMUSTF and should the IMM want to propose this market change that would be the appropriate place to do so.
IMM Recommendation: Use the entire offer curve and not a single point on the offer curve to calculate energy lost opportunity cost.

PJM Response – PJM agrees with this recommendation. The point on the curve is used today for simplicity but can result in overpaying a resource. Using the entire offer curve is more accurate. PJM has proposed this as a change to the calculation and it is currently being discussed at the EMUSTF.

IMM Recommendation: PJM should be transparent in the formulation of closed loop interfaces with adjustable limits and develop rules to reduce the levels of subjectivity around the creation and implementation of these interfaces. PJM should estimate the impact such interfaces could have on additional uplift payments inside closed loops, transmission planning, offer capping, FTR and ARR revenue, ancillary services markets and the capacity market to avoid unintended consequences.

PJM Response – PJM agrees with this recommendation and continues to improve processes and standards related to the formation of closed loop interfaces.

IMM Recommendation: The total cost of providing reactive support be categorized and allocated as reactive services. Reactive services credits should be calculated consistent with the operating reserve credits calculation. Include real-time exports in the allocation of the cost of providing reactive support to the 500 kV system or above which is currently allocated to real-time RTO load.

PJM Response – PJM agrees with the IMM’s recommendation that reactive service credits should be calculated consistent with operating reserve credits. Under today’s methodology, units scheduled in real-time to provide reactive services are made whole on an hourly basis as opposed to over the entire day like they are in operating reserves. These calculations should be consistent. The other components of this recommendation are related to cost allocation. PJM feels cost allocation items need to be discussed more holistically with all parties rather than making one-off changes.

IMM Recommendation: Eliminate the use of internal bilateral transactions (IBTs) in the calculation of deviations used to allocate balancing operating reserve charges.

PJM Response – This topic is under discussion in the Energy Market Uplift Senior Task Force. PJM does not oppose this recommendation but feels it needs to be part of a broader discussion on cost allocation.

IMM Recommendation: Up-to congestion transactions should be required to pay operating reserve charges.

PJM Response – PJM agrees with the IMM that UTCs should be allocated some portion of operating reserve charges, however, their allocation should be determined as part of the holistic review at the EMUSTF.

IMM Recommendation: PJM should revise the current operating reserve confidentiality rules in order to allow the disclosure of complete information about the level of operating reserve charges by unit and the detailed reasons for the level of operating reserve payments by unit in the PJM region.

PJM Response – A discussion of this item is planned for an upcoming meeting of the Markets and Reliability Committee. PJM generally supports the IMM’s recommendation for data transparency regarding operating reserve charges but recognizes the need for adhering to confidentiality provisions in the Tariff. Individual generating unit compensation is considered confidential under the Tariff and FERC precedent.
**IMM Recommendation:** Enhance the day-ahead operating reserve credits calculation in order to ensure that units receive an energy uplift payment based on their real-time output and not their day-ahead scheduled output whenever their operation results in a lower loss or no loss at all.

**PJM Response** – This topic is under discussion in the Energy Market Uplift Senior Task Force. PJM agrees with this recommendation and feels this is appropriate because under the current market rules a generation resource can profit from a make whole payment in the Day-Ahead Market. Removing day ahead make whole payments will also simplify PJM’s two-settlement process.

**IMM Recommendation:** Include net Day-Ahead Scheduling Reserve revenues as part of the offsets used in determining day-ahead operating reserve credits.

**PJM Response** – This topic is under discussion in the Energy Market Uplift Senior Task Force. PJM agrees with this recommendation. Netting DASR net revenues against and day-ahead operating reserve credits (should they remain in place) is consistent with the current market design that nets revenues in other markets against make whole payments.

**IMM Recommendation:** Reincorporate the use of net regulation revenues as an offset in the calculation of balancing operating reserve credits.

**PJM Response** – This topic is under discussion in the Energy Market Uplift Senior Task Force. Removing the net regulation revenues as an offset was part of a stakeholder compromise in 2005 when the Three-Pivotal Supplier Test was implemented. While PJM does not oppose this change, it is also not something PJM feels is critical to the market design and the issue is not material enough to override stakeholder decisions in this area.

**IMM Recommendation:** Do not compensate self-scheduled units for their startup cost when the units are scheduled by PJM to start before the self-scheduled hours.

**PJM Response** – PJM agrees with the IMM’s recommendation but feels that this is not a critical component of market design or a key cause of uplift charges in PJM, therefore the issue is relatively low materiality. However, PJM has included it in its proposed set of market rule changes at the EMUSTF.

**Capacity Market Recommendations**

The IMM recommendations related to the capacity market are generally related to the obligations of capacity resources and the definition of what it means to be a capacity resource. Many recommendations related to demand response are also tied directly to the RPM Capacity Market.

**IMM Recommendation:** Enforce a consistent definition of capacity resource. Enforce and enhance the requirement to be a physical resource. This requirement should apply at the time of auctions and should also constitute a commitment to be physical in the relevant delivery year. The requirement should be applied to all resource types, including planned generation, demand resources and imports.

**PJM Response** – This topic is currently before the Federal Energy Regulatory Commission.

**IMM Recommendation:** The definition of demand side resources should be modified in order to ensure that such resources be fully substitutable for other generation capacity resources. Both the Limited and the Extended Summer DR
products should be eliminated in order to ensure that the DR product has the same unlimited obligation to provide capacity year round as generation capacity resources.

**PJM Response** – PJM does not believe the elimination of the extended summer and limited Demand Response products is warranted or feasible at this time. PJM agrees that the obligations of demand resources should be reviewed and modified to be more consistent with generation resource requirements.

**IMM Recommendation**: Elimination of the Short-Term Resource Procurement Target (2.5 percent demand holdback in the Base Residual Auction).

**PJM Response** – PJM disagrees with this recommendation. The short-term resource procurement target was included as a design feature of the forward capacity market to replace the Interruptible Load for Reliability mechanism in order to provide a participation mechanism for short term resources. This mechanism was also justified as an offset to forward load forecast uncertainty which was created as a result of transitioning the capacity market from a short term market to a longer term forward market. Based on analysis of RPM performance since 2007, the 2.5 percent deferred supply does not unreasonably lower capacity procurement, rather it is a mechanism to provide opportunity for short-term resource participation and to prevent systematic over procurement of capacity. Actual market performance and comparison of 3.5 year forward load forecast to actual load requirements appear to validate the deferred supply procurement mechanism. Based on this analysis, PJM does not believe there is evidence that the 2.5 percent deferred supply artificially or inappropriately suppresses forward capacity prices. In fact, the 2.5 percent deferred supply appears to be a conservative quantity of supply deferral that properly reflects the dynamics of forward load forecasting and prohibits over-procurement of forward capacity and overstatement of forward capacity prices. While PJM does not believe the historic performance justifies elimination of the 2.5 percent holdback at this time, it is important to note the load forecast mechanism was recently changed and more analysis will be needed in the future to determine the impacts of these changes on forward load forecasting. Therefore PJM will evaluate the performance of the 2.5 percent holdback on an ongoing basis to ensure it is still performing in a manner consistent with resource adequacy requirements.

**IMM Recommendation**: Redefining the test for determining modeled Locational Deliverability Areas in RPM to include a detailed reliability analysis of all at-risk units.

**PJM Response** – PJM has studied at-risk units as part of the Regional Transmission Expansion Plan (RTEP) process over the past several years, and has provided that information to stakeholders. PJM has also made substantive changes to LDA modeling assumptions to improve coordination between RPM and the RTEP process. PJM does not believe additional changes to the LDA modeling are justified or appropriate at this time.

**IMM Recommendation**: Explicitly require that capacity unit offers into the Day-Ahead Energy Market be competitive where competitive is defined to be the short run marginal cost of the units.

**PJM Response** - PJM disagrees with this recommendation. In the PJM market, capacity resources that are deemed to present a local market power risk (i.e. those that fail the three pivotal supplier test) are subject to market power mitigation at short run marginal cost. PJM believes this recommendation would extend offer mitigation to all operating hours for any capacity resource, even when the resource has passed very conservative market power screens. PJM believes offer capping resources that have been deemed to satisfy market power screens is inconsistent with FERC’s authority and action to grant market-based rates for resources in the energy market. PJM notes the analysis of market-based offers presented in the State of the Market Report prepared by the IMM does not appear to support
or justify this recommendation. PJM believes the additional, unnecessary mitigation that is recommended in a market that has been demonstrated to be operating competitively could have unintended and adverse consequences, which ultimately could create incentives for resources to limit their operational flexibility and availability to PJM, which could inhibit PJM’s ability to maintain reliable and efficient grid operation, efficient dispatch of resources and efficient operation of the energy market.

**IMM Recommendation:** Protocols need to be defined for recalling the energy output of Capacity Resources when PJM is in an emergency condition. PJM has modified these protocols, but they need additional clarification and operational details.

**PJM Response** – These protocols were developed in 2012 and are established in Manual 11. PJM believes these protocols are sufficient. The IMM has not presented specific information on what details it feels are missing.

**IMM Recommendation:** Generation capacity resources should only be paid on the basis of whether they produce energy when called upon during any of the hours defined as critical.

**PJM Response** – PJM disagrees with this recommendation. The IMM has not provided PJM staff or stakeholders with analysis that justifies the recommendation or demonstrates an imminent or potential problem that threatens resource adequacy, market efficiency or grid reliability under the current set of performance incentives in RPM. However, based on recent experience in cold weather operation in January 2014, PJM will evaluate the issue of generation performance and evaluate whether rule changes are necessary to improve performance and incentives.

**IMM Recommendation:** A unit which is not capable of supplying energy consistent with its day-ahead offer should reflect an appropriate outage rather than indicating its availability to supply energy on an emergency basis.

**PJM Response** – PJM generally agrees that if a unit is not capable of supplying energy at all, it should be reflected as an outage. However if the unit is capable of supplying the energy in an emergency, then it is appropriate to designate the energy as available under emergency operating conditions which is consistent with the operational definition of a capacity resource. PJM believes the IMM recommendation to require outage tickets for a resource that is available under emergency conditions would remove a potentially valuable tool for PJM to maintain reliable operations under emergency conditions. PJM has experienced operational circumstances where the only viable alternative was emergency only resources. Dismissing these valuable resources at times when they are most needed is inconsistent with good utility operating practice and would impose higher costs and risks on consumers than necessary. The PJM capacity construct and accompanying energy market rules currently provide incentive for resources to maximize output in response to PJM-declared emergency conditions; PJM believes the IMM recommendation would diminish that incentive which is detrimental to operational reliability. Moreover, the IMM has not provided an analysis of impacts to operating reliability in real-time if such a recommendation were implemented.

**IMM Recommendation:** Elimination of all Out of Management Control (OMC) outages from use in planning or capacity markets.

**PJM Response** – PJM expects that in the wake of the analysis of the severe winter weather events of 2014, a number of actions and recommendations will emerge. While PJM believes that complete elimination of OMC outages
is not warranted, PJM expects that handling of OMC outages in the Capacity Market will be evaluated as part of the analysis of these events.

**IMM Recommendation:** PJM should eliminate the broad exception related to lack of gas during the winter period for single-fuel, natural gas-fired units.

**PJM Response –** PJM believes some adaptation of procedures regarding lack of fuel outages is necessary. Regarding lack of fuel outages, the NERC guidelines state:

“Lack of fuels (water from rivers or lakes, coal mines, gas lines, etc) in the cases where the operator of the unit is not in control of contracts, supply lines, or delivery of fuels. However, if the operator elected to contract for fuels where the fuel (for example, natural gas) can be interrupted so that the fuel suppliers can sell the fuels to others (part of the plant fuel cost-saving measure), then the lack of fuel is under management control and is not applicable to this case.”

PJM strictly enforces this NERC guideline and since May 2013 has instituted changes to reflect this definition.

**Demand Response Recommendations**

The IMM recommendations with respect to Demand Response and Demand Resources touch on aspects of the PJM Energy and Capacity Markets.

**IMM Recommendation:** There should be only one demand resources product, with an obligation to respond when called for all hours of the year.

**PJM Response –** PJM has filed several changes with the FERC regarding enhancements to performance expectations for demand response products.

**IMM Recommendation:** The emergency load response program should be classified as an economic program and not an emergency program.

**PJM Response –** PJM agrees with the intent of this recommendation which we understand is to require all DR providers to submit a curtailment price if they are a capacity resource. However PJM does not agree that requiring all Demand Response to be economic only is feasible or warranted.

**IMM Recommendation:** A daily must offer requirement should apply to demand resources, comparable to the rule applicable to generation capacity resources.

**PJM Response –** This topic is currently before the Federal Energy Regulatory Commission. PJM has expressed its position in that proceeding.

**IMM Recommendation:** The demand response programs should adopt an offer cap equal to the offer cap applicable to energy offers from generation capacity resources, currently $1,000 per MWh.

**PJM Response –** PJM agrees that the caps should be comparable but instead recommends raising the generation offer cap to match the level of the demand response offer caps and has recommended this course of action to the Federal Energy Regulatory Commission.
**IMM Recommendation:** The lead times for demand resources should be shortened to a 30 minute lead time with a one hour minimum dispatch for all resources.

**PJM Response –** This topic is currently before the Federal Energy Regulatory Commission and PJM has expressed its position in that proceeding.

**IMM Recommendation:** Demand resources should be required to provide their nodal location on the electricity grid.

**PJM Response –** A move to require implementation of nodal dispatch for all demand response does not appear to be consistent with aggregation and portfolio requirements ordered by the FERC.

**IMM Recommendation:** Demand resources measurement and verification should be further modified to more accurately reflect compliance.

**PJM Response –** PJM’s understanding of this recommendation is that the IMM proposes to measure compliance on an individual site basis for demand response and as such does not agree with this recommendation. Implementation of such a concept would effectively eliminate the ability for DR providers to manage performance through aggregation. PJM believes aggregation is an integral part of demand response product design and is consistent with FERC mandates in approval of demand response rules.

**IMM Recommendation:** The compliance rules should be revised to include submittal of all necessary hourly load data, and negative values when calculating event compliance across hours and registrations.

**PJM Response –** PJM currently receives meter load data except for certain direct load control entities for which meter data appears to be impractical. Imposing a strict metering requirement on all entities regardless of circumstance may create and unreasonable barrier to participation.

**IMM Recommendation:** PJM should adopt the ISONE metering requirements in order to ensure that dispatchers have the necessary information for reliability and that market payments to demand resources be calculated based on interval meter data at the site of the demand reductions.

**PJM Response –** PJM believes it has made appropriate changes to insure that dispatchers have the information necessary to maintain system reliability.

**IMM Recommendation:** The demand response event compliance should be calculated for each hour and the penalty structure reflect hourly compliance.

**PJM Response –** This topic is currently before the Federal Energy Regulatory Commission and PJM has expressed its position in that proceeding.

**IMM Recommendation:** Demand resources whose load drop method is designated as “Other” should explicitly record the method of load drop.

**PJM Response –** PJM does not believe this recommendation is material enough to act on given other changes in this area.

**IMM Recommendation:** Load management testing should be initiated by PJM with limited warning to CSPs in order to more accurately resemble the conditions of an emergency event.
**PJM Response** – This issue was reviewed in the Capacity Senior Task Force but eventually dropped due to a lack of stakeholder interest in addressing it. Stakeholders may want to consider re-evaluation of testing procedures as the frequency of demand response dispatch increases in order to evaluate the impact of repeated demand response utilization on participation levels.

**Planning Recommendations**
The IMM has offered recommendations regarding transmission planning.

**IMM Recommendation:** There is no mechanism to permit a direct comparison, or competition, between transmission and generation alternatives. There is no mechanism to evaluate whether the generation or transmission alternative is less costly or who bears the risks associated with each alternative. The MMU recommends the creation of such a mechanism.

**PJM Response** – PJM is committed to improving the quality and timeliness of available information so that the market can make investment decisions given the uncertainty and long lead times involved in both transmission and resource planning.

**IMM Recommendation:** Implement rules to permit competition to provide financing of transmission projects. This competition could reduce the cost of capital for transmission projects and significantly reduce total costs to customers.

**PJM Response** – PJM agrees with this recommendation on a conceptual level, however such a construct would require careful consideration to prevent any unintended consequences. A change of this nature is not a short term fix but instead a long term effort that will require many years to implement. Moreover, this approach which would focus on bidding on specific pre-designated projects is not consistent with PJM’s Order 1000 compliance approach which compares project submittals as opposed to simply bidding out the construction of RTO-designated projects.

**IMM Recommendation:** Address the question of whether Capacity Injection Rights (CIRs) should persist after the retirement of a unit. Even if the treatment of CIRs remains unchanged, the rules need to ensure that incumbents cannot exploit control of CIRs to block or postpone entry of competitors.

**PJM Response** – Several rule modifications have been implemented in recent years through the efforts of the Regional Planning Process Task Force and Interconnection Process Senior Task Force that reduced or eliminated these issues. PJM invites further discussion on this issue in the stakeholder process.

**IMM Recommendation:** Outsource interconnection studies to an independent party to avoid potential conflicts of interest. Currently, these studies are performed by incumbent transmission owners under PJM’s direction. This could result in a conflict of interest when transmission owners have generation interests.

**PJM Response** – PJM disagrees with the IMM’s characterization of the responsibilities in this area. These studies are not performed by incumbent transmission owners under PJM’s direction. They are performed by PJM with the support of the incumbent transmission owner. PJM feels the oversight and controls for these studies are adequate.

**IMM Recommendation:** The MMU recommends that a review process be created to ensure that projects are removed from transmission queues, if they are no longer viable and no longer planning to complete the project.

**PJM Response** – Provided that a project is meeting the financial milestones required, PJM has no way of knowing or predicting that a project is no longer planned to be completed by the developer. PJM agrees that the issue should be
addressed, but any process should be based on clear milestones rather than a subjective review process. Moreover, any such change would need to be addressed with reference to FERC’s directives in Order 2003.

Ancillary Services Recommendations

IMM Recommendation: The Regulation Market should be modified to incorporate a consistent application of the marginal benefits factor throughout the optimization, assignment and settlement process.

PJM Response – PJM agrees with this recommendation however recent FERC rulings have prevented application of the marginal benefits factor.

IMM Recommendation: Eliminate the rule requiring the payment of tier 1 synchronized reserve resources when the non-synchronized reserve price is above zero.

PJM Response – PJM disagrees with this recommendation and the FERC has approved the current market rules granting equal payment for equal services.

IMM Recommendation: The tier 2 synchronized reserve must-offer provision of scarcity pricing should be enforced.

PJM Response – PJM is in the process of implementing checks to better ensure compliance with the must-offer provision.

IMM Recommendation: Be more explicit about why tier 1 biasing is used in the optimized solution to the Tier 2 Synchronized Reserve Market. Define rules for calculating available tier 1 MW and for the use of biasing during any phase of the market solution and then identify the relevant rule for each instance of biasing.

PJM Response – PJM has implemented and continues to improve calculation of Tier 1 reserves. However PJM believe that dispatcher discretion and experience are critical tools used in maintaining system reliability and it is impossible to set rigid rules in this area without sacrificing reliability.

IMM Recommendation: Determine why secondary reserve was either unavailable or not dispatched on September 10, 2013 and evaluate replacing the DASR market with a real time secondary reserve product that is available and dispatchable in real time.

PJM Response – PJM has implemented improvements based on experiences from the September 10, 2013 events and continues to discuss more improvements through the PJM Operating Committee.

IMM Recommendation: Revise the current confidentiality rules in order to specifically allow a more transparent disclosure of information regarding black start resources and their associated payments in PJM.

PJM Response – PJM is generally supportive of market transparency but is concerned for the potential to disclose market sensitive information.

IMM Recommendation: The DASR Market rules should be modified to incorporate the application of the three pivotal supplier test.

PJM Response – PJM agrees with the IMM that this issue is a low priority item given the near-zero clearing prices and minimal impact of the Day Ahead Scheduling Reserve Market on overall consumer costs. Given the low materiality of this item, PJM does not believe stakeholder consideration of this issue is warranted at this time. PJM
notes the IMM’s analysis reports that at no time did the DASR market fail their after-the-fact Three Pivotal Supplier test in 2012 despite its reporting of seven high load days and forty high load hours which appears to further confirm the low materiality of this item.

**Interchange Transactions Recommendations**

**IMM Recommendation:** Eliminate of the IMO Interface Pricing Point, and assign the MISO Interface Pricing Point to transactions that originate or sink in the IESO balancing authority.

**PJM Response** – PJM is currently in discussions with MISO regarding the modelling of the Michigan-Ontario PARs and that these modelling improvements will mitigate or eliminate this issue.

**IMM Recommendation:** Permit unlimited spot market imports as well as unlimited non-firm point-to-point willing to pay congestion imports and exports at all PJM Interfaces in order to improve the efficiency of the market.

**PJM Response** – PJM has discussed this concept with its neighbors related to this recommendation and there have been some objections to this approach under the terms of the Joint Operating Agreements. PJM also believes that prior issues with “hoarding” spot import service have been addressed via direct interaction with market participants. At this time PJM does not expect to pursue this recommendation further.

**IMM Recommendation:** Implement a validation method for submitted transactions that would prohibit market participants from breaking transactions into smaller segments to defeat the interface pricing rule and receive higher prices (for imports) or lower prices (for exports) from PJM resulting from the inability to identify the true source or sink of the transaction.

**PJM Response** – This recommendation is under discussion in stakeholder processes. Discussions in the Markets Implementation Committee are on hold pending discussions occurring in the Joint and Common Market stakeholder process.

**IMM Recommendation:** The MMU recommends that the validation also require market participants to submit transactions on market paths that reflect the expected actual flow in order to reduce unscheduled loop flows.

**PJM Response** – The IMM has presented a problem statement at the MIC. PJM staff does not believe there is a problem with PJM’s interface pricing nor does PJM see a need to implement a path restriction similar to what NYISO has done.

**IMM Recommendation:** Implement rules to prevent sham scheduling. The MMU’s proposed validation rules would address sham scheduling.

**PJM Response** – This item is currently in discussions in the stakeholder processes. MIC discussions are currently on hold pending discussions occurring at in the Joint and Common Market stakeholder process.

**IMM Recommendation:** The MMU recommends that PJM eliminate the NIPSCO and Southeast interface pricing points from the Day-Ahead and Real-Time Energy Markets and, with VACAR, assign the SouthIMP/EXP pricing point to transactions created under the reserve sharing agreement.

**PJM Response** – PJM supports the recommendation to remove the NIPSCO and SOUTHEAST interface pricing points from the Day-Ahead and Real-Time Energy Markets. Given that neither of these interface pricing points can be used for real time transactions, there is no need to have them available for day-ahead transactions.
since there are existing, Long-Term FTR positions at the NIPSCO interface pricing point, PJM is required to establish a day-ahead price at which they are settled. PJM continues to believe that the SOUTHEAST interface pricing point is the applicable point for settling VACAR reserve sharing agreement energy transfers. PJM would need to investigate with stakeholders whether any rule or agreement changes would be required in order to continue to calculate these interface prices but make them ineligible for day ahead, real time, and Virtual Transactions.

**IMM Recommendation:** Terminate the Joint Operating Agreement with PEC.

**PJM Response** – PJM does not agree with the proposal to terminate the PJM/PEC JOA. PJM believes that the PJM/PEC JOA has been beneficial both for the purposes of reliability coordination as well as efficient management of congestion via the dynamic schedule between PJM and the Progress Energy Balancing Authority. Beyond the reliability coordination provisions, the dynamic schedule implemented via the JOA provides the ability for energy to be scheduled between PJM and the Progress Energy Balancing Authority in a manner that beneficially impacts congestion affected by those energy transfers. PJM does not believe that the Duke/Progress merger has changed operation of the Progress Energy Balancing Authority sufficiently to warrant termination of the PJM/PEC JOA or the dynamic schedule for which the JOA provides.

**IMM Recommendation:** PJM and MISO should work together to align interface pricing definitions, using the same number of external buses and selecting buses in close proximity on either side of the border with comparable bus weights.

**PJM Response** – PJM will be adjusting its definition of the MISO interface such that the buses included in that definition are at the border between PJM and MISO effective June 1, 2014. PJM has suggested that MISO similarly redefine its interface for PJM such that MISO uses the same set of buses for its interchange pricing with PJM. It is unclear at this time whether MISO will change its interface pricing point for transactions between PJM and MISO in such a manner.

**FTR and ARR Recommendations**

The IMM has made a number of recommendations related to the FTR and ARR markets, and these recommendations largely relate to issues around persistent underfunding. PJM is preparing to discuss a comprehensive review process with stakeholders with an eye towards reforms to help reduce FTR underfunding. PJM expects to begin this discussion with stakeholders in 2014. A group of the high priority recommendations are discussed in more detail below.

**IMM Recommendation:** Eliminate over allocation requirement of ARRs in the Annual ARR Allocation process.

**PJM Response** – PJM agrees with this recommendation. PJM has discussed this type of solution with stakeholders for the past several years and there is no stakeholder consensus on a resolution. Given the trends of decreasing transmission performance in certain areas of the system, PJM believes action is necessary to address the over allocation issue. PJM will discuss the issue with stakeholders. PJM believes that the Tariff requirement to allocate all requested Stage 1A ARRs has resulted in a significant portion of the underfunding experienced over the last two Planning Years due to ongoing transmission construction outages and transmission equipment failures. Additionally, the over-allocation of ARRs has also contributed to the underfunding caused by other, related aspects of the FTR auction processes, as indicated in the responses to several of the recommendations below.

**IMM Recommendation:** Eliminate portfolio netting to eliminate cross subsidies across FTR marketplace participants.
PJM Response – The IMM recommendation would not change the total PJM FTR payout dollars but will change the payout dollars for individual FTR participants. PJM agrees with the IMM proposal to remove the netting of positive and negative FTR Target Allocations within a portfolio. PJM recommended this change at the FTR Task Force conducted in 2011. However, PJM stakeholders were not supportive of this proposal to remove the netting of positive and negative FTR Target Allocations within a member’s portfolio. Therefore, in recognition of the fact that this issue does not affect the magnitude of the FTR underfunding itself, but rather how the amount of underfunding applied to FTR holders is distributed among those market participants and PJM stakeholders’ lack of support, PJM will not propose this change again at this time. PJM will continue to support discussions of this topic should PJM stakeholders want to pursue it.

IMM Recommendation: Eliminate subsidies to counter flow FTR holders by treating them comparably to prevailing flow FTR holders when the payout ratio is applied.

PJM Response – In this recommendation the IMM is suggesting that when positively valued FTRs are underfunded, negatively valued FTRs should be charged more than 100% of their negative value in order to reduce the underfunding to positively valued FTRs. PJM staff does not understand the basis for charging an FTR holder for more than 100% of its negative Target Allocation and does not support moving forward with this recommendation. When sufficient congestion funds do not exist to pay all positively valued FTR holders at 100% of their Target Allocations, then the payments to all such positively valued FTRs are pro-rated down such that they all receive less than 100% of Target Allocation payments. However, negatively valued FTRs are still charged at 100% of their negative values. PJM believes that charging negatively valued FTRs more than 100% of their negative value would amount to those negatively valued FTRs subsidizing the payments to positively valued FTRs. PJM does not believe such a subsidy is justified.

IMM Recommendation: Eliminate cross geographic subsidies.

PJM Response – PJM staff believes that this recommendation is better addressed through adoption of other of the IMM recommendations, most significantly the recommendation to eliminate the over-allocation requirement for Stage 1A ARRs. In recommending the elimination of cross geographic subsidies, the IMM is suggesting that FTR underfunding be allocated to those FTR holders whose FTRs are across paths where the constraints causing the underfunding occurred. Changing the allocation mechanism for FTR underfunding such that revenue inadequacy was allocated to participants whose FTRs impacted transmission constraints that drove the underfunding would be directly akin to “undoing” the ARR allocation(s) and/or FTR auction(s) through which the ARRs and FTRs were allocated or sold. In other words, once ARRs are allocated and FTRs are sold, participants have reasonable expectation that their allocated and purchased rights will be treated comparably with all other similarly awarded rights on the system, because (absent the Stage 1A over-allocation that the Tariff requires today) such rights are not allocated or sold with the expectation or indication that underfunding will occur. Eliminating the pro-rata allocation of underfunding across all participants would be changing the allocation such that the rights across transmission constraints driving the underfunding were funded at levels equivalent to if they had not been allocated or sold in the first place. PJM therefore suggests adopting this concept more directly through implementation of the recommendation to eliminate the up-front over-allocation of Stage 1A ARRs.
IMM Recommendation: Reduce FTR sales on paths with persistent underfunding including clear rules for what defines persistent underfunding and how the reduction will be applied.

PJM Response – PJM believes the resolution of the Stage 1A allocation will also address this recommendation. The PJM Tariff already provides PJM with the necessary authority to model the transmission system with the reduced capability necessary to minimize underfunding of FTRs. Therefore, PJM already reduces the capability modeled in the FTR auctions on historically constrained and underfunded paths to the greatest extent possible. However, doing so to the extent necessary to eliminate underfunding on such paths can result in negative revenue from the FTR auctions if the capability is reduced to a level below the impact of the ARRs that have already been allocated. The PJM stakeholders have repeatedly indicated that PJM should not reduce the system capability modeled in the FTR auctions to the point that FTR auction revenue becomes negative, and PJM staff agrees. PJM will be in a much better position to further reduce the capability modeled on historically constrained and underfunded paths without causing negative FTR auction revenue when the amount of ARRs initially allocated can be reduced.