



Monitoring
Analytics

**PJM Marginal Loss Surplus Allocation
and Market Participant Transaction
Activity:
May 15, 2010 through September 17, 2010**

The Independent Market Monitor for PJM

January 6, 2011

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Introduction

A number of market participants engaged in trades in the PJM Energy Market that were economic only as a result of the allocation of marginal losses under market rules applicable during the period from May 15, 2010 through September 17, 2010. Monitoring Analytics, LLC, acting in its capacity as the Independent Market Monitor for PJM (“Market Monitor” or “Market Monitoring Unit” or “MMU”), has investigated and analyzed these trading activities and has determined that there is sufficient credible information to believe that the behavior of certain market participants in PJM constituted a Market Violation and requires investigation. The Market Monitoring Unit has provided the Commission with oral notice of these activities in advance of this submission of a written, non-public referral. The Market Monitor submits this referral, which, consistent with Section I.1 of Attachment M to the PJM Open Access Transmission Tariff (OATT), includes the names of market participants that took the actions constituting alleged Market Violations; contact information (see Appendix A); the applicable time period; the rules implicated; the specific acts or conduct that constitute the alleged Market Violation; the consequences to the market; a description of the alleged manipulative effect on market prices, market conditions or market rules; and other information that the Market Monitor believes is relevant and may be helpful to the Commission.¹

Marginal Loss Surplus

The PJM Locational Marginal Price (LMP) consists of an energy component, a congestion component and a marginal loss component.² The collection of marginal losses results in the over-collection of transmission line losses. This marginal loss surplus must be allocated to customers. In accordance with the order issued by the Commission on April 15, 2010, PJM modified the methodology for allocating the marginal loss surplus, effective May 15, 2010.³ The dollars of marginal loss surplus, or loss charges, were distributed per Schedule 1 of the PJM Operating Agreement:

¹ Attachment M defines a “Market Violation” to mean “a tariff violation, violation of a Commission approved order, rule or regulation, market manipulation, or inappropriate dispatch that creates substantial concerns regarding unnecessary market inefficiencies, as defined in 18 C.F.R. § 35.28(b)(8).” Capitalized terms in this referral not otherwise defined herein have the meaning specified in the PJM OATT.

² The marginal loss component, which is the basis of this analysis, is defined as the loss price at a bus, between points of delivery and points of receipt. See PJM OA Schedule 1 § 5.4.2.

³ *Black Oak Energy, L.L.C. v. PJM Interconnection, L.L.C.*, 131 FERC ¶ 61,024 (2010) (*Black Oak Order*).

The total Transmission Loss Charges accumulated by the Office of Interconnection in any hour shall be distributed pro-rata to each Network Service User and Transmission Customer in proportion to its ratio shares of the total MWhs of energy delivered to load (net of operating Behind The Meter Generation, but not less than zero) in the PJM Region, or the total exports of MWh of energy from the PJM Region (that paid for transmission service during such hour), or the total MWh of cleared Up-To Congestion transactions (that paid for transmission service during such hour).⁴

PJM's implemented marginal loss surplus allocation methodology, as defined in the tariff, is based on usage. The method implemented by PJM does not reflect the method required in the Commission's most recent order on this matter because the PJM allocation of the marginal loss surplus is not done on the basis of contributions to the fixed costs of the grid. The PJM allocation is not consistent with the *Black Oak* Order which specified that the allocation should be based on contributions to the fixed costs of the grid.⁵ Usage does not equal the total contribution in dollars to the fixed costs of the transmission grid and an allocation based on usage will underallocate to firm transmission customers and overallocate to non-firm transmission customers. Firm transmission customers pay fixed charges that do not vary based on the level of usage. Firm transmission customers buy long term transmission service and use it with a relatively low load factor while non-firm transmission customers buy short term transmission service and use it with a higher load factor. Firm transmission customers pay more than non-firm transmission customers per MWh of transmission reservations and even more per MWh of transmission service used, as a result of the lower load factor of firm transmission customers.⁶ There is no hourly charge for firm service because the minimum duration of firm service is one day. In 2010, 63.8 percent of firm transmission service purchased was annual, 28.3 percent was monthly, 7.5 percent was daily and 0.4 percent was weekly. An allocation based on the contributions to the fixed costs of the grid would have produced a different result than the tariff allocation, and

⁴ See PJM OA Schedule 1 § 5.5.

⁵ See *Black Oak Energy, L.L.C., et al. v. PJM Interconnection, L.L.C.*, 125 FERC ¶61,042 (2008), *order on reh'g*, 122 FERC ¶61,208 (2008).

⁶ The cost of firm transmission is \$2.16 per MWh of reservations, which assumes a 100 percent load factor. If the firm transmission service is used only half the time, the effective cost per MWh used is \$4.32 per MWh. The cost of non-firm transmission is \$0.67 per MWh of reservations, which is also the effective cost after accounting for load factor.

would not have provided the incentives to market participants to engage in the trading strategies identified in this referral. The flawed allocation method resulted in incentives for these trading strategies that would not have existed under a correct allocation of the marginal loss surplus.

Issue

This modification to the marginal loss allocation methodology created an opportunity for market participants to engage in energy transactions that had no economic basis other than to collect marginal loss surplus allocations, resulting in profits where they would have otherwise had a net zero or negative settlement position. Such transactions took several forms, including wheeling up-to congestion transactions at the same PJM interface with equal LMPs; wheeling up-to congestion transactions at interfaces with LMPs that were close to equal; equal and opposite up-to congestion transactions to and from the same internal PJM buses with equal LMPs; and up-to congestion transactions at buses within the PJM Energy Market with LMPs that were close to equal.

The Market Monitor has identified a set of transactions that were submitted to the PJM Day-Ahead Energy Market that constitute market manipulation, which is prohibited by the Commission. This behavior is prohibited by the Commission's anti-manipulation rule, set forth at 18 CFR § 1c.2 (2010), and constitutes a "Market Violation" as defined in attachment M. The Market Monitor believes that this referral is sufficient to show that the Market Participants involved have engaged in manipulation prohibited under the Commission's anti-manipulation rule, and recommends that the Commission's Office of Enforcement take such action as it deems appropriate.⁷

The Market Monitor views the identified transactions as violating the Commission's anti-manipulation rule. The value of the underlying transactions completely, or nearly completely, cancel out, creating a net benefit only to the extent that the entitlement to an allocation of marginal losses exceeds the cost of transmission service and any applicable ancillary service charges. These transactions exploit the marginal loss allocation rules implemented by PJM to derive a benefit from transactions with no fundamental economic rationale or value.

When the allocation of marginal losses is necessary for the profitability of an economically meaningless transaction, when such transactions are repeated, when similar transactions were not entered into prior to the marginal loss surplus rule, or when the volume of such transactions increased significantly following the marginal loss surplus rule, it is reasonable to infer intent. As there is no rational basis for characterizing such transactions as economic without the marginal loss surplus

⁷ Please see Appendix A for the list of market participants included in this referral.

allocation, a determination that such transactions were intended to operate as a fraud or deceit upon PJM and participants in the markets administered by PJM is warranted. Such behavior violates the Commission's rule prohibiting energy market manipulation⁸ and constitutes a Market Violation subject to referral by the Market Monitor.⁹ Also, there can be no question here about whether the behavior resulted from confusion about the purpose of a pricing signal. Participants in such transactions had no basis to believe that their behavior could be a useful response to any market signal.

The identified transactions are similar in fundamentals to wash trades, which have been expressly identified as prohibited activities by the Commission. In the Enron case, wash trades took the form of energy market transactions that completely canceled out but created the illusion of trading volume. This deceives the market about the level of economic transactions but benefits the participant.

The Commission has explained:

A 'wash trade' is generally defined as a prearranged pair of trades of the same good between the same parties, involving no economic risk and no net change in beneficial ownership. It exposes the parties to no monetary risk and serves no legitimate business purpose. A wash trade might be used to create the illusion that a market is liquid and active, or to increase reporting trading revenue figures. A wash trade might be arranged at prices that diverge from the prevailing market in an attempt to send false signals to other market participants. Alternatively, the intent might be to affect the average or index price reported for a market, which in turn could benefit a derivative position

⁸ See 18 CFR § 1c.2(a) ("It shall be unlawful for any entity, directly or indirectly, in connection with the purchase or sale of electric energy or the purchase or sale of transmission services subject to the jurisdiction of the Commission, (1) To use or employ any device, scheme, or artifice to defraud, (2) To make any untrue statement of a material fact or to omit to state a material fact necessary in order to make the statements made, in the light of the circumstances under which they were made, not misleading, or (3) To engage in any act, practice, or course of business that operates or would operate as a fraud or deceit upon any entity.").

⁹ PJM OATT Attachment M §§ II(h-1) & IV.I.1.

or affect the magnitude of payments on a contract linked to the index price.¹⁰

Wash trades are among those behaviors at one time explicitly codified in Market Rule 2. (*Investigation of Terms and Conditions of Public Utility Market-Based Rate Authorizations*, 114 FERC ¶61,165 at P 5 (2006).) Although the Commission rescinded Market Rule 2, the Commission confirmed that such behavior constitutes “prohibited activities under new section 1c.2 of our regulations and are subject to sanctions and remedial actions”. (*Id.* at P 24.) The Commission explains: “The Commission emphasized in Order No. 670 that “the specific prohibitions of Market Behavior Rule 2 (wash trades, transactions predicated on submitting false information, transactions creating and relieving artificial congestion, and collusion for the purpose of market manipulation), are examples of prohibited manipulation, all of which are manipulative or deceptive devices or contrivances, and are therefore prohibited activities under this Final Rule, subject to punitive and remedial action.”[footnote omitted] Such fraud and manipulative conduct therefore remains prohibited and subject to the Commission’s anti-manipulation and civil penalty authority.” (*Market-Based Rates for Wholesales of Electric Energy, Capacity and Ancillary Services by Public Utilities*, Order No. 697, 119 FERC ¶61,295 at P 824 (2007), citing *Prohibition of Energy Market Manipulation*, Order No. 670, 114 FERC ¶61047 at P 59 (2006).)

Up-to congestion transactions are financial transactions, and are not physical trades of power where ownership changes. While the identified transactions are not a prearranged pair of trades of the same good between the same parties, the identified transactions involve little or no economic risk and no net change in beneficial ownership.¹¹ The identified transactions expose the parties to little or no monetary risk and serve no legitimate business purpose. Although the motivation for wash trades has typically involved inflating trading volumes, such schemes also have involved trades to obtain direct benefits determined on the basis of trading volumes.¹² That a transaction is

¹⁰ *Enron Power Marketing, Inc. et al.*, 103 FERC ¶61,343 at P 61 (2003); see also *Enron Power Marketing, Inc., et al.*, 119 FERC ¶63,013 at P 51 (2007).

¹¹ The SEC typically defines without elaboration “wash trades” as a lack of change in beneficial ownership. See, e.g., *In the Matter of Newbridge Securities Corp., Guy S. Amico, Scott H. Goldstein, Eric M. Vallejo, And Daniel M. Kantrowitz*, SEC Admin. Proc. File No. 3-13099 at n.28 (2009) (“‘Wash trades,’ also known as ‘wash sales,’ are securities transactions involving no change in beneficial ownership”), citing *Ernst & Ernst v. Hochfelder*, 425 U.S. 185, 205 n.25 (1976); *Richard D. Chema*, 53 S.E.C. 1049, 1051 n.3 (1998).

¹² See *Irfan Mohammed Amanat*, Exchange Act Rel. No. 54708, 89 SEC Docket 714, 726–33 (2006) (finding that respondent “engaged in fraudulent scheme to obtain market data rebates from Nasdaq by deceptively executing thousands of wash trades and matched orders”).

profitable does not provide a “legitimate business purpose” when the transaction lacks “economic substance.”¹³ Thus, the identified transactions have key characteristics that the Commission has identified as prohibited manipulation.

The Market Monitor recommends that, where the Commission agrees that there is sufficient evidence of intent to engage in the identified activities for the purpose of collecting an allocation of the marginal loss surplus, this justifies a finding that manipulation has occurred.

This report includes a list of all Market Participants that submitted up-to congestion transactions that were profitable only as a result of the marginal loss surplus allocation (See Table 12). Not all of these Market Participants are being referred at this time. Appendix A lists the referred market participants and Appendix B lists the additional market participants that submitted up-to congestion transactions that were profitable only as a result of the marginal loss surplus allocation but which are not currently being referred. The MMU is conducting further investigation of the market participants listed in Appendix B, and their specific activities, which do not fall within the scope of this referral. The MMU will make an additional referral if appropriate or inform the Commission if the MMU determines that a referral is not required.

Background

Up-to Congestion Settlements

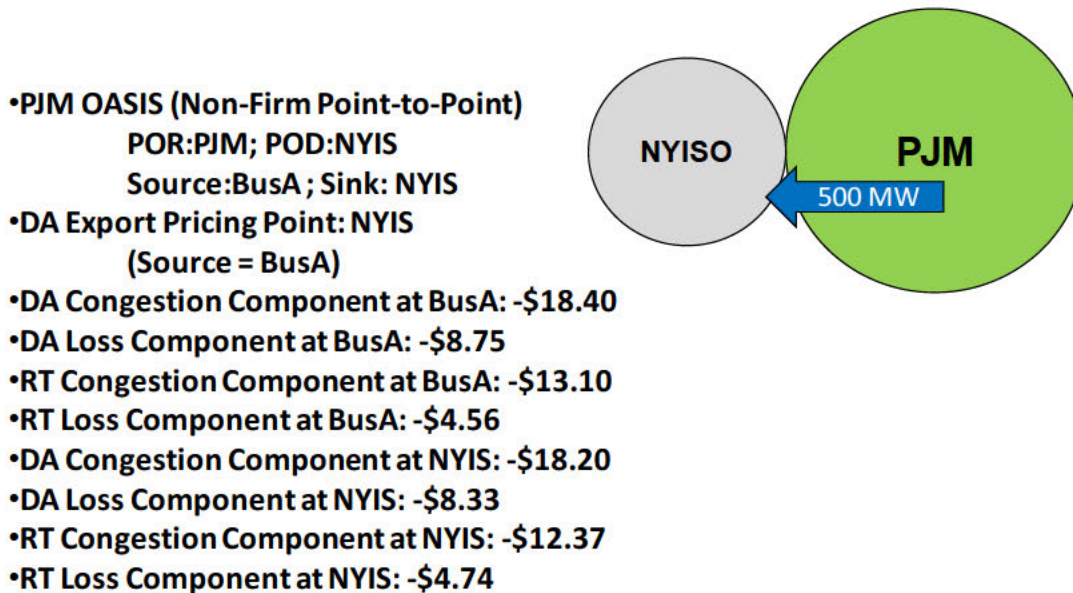
The accounting and settlements for up-to congestion transactions in PJM are complex, but provide the framework within which the market actions included in this referral must be understood.

When a market participant submits an up-to congestion transaction, several related market settlement billing items are affected. Those billing line items are: transmission charges, Day-Ahead Market transmission congestion charges, balancing transmission congestion charges, Day-Ahead Market transmission loss charges, balancing

¹³ See *Intertie Bidding in the California Independent System Operator’s Supplemental Energy Market*, 122 FERC ¶61,333 at 62,481 (2005) (“[T]he term ‘legitimate business purpose’ includes only ‘transactions with economic substance, in which a seller offers and provides service to a willing buyer and where value is exchanged for value.’ [footnote omitted] To have ‘economic substance’ a transaction must involve economic risk and result in an exchange of value between a willing buyer and seller. [footnote omitted] Further, the Commission stated that ‘an action or transaction which is anticompetitive (even though it may be undertaken to maximize seller’s profits), could not have a legitimate business purpose attributed to it under our rule.’ [footnote omitted] Therefore, profit maximization alone does not constitute a legitimate business purpose.”).

transmission loss charges, transmission loss credits and ancillary service charges (black start and reactive services, market support, MMU funding and advanced second control center charges). Each charge and credit is explained in detail based on the example up-to congestion transaction shown in Figure 1. Table 1 includes a summary of the accounting for the transaction.

Figure 1 Example Up-To Congestion Transaction



Transmission Charge

Non-firm point-to-point transmission customers pay demand charges for reserved capacity at the discounted rate of \$0.67/MWh. There is no charge for reserved capacity with a MISO point of delivery.

Firm point-to-point transmission customers pay demand charges for reserved capacity at the applicable tariff rates. There is no charge for reserved capacity with a MISO point of delivery.

In the example shown, the market participant acquired 500 MW of non-firm point-to-point transmission service on the path of PJM to the New York ISO. The transmission charge associated with this transaction would be 500 MWh * \$0.67 /MWh for a total charge of \$335.00.

Day-Ahead Market Transmission Congestion Charge

The Day-Ahead Market transmission congestion charge is the difference in prices in the Day-Ahead market when the PJM transmission system is constrained. These congestion

charges are assessed to market participants based on the Day-Ahead Market congestion price component of LMPs. For up-to congestion transactions, the market participant is charged the difference between the Day-Ahead Market LMP congestion component at the sink and the Day-Ahead Market LMP congestion component at the source, multiplied by the total MWh of the transaction. This charge reflects the congestion cost to move power between the source and sink.

In the example shown, the sink Day-Ahead LMP congestion component was -\$18.20/MWh and the source Day-Ahead LMP congestion component was -\$18.40/MWh. The Day-Ahead Market transmission congestion charge is calculated as $(-18.20 - -18.40) * 500$ MWh for a total charge of \$100.00.

Balancing Transmission Congestion Charge

The balancing transmission congestion charge is the difference in prices in the Real-Time market when the PJM transmission system is constrained. These congestion charges are assessed to market participants based on the Real-Time Market congestion price component of LMPs. The market participant is charged the difference between the Real-Time Market LMP congestion component at the sink and the Real-Time Market LMP congestion component at the source, multiplied by the difference between the Real-Time MWh and Day-Ahead MWh scheduled. For example, if a transaction were scheduled in the Day-Ahead Market only, the Real-Time MWh in the balancing transmission congestion charge calculation would be zero (as the transaction was not scheduled in the Real-Time Market) minus the Day-Ahead MWh. Therefore, the balancing MWh would be the negative value of the Day-Ahead scheduled MWh of the transaction.

In the example shown, the Real-Time LMP congestion component at the sink was -\$12.37/MWh and the Real-Time LMP congestion component at the source was -\$13.11/MWh. The balancing transmission congestion charge would be calculated as $(-12.37 - -13.11) * -500$ for a total charge of -\$365.00 (note that the negative charge is a credit).

Day-Ahead Market Transmission Loss Charge

The Day-Ahead Market loss charges are assessed to market participants based on the Day-Ahead Market loss price component of LMPs. The market participant is charged the difference between the Day-Ahead Market LMP loss component at the sink and the Day-Ahead Market LMP loss component at the source, multiplied by the total MWh of the transaction.

In the example shown, the sink's Day-Ahead LMP loss component was -\$8.33/MWh and the source's Day-Ahead LMP loss component was -\$8.75/MWh. The Day-Ahead Market transmission loss charge would be calculated as $(-8.33 - -8.75) * 500$ for a total charge of \$207.67.

Balancing Transmission Loss Charge

The balancing loss charges are assessed to market participants based on the Real-Time Market loss price component of LMPs. The market participant is charged the difference between the Real-Time Market LMP loss component at the sink and the Real-Time Market LMP loss component at the source, multiplied by the difference between the Real-Time MWh and Day-Ahead MWh scheduled.

In the example shown, the Real-Time LMP loss component at the sink was $-\$4.74/\text{MWh}$ and the Real-Time LMP loss component at the source was $-\$4.56/\text{MWh}$. The balancing transmission loss charge would be calculated as $(-\$4.74 - -\$4.56) * -500$ for a total charge of $\$90.00$.

Marginal Loss Surplus Allocation

The method for calculating the marginal loss surplus allocation, implemented effective May 15, 2010, was not consistent with the *Black Oak* Order. The example calculations presented are based on the marginal loss surplus allocation implemented by PJM on May 15, 2010.

Per MWh Allocation

PJM calculated the marginal loss surplus on an hourly basis. For each hour, the total loss surplus in any given hour was divided by the sum of the total PJM real-time load, exports and up-to congestion transactions. For example, if the total loss surplus collected in an hour were $\$150,000$, and the total PJM real-time load, exports and up-to congestion transactions, for the entire PJM market, were $78,500 \text{ MWh}$ in that hour, the per MWh loss surplus allocation would be $\$150,000 / 78,500$, or $\$1.91/\text{MWh}$.

Allocation Recipients

The PJM market rules provide that market participants that have paid for transmission service receive a pro-rata share of the marginal loss surplus based on the gross MWh volume of their real-time load, scheduled real-time exports or scheduled up-to congestion transactions.

Each market participant's activity for each hour serves as the basis for the per MWh loss surplus allocation. In the example, the 500 MWh up-to congestion transaction would be eligible to receive a marginal loss surplus allocation. The calculation of the credit for this transaction would be $\$1.91 * 500$, or a total credit of $\$955.00$.

Ancillary Services

There are additional charges associated with submitting up-to congestion bids in the PJM Energy Market. These ancillary service charges include Black start and Reactive charges associated with firm and non-firm transmission schedules, Schedule 9-3 (Market

Support), Schedule 9-MMU (Market Monitoring Unit (MMU) Funding) and Schedule 9-AC2 (Advanced Second Control Center Charges). Each of these ancillary service charges are explained in detail in Appendix D of this document. During the period from May 15, 2010, through September 17, 2010, the average cost of ancillary services was \$0.23/MWh for up-to congestion transactions.

Up-to Congestion Settlement Summary

Table 1 below shows how the example transaction totals would appear on a customer's bill. In this example, average values were used to determine the per MWh Black Start, Reactive and Advanced Second Control Area Ancillary Service Charges. In this example, the market participant would have lost \$480.71 but for the marginal loss surplus allocation. After the marginal loss surplus allocation credit is applied, the market participant profits by \$474.29 on the up-to congestion transaction.

Table 1 Up-to congestion settlement example summary table

Charges		
Non-Firm Point-to-Point Transmission Charge	\$0.67 / MWh	\$335.00
Day-Ahead Transmission Congestion Charge	\$0.20 / MWh	\$100.00
Balancing Transmission Congestion Charge	(\$0.73) / MWh	(\$365.00)
Day-Ahead Transmission Loss Charge	\$0.42 / MWh	\$207.67
Balancing Transmission Loss Charge	\$0.18 / MWh	\$90.00
Black Start Ancillary Service Charge	\$0.009 / MWh	\$4.53
Reactive Ancillary Service Charge	\$0.17 / MWh	\$84.98
Market Support Ancillary Service Charge	\$0.04 / MWh	\$20.01
Market Monitoring Unit Funding Ancillary Service Charge	\$0.005 / MWh	\$2.50
Advanced Second Control Area Ancillary Service Charge	\$0.002 / MWh	\$1.02
Total Charges	\$0.96 / MWh	\$480.71
Credits		
Loss Surplus Allocation Credit	\$1.91 / MWh	\$955.00
Total Credits	\$1.91 / MWh	\$955.00
Net Profit		
Total Profit	\$0.95 / MWh	\$474.29

Up-to congestion transactions are profitable, without a marginal loss surplus allocation, when the difference between the source and sink Real-Time Market LMP is sufficiently greater than the difference between the source and sink Day-Ahead Market LMP to cover the cost of transmission, if any, and the cost of ancillary services. When the net difference between the Real-Time and Day-Ahead market LMP is zero, the market participant would net zero for the transaction, and payment of the transmission charges, if any, and ancillary service charges, would result in a net loss. When the net difference between the Real-Time and Day-Ahead Market LMP is close to zero, the market

participant would net close to zero for the transaction, but payment of the transmission charges, if any, and ancillary service charges, would result in a net loss. When market participants submit up-to congestion transactions at the same interface, or at interfaces where the LMPs are close to equal and pay for transmission, the transactions result in a net loss.

Transaction Analysis

In the period following implementation of the modified marginal loss surplus allocation method, market participants submitted up-to congestion transactions that would not have been profitable but for the marginal loss surplus allocation.

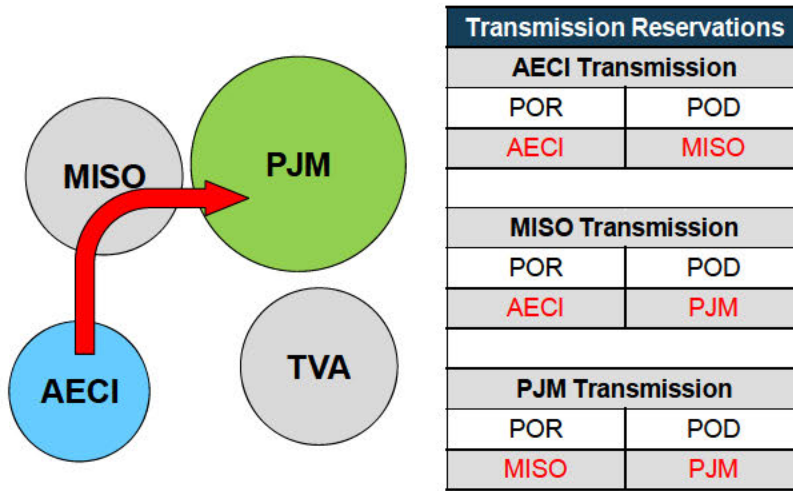
Purpose and Mechanics of Submitting Up-to Congestion Transactions

The up-to congestion product “was originally created as a mechanism to hedge in the Day-Ahead Energy Market the exposure to price differentials from the source to the sink of their physical energy deliveries into, out of or through PJM in the Real-Time Energy Market, and to allow market participants who want to wheel power through PJM to set the maximum dollar value of congestion they would be willing to pay to wheel that power.”¹⁴ Because this product was designed to use prices in the Day-Ahead Market to hedge prices in the Real-Time Energy Markets, PJM permitted the submission of the up-to congestion bids in the Day-Ahead Market to reflect the interface pricing points that would be used for interface pricing in real time, regardless of the transmission path reserved.

For example, to submit a Real-Time Energy Market schedule, a market participant must acquire transmission along a specific path. Figure 2 below shows a sample market path of AECI-MISO-PJM, including the transmission reservations required. The term “market path” refers to the scheduled path and not the actual path along which the physical energy will flow. From the PJM transmission reservation perspective, the market path example in Figure 2 represents an import of energy from the Midwest ISO. For this transaction, the market participant acquired a transmission reservation with a point of receipt (POR) of MISO, and a point of delivery (POD) of PJM.

¹⁴ ER10-2280-000 (August 18, 2010) p.2.

Figure 2 Example market path with transmission reservations



Although participants must acquire transmission along the selected market path, the market path does not accurately reflect the actual flows of energy associated with the transaction in this example. The market path represents only the scheduled transmission path across the PJM/Midwest ISO Interface. In the Real-Time Market, PJM does not price the energy transaction at the Midwest ISO Interface price based on the market path. PJM's interface pricing rules result in prices for transactions based on how the energy physically flows over interfaces, which is based on an underlying power flow analysis. PJM's pricing rules recognize that energy transfers from the AECI Balancing Authority to PJM actually flow across PJM's southern interface, and, as a result, PJM would assign the SouthIMP Interface pricing point in the Real-Time Energy Market to the transaction for market settlement billing in this example.

To permit market participants to hedge, in the Day-Ahead Energy Market, the Real-Time Energy Market prices that result from PJM's physical path pricing, PJM allows market participants to specify the pricing points when submitting transactions in the Day-Ahead Energy Market, even if such pricing points do not match the transmission reservation. Market participants can select day-ahead pricing points consistent with the physical flow of energy and thus consistent with the interface pricing applied in the Real-Time Energy Market. Thus, for import up-to congestion transactions, PJM allows the market participant to specify any import pricing point they wish when submitting their transaction. For export up-to congestion transactions, PJM allows the market participant to specify any export pricing point they wish. For wheeling transactions, PJM allows market participants to specify any import and export pricing points they wish. This flexibility in specifying pricing points in the Day-Ahead Energy Market allows market participants to align their PJM Day-Ahead Energy Market offer positions with the physical flow and, therefore, with the interface price received, in the PJM Real-Time Energy Market. In the example, had the PJM business rules not offered this flexibility, the market participant would be billed based on the import pricing point of MISO in the

Day-Ahead Energy Market, and would have been billed at the SouthIMP pricing point in the Real-Time Energy Market. This would have created a mismatch between the transaction prices in the Day-Ahead and Real-Time Energy Markets, and the market participant's transaction in the Real-Time Energy Market would not be effectively hedged.

Transmission Costs

PJM rules explicitly state that to qualify for marginal loss surplus allocations, market participants must pay for transmission.¹⁵ With the exception of export transmission service from PJM to the Midwest ISO, which is a transmission service provided at no charge due to regional through and out rates, PJM offers non-firm point-to-point transmission for imports, exports and wheels at a rate of \$0.67/MWh. This means that the net value of a transaction must exceed \$0.67/MWh, in addition to any ancillary service charges, to be profitable.

Wheeling Up-to Congestion Transactions at the SouthIMP / SouthEXP Interface

Following implementation of the marginal loss surplus allocation modifications on May 15, 2010, market participants submitted wheeling up-to congestion transactions at the SouthIMP/SouthEXP Interface, where the import and the export had the identical price. These transactions had no economic rationale and were entered into solely for the purpose of receiving a marginal loss surplus allocation. The only basis for such transactions was to receive an allocation of the marginal loss surplus and entering such transactions is evidence of intent.

The use of any POD other than MISO when creating an up-to congestion transaction between SouthIMP and SouthEXP in order to capture the difference between interface prices is evidence of intent, because the use of any POD other than MISO requires paying for transmission service that is not required for the transaction. The only reason to incur that additional cost is to make the transaction eligible for a marginal loss surplus allocation.

Prior to the change in the rules governing the marginal loss surplus allocation, no market participant had ever submitted an up-to congestion transaction with this set of import and export pricing points.

Market participants acquired large amounts of transmission, typically on the Midwest ISO (MISO) through PJM to the New York Independent System Operator (NYIS) path.

¹⁵ See PJM OA Schedule 1 § 5.5.

The associated POR and POD for these reservations were MISO and NYIS. However, when market participants submitted their up-to congestion transactions in the Day-Ahead Market, they chose identical import and export pricing points. The import pricing point was specified as SouthIMP and the export pricing point was specified as SouthEXP. Because the SouthIMP and SouthEXP Interface pricing points are defined exactly the same, the net position for such transactions was zero charges and zero credits (prior to transmission and ancillary service charges).¹⁶ In addition to the MISO through PJM to the NYIS path, market participants utilized additional wheeling transmission paths to accomplish the same result. Table 2 below shows the various PORs and PODs and the associated MWh utilized when submitting up-to congestion transactions at the SouthIMP/SouthExp interface, all of which require the market participants to pay for the transmission.

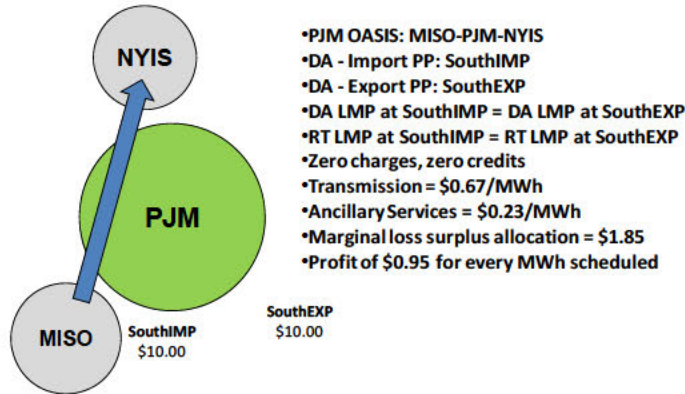
Table 2 Transmission PORs, PODs and total MWh of up-to congestion transactions submitted at the SouthIMP/SouthEXP Interface.

POR	POD	MWh
MISO	NYIS	2,401,575
CPLEIMP	SOUTHEXP	306,120
SOUTHIMP	NYIS	78,180
NYIS	SOUTHEXP	62,818
OVEC	NYIS	24,772
SOUTHIMP	DUKEXP	22,438
CPLEIMP	NYIS	20,622
NORTHWEST	NYIS	16,198
MISO	SOUTHEXP	12,350
SOUTHIMP	CPLEEXP	7,600

¹⁶ The PJM LMP software has a limitation in the way that interfaces are defined. Interfaces must use generator buses, and those buses cannot be included in more than one interface definition. While the SouthIMP and SouthEXP Interfaces are electrically equivalent, one is defined using the actual generator buses, and the other uses virtual buses, which are modeled to be equivalent to the physical buses. When a physical breaker is opened, which means that the physical bus is not active and does not have a calculated LMP, the virtual bus must also be opened in order for the LMPs to remain equal. Without manual intervention by PJM Engineering Support to ensure that the virtual bus has the same status as the physical bus, there is a deviation between the calculated SouthIMP and SouthEXP Interface prices. The last time this situation occurred, resulting in a deviation between the SouthIMP and SouthEXP Interface prices, was during the last two weeks of May, 2010, ending on June 2, 2010 at 1600.

Figure 3 shows how the transactions were settled for the SouthIMP/SouthEXP wheeling up-to congestion transactions.

Figure 3 Settlement for wheeling up-to congestion scenario



As Figure 3 shows, while the OASIS reservation was specified as MISO-PJM-NYIS, the market participant specified the import pricing point as SouthIMP, and the export pricing point of SouthEXP. Because these pricing points are modeled exactly the same, the SouthIMP and SouthEXP LMP (including the congestion and loss components) always matched, resulting in a Day-Ahead Energy Market position of zero, as the difference between import and export pricing points was zero. Additionally, when the transaction reaches the PJM Balancing Market, the transaction was a deviation, because the market participants did not schedule the same transaction in the PJM Real-Time Energy Market. The balancing charges also summed to zero, as the SouthIMP and SouthEXP LMPs were equal. This resulted in a total net position of zero for the transaction. This activity had no basis in market fundamentals and would have been irrational but for the allocation of marginal loss surplus.

For such transactions, in order to receive the marginal loss surplus allocation, the market participant had to purchase non-firm transmission and incur a \$0.67/MWh charge. The only reason to incur the transmission charge was to receive the marginal loss surplus allocation. As long as the hourly marginal loss surplus allocation exceeds the cost of non-firm transmission (\$0.67/MWh plus the applicable ancillary service charges) the market participant profits from the transaction. If the market participant had wanted to try to capture any asserted differences between the LMPs at the SouthIMP and SouthEXP Interfaces, they could have done so without incurring any transmission charges by acquiring a wheeling reservation that sinks in the Midwest ISO, for which there is no associated cost. In the example shown, the hourly marginal loss surplus allocation was \$1.85/MWh, resulting in a profit of \$.95 for every MWh scheduled where the market participant is guaranteed to have a net zero PJM Energy Market position. ($\$1.85 - \$0.67 - \$0.23 = \0.95)

During the period from May 15, 2010, through September 17, 2010, four market participants engaged in the defined transactions of wheeling energy at the SouthIMP/SouthEXP Interface. Table 3 below shows the companies that submitted up-to congestion transactions at the SouthIMP/SouthEXP Interface, the MWh submitted, the profit or loss obtained before the cost of transmission or marginal loss surplus allocations were included, the marginal loss surplus allocation received as a result of those transactions, the cost of transmission spent in order to submit the transactions, the net profit from the transactions and the average bid price, which represents the maximum difference between the prices at the sink and source that the market participant is willing to pay for the transaction to be accepted in the Day-Ahead Market.

Table 3 Up-to congestion settlements for wheels at the SouthIMP/SouthEXP Interface (May 15, 2010, through September 17, 2010)

Company	MWh Submitted	Profit/Loss Before Transmission, Ancillary Services and MLSA	Cost of Transmission	Cost of Ancillary Services	Profit/Loss Before MLSA	Marginal Loss Surplus Allocation Received	Net Profit/Loss	Average Bid Price
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Total	2,952,673	\$0	(\$1,978,291)	(\$831,756)	(\$2,610,046)	\$5,397,626	\$2,787,579	\$0.93

These market participants obtained approximately \$5.4 million in marginal loss surplus allocations that would otherwise have been allocated to economic transactions, and profited by approximately \$2.8 million, by submitting wheeling up-to congestion transactions at the SouthIMP/SouthEXP Interface solely for the purpose of receiving the marginal loss surplus allocation. The average bid price for these transactions is irrelevant, as any positive bid would clear, because the difference between the source and sink was always zero.

The MMU is referring [REDACTED] and [REDACTED]. Because there is no economic substance to the transactions identified in Table 3, the Market Monitor finds sufficient credible evidence of a Market Violation, concludes its investigation of the companies that engaged in these transactions, and refers this matter to the Commission for such further action as the Commission deems appropriate. The Market Monitor will perform additional investigation of the involvement of these companies in this matter only at the direction of FERC staff.

Wheeling Up-to Congestion Transactions at Other Interface Combinations

Market participants also submitted wheeling up-to congestion transactions at other interfaces with LMPs that were close to equal. These transactions had no economic rationale and were entered into solely for the purpose of receiving a marginal loss surplus allocation. Market participants profited by an additional approximate \$1.3 million by submitting wheeling up-to congestion transactions at the interfaces shown

in Table 4. The only basis for such transactions was to receive an allocation of the marginal loss surplus and entering such transactions is evidence of intent.

During the period from May 15, 2010, through September 17, 2010, five market participants engaged in the defined transactions of wheeling energy at other interfaces with LMPs that were close to equal. Table 4 below shows the companies that submitted up-to congestion transactions at those interfaces, the MWh submitted, the profit or loss obtained before the cost of transmission or marginal loss surplus allocations were included, the marginal loss surplus allocation received as a result of those transactions, the cost of transmission spent in order to submit the transactions, the net profit from the transactions and the average bid price, which represents the maximum difference between the prices at the sink and source that the market participant is willing to pay for the transaction to be accepted in the Day-Ahead Market.

Table 4 Up-to congestion settlements for wheels at other interfaces (May 15, 2010, through September 17, 2010)

Company	MWh Submitted	Profit/Loss Before Transmission, Ancillary Services and MLSA	Cost of Transmission	Cost of Ancillary Services	Profit/Loss Before MLSA	Marginal Loss Surplus Allocation Received	Net Profit/Loss	Average Bid Price
NCMPAIMP/NCMPAEXP								
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Total	1,719,102	\$225,001	(\$1,151,798)	(\$362,147)	(\$1,288,944)	\$2,941,747	\$1,202,801	\$1.03
Southeast/SouthEXP								
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
SouthIMP/Southeast								
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Southeast/Southwest								
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
CPLEIMP/CPLEEXP								
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
NYIS/NYIS								
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Total	7	\$0	(\$5)	(\$2)	(\$6)	\$13	\$6	\$7.00
TOTAL								
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Total	1,786,159	\$224,319	(\$1,196,727)	(\$376,268)	(\$1,348,676)	\$3,063,399	\$1,264,721	\$0.91

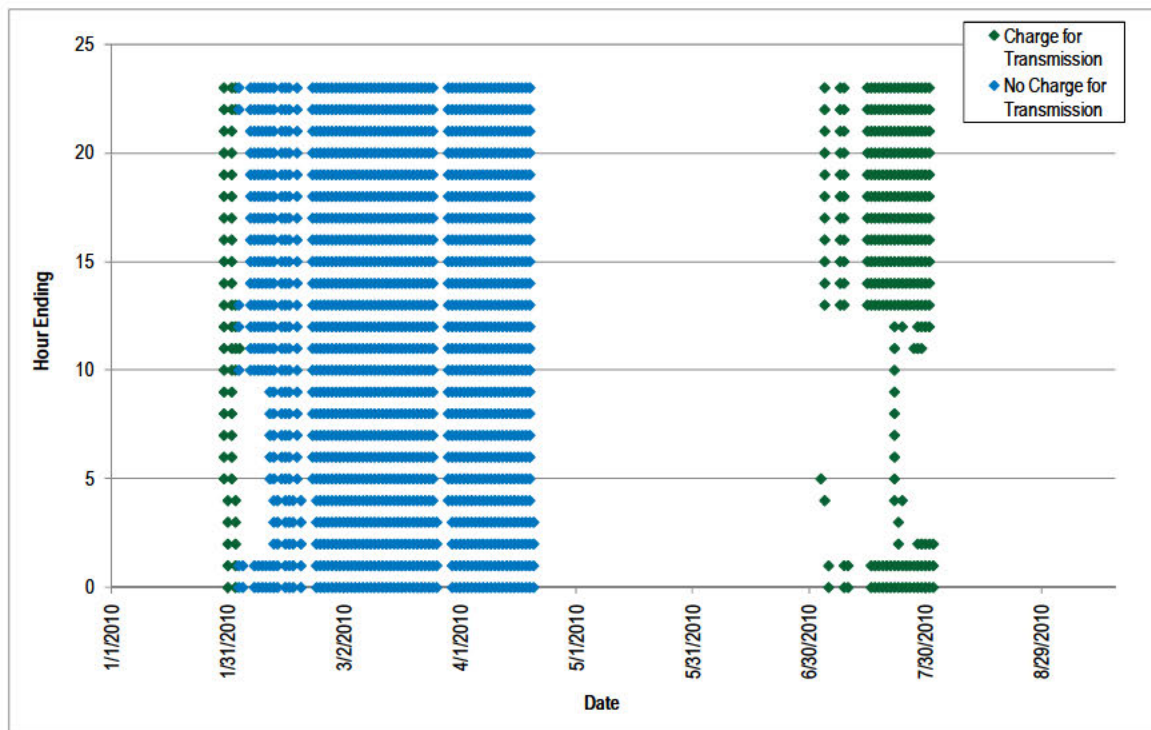
These market participants obtained approximately \$3.1 million in marginal loss surplus allocations that would otherwise have been allocated to economic transactions, and profited by approximately \$1.3 million, by submitting wheeling up-to congestion transactions at the various interfaces where LMPs were close to equal. The average bid price for these transactions is \$0.91, which resulted in approximately 1.8 million MWh of approved up-to congestion transactions.

Prior to the change in the rules governing the marginal loss surplus allocation, only [REDACTED] had ever submitted up-to congestion transactions with a set of import and export pricing points shown in Table 4. These prior transactions were submitted at the NCMPAIMP/NCMPAEXP Interface, and were submitted using a transmission

reservation for which they were required to pay, for a total of 56 hours over the course of the five days from January 30, 2010, through February 3, 2010. [REDACTED] then submitted transactions at the same interfaces for a total of 1,551 hours during the period from February 6, 2010, through April 20, 2010, using transmission service available at no cost. Figure 4 shows all hours where [REDACTED] submitted NCMPAIMP/NCMPAEXP up-to congestion transactions. As is evident from Figure 4, when [REDACTED] realized they could submit the up-to congestion wheeling transactions without incurring a transmission charge, they chose to do so, but when transmission service was required in order to receive a share of the marginal loss surplus allocation, they paid for transmission for the sole purpose of receiving an allocation.

Prior to the change in the rules governing the marginal loss surplus allocation, no other market participant had ever submitted an up-to congestion transaction with this set of import and export pricing points.

Figure 4 Hours where NCMPAIMP/NCMPAEXP up-to congestion transactions were submitted for all transmission types (January 1, 2010, through September 17, 2010)



The notable increase in bids at these interface combinations after the marginal loss surplus allocation methodology change provides further evidence of the intent of the trading parties to submit such transactions only to benefit from the marginal loss surplus allocations. Table 5 shows the up-to congestion settlements for all activity at the selected interface combinations from August 1, 2008, to May 15, 2010, where market

participants were required to pay for transmission. Table 6 shows the up-to congestion settlements for all activity at the interface combinations from August 1, 2008, to May 15, 2010, where market participants utilized transmission available at no cost.

Table 5 Up-to congestion settlements for wheels at other interfaces where transmission was not free (August 1, 2008, to May 15, 2010)

Company	MWh Submitted	Profit/Loss Before Transmission, Ancillary Services and MLSA	Cost of Transmission	Cost of Ancillary Services	Profit/Loss Before MLSA	Marginal Loss Surplus Allocation Received	Net Profit/Loss	Average Bid Price
NCMPAAMP/NCMPAEXP								
Total	14,350	\$1,107	(\$9,615)	(\$3,514)	(\$12,022)	\$0	(\$12,022)	\$2.40
Southeast/SouthEXP								
SouthIMP/Southeast								
Southeast/Southwest								
CPLAEMP/CPLAEXP								
NYIS/NYIS								
Total	-	\$0	\$0	\$0	\$0	\$0	\$0	\$0.00
TOTAL								
Total	14,350	1,107	(9,615)	(3,514)	(12,022)	\$0	(12,022)	\$2.40

Table 6 Up-to congestion settlements for wheels at other interfaces using free transmission (August 1, 2008, to May 15, 2010)

Company	MWh Submitted	Profit/Loss Before Transmission, Ancillary Services and MLSA	Cost of Transmission	Cost of Ancillary Services	Profit/Loss Before MLSA	Marginal Loss Surplus Allocation Received	Net Profit/Loss	Average Bid Price
NCMPAAMP/NCMPAEXP								
Total	327,000	\$675	\$0	(\$78,050)	(\$77,375)	\$0	(\$77,375)	\$1.30
Southeast/SouthEXP								
SouthIMP/Southeast								
Southeast/Southwest								
CPLAEMP/CPLAEXP								
NYIS/NYIS								
Total	-	\$0	\$0	\$0	\$0	\$0	\$0	\$0.00
TOTAL								
Total	327,000	675	\$0	(78,050)	(77,375)	\$0	(77,375)	\$1.30

Table 7 shows the average Real-Time and Day-Ahead LMPs of the interfaces shown in Table 4, based on data from January 1, 2010, through September 30, 2010, including the

source and sink Day-Ahead LMP differences, and the source and sink Real-Time LMP differences, and the net balancing LMP difference. The net balancing LMP difference is the difference between the source and sink DA LMP differences and the source and sink RT LMP differences. The net balancing LMP difference is best indication of the profitability of an up-to congestion transaction. The relatively small net balancing LMP differences for these interfaces is additional evidence that these transactions were entered into solely for the purpose of receiving a marginal loss surplus allocation.

Table 7 Average LMP at interfaces from January 1, 2010, through September 30, 2010

	NCMPAIMP	NCMPAEXP	Difference
Average Day-Ahead LMP	\$43.17	\$43.31	(\$0.14)
Average Real-Time LMP	\$42.53	\$42.69	(\$0.16)
NET Balancing LMP Difference			\$0.02
	SOUTHEAST	SouthEXP	Difference
Average Day-Ahead LMP	\$45.33	\$40.24	\$5.09
Average Real-Time LMP	\$44.30	\$39.99	\$4.31
NET Balancing LMP Difference			\$0.78
	SouthIMP	SOUTHEAST	Difference
Average Day-Ahead LMP	\$40.24	\$45.33	(\$4.12)
Average Real-Time LMP	\$40.18	\$44.30	(\$5.09)
NET Balancing LMP Difference			\$0.97
	SOUTHEAST	SOUTHWEST	Difference
Average Day-Ahead LMP	\$45.33	\$37.57	\$7.76
Average Real-Time LMP	\$44.30	\$37.18	\$7.12
NET Balancing LMP Difference			\$0.64
	CPLEIMP	CPLEEXP	Difference
Average Day-Ahead LMP	\$43.57	\$46.61	(\$3.04)
Average Real-Time LMP	\$42.84	\$46.07	(\$3.23)
NET Balancing LMP Difference			\$0.19
	SOUTHWEST	SOUTHEAST	Difference
Average Day-Ahead LMP	\$37.57	\$45.33	(\$7.76)
Average Real-Time LMP	\$37.18	\$44.30	(\$7.12)
NET Balancing LMP Difference			(\$0.64)

The MMU is referring [REDACTED] for their activity of trading at interfaces where the LMPs are close to identical for the sole purpose of obtaining a marginal loss surplus allocation. Although the net profits were smaller for this strategy, the fact that [REDACTED] also engaged in the SouthImp/SouthExp strategy is additional evidence that the activities here were intentional efforts to manipulate. Because there is no economic substance to the transactions identified in Table 4, the Market Monitor finds sufficient credible evidence of a Market Violation, concludes its investigation of these companies, and refers this matter to the Commission for such further action as the Commission deems appropriate. The Market Monitor will perform additional investigation of the involvement of these companies in this matter only at the direction of FERC staff. Table 4 includes two market participants, [REDACTED], who gained what could be considered de minimis amounts from the identified manipulative behavior and who, in addition, did not gain significant profits under any of the three strategies identified in

this referral. For that reason, the Market Monitor is not referring these two participants at this time, but leaves to the Commission the decision of what, if any, level of activity is de minimis.

Equal and Opposite Up-to Congestion Transactions

As with the wheeling transactions at the SouthIMP and SouthEXP Interfaces, market participants entered transactions that had no economic merit, but for the marginal loss surplus allocation, by submitting two separate up-to congestion transactions with equal and opposite paths. These equal and opposite transactions were also market manipulation, as there was a guaranteed zero settlement resulting from the transactions with the exception of the marginal loss surplus allocations (and the transmission and ancillary service charges). Market participants acquired a large amount of transmission along two separate paths, one from the Midwest ISO to PJM, with a sink at a particular bus internal to the PJM system, and a second one from PJM to the Midwest ISO, with a source at the same internal bus on the PJM system. Table 8 shows the various internal PJM buses and the associated MWh utilized when submitting equal and opposite up-to congestion transactions. Upon submission of these equal and opposite transactions, the settlements guaranteed a net zero position and meant that there was no fundamental market or economic basis for the transaction. The only basis for such transactions was to receive an allocation of the marginal loss surplus and entering such transactions is evidence of intent. The example below shows how the transaction would be settled for equal and opposite up-to congestion transactions.

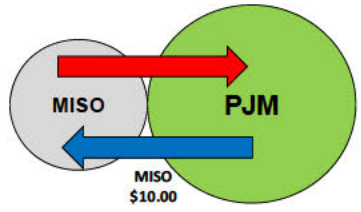
Table 8 Internal PJM buses and total MWh of equal and opposite up-to congestion transactions.

Internal Bus	MWh
COMED	1,510,865
DAY	1,418,710
COOK	773,380
ROCKPORT	341,145
AEP	138,390
YUKON	4,935
APS	2,520
PSEG	1,008
PENELEC	840
MARION	672
LEONIA 230 T-1	336
WESTVACO	165

Figure 5 provides example data that will be used to explain how equal and opposite up-to congestion transactions were utilized to profit from marginal loss surplus allocations.

Figure 5 Example Settlement for equal and opposite up-to congestion scenario

- PJM OASIS 1: MISO-PJM;
Src:MISO Sink: BusA (\$0.67)
- PJM OASIS 2: PJM-MISO;
Src:BusA Sink: MISO (\$0.00)
- DA Set Import PP: MISO
(Sink = BusA)
- DA Set Export PP: MISO
(Source = BusA)



- DA LMP for MISO import = DA LMP for MISO export
- RT LMP for MISO import = RT LMP for MISO export
- Congestion from BusA to MISO = - Congestion fromMISO to BusA
- Zero charges, zero credits
- Transmission = \$0.67+\$0.00 = \$0.67/MWh
- Ancillary Services = \$0.23/MWh
- Marginal loss surplus allocation = \$1.85
- Profit of \$0.95 for every MWh scheduled

As Figure 5 shows, two separate OASIS reservations were required in order to submit the up-to congestion transactions. The first was on the path from the Midwest ISO to PJM, sinking at bus A. The cost of this transmission reservation was \$0.67/MWh. The second transmission reservation was on the path from PJM to the Midwest ISO, sourcing at bus A. Because this transmission has a POD of MISO, it is available free of charge due to the regional through and out rates. The net settlements for these equal and opposite transactions would be zero, because, when combined, any congestion and loss charges from the Midwest ISO to bus A would also represent congestion and loss credits between bus A and the Midwest ISO. When the transactions reach the PJM Balancing Market, the transactions would appear as a deviation, as the market participant would not schedule the same transactions in the PJM Real-Time Energy Market. The balancing charges would sum to zero, as the congestion and loss charges for the two transactions would offset each other. This would result in a guaranteed total net position of zero for the transactions, prior to transmission and ancillary services charges. As with the wheeling up-to congestion example, the market participant would be exposed to the single \$0.67/MWh charge on a set of transactions that are guaranteed to have a net zero PJM Energy Market position, and as long as the hourly marginal loss surplus allocation exceeds \$0.67/MWh plus the applicable ancillary service charges, the market participant would profit from entering the transaction. In the example, the hourly marginal loss surplus allocation was \$1.85/MWh, resulting in a profit of \$.95 for every MWh scheduled where the market participant is guaranteed to have a net zero PJM Energy Market position. ($\$1.85 - \$0.67 - \$0.23 = \0.95)

During the period from May 15, 2010, through August 31, 2010, seven market participants submitted equal and opposite up-to congestion transactions. Table 9 shows the companies that engaged in this trading behavior. The top four companies accounted for over 99 percent of all MWh submitted and over 99 percent of the net profits obtained by submitting equal and opposite up-to congestion transactions.

During the prior period from August 1, 2008, to May 15, 2010, there were 175 total hours, out of the possible 15,648 hours, where equal and opposite up-to congestion transactions were submitted. However, in those cases the transactions aligned for only a few hours in any given day, were sporadic in nature and therefore did not appear to be intentionally submitted as equal and opposite transactions. For example, the transaction in one direction may have only have been in place for one hour of a multi hour transaction at the same time that the transaction in the opposite direction was also in place. In the period after the marginal loss surplus allocation calculation modification, equal and opposite transactions aligned in 1,484 hours, out of the possible 1,488 hours from June 2, 2010 through August 3, 2010. Figure 6 illustrates the dramatic difference in behavior following the change in the rules governing the allocation of the marginal loss surplus. The increase in and systematic nature of these equal and opposite transactions is evidence of intent.

During the period from May 15, 2010, through September 17, 2010, seven market participants engaged in the defined transactions of submitting equal and opposite up-to congestion transactions. Table 9 below shows the companies that submitted equal and opposite up-to congestion transactions, the MWh submitted, the profit or loss obtained before the cost of transmission or marginal loss surplus allocations were included, the marginal loss surplus allocation received as a result of those transactions, the cost of transmission spent in order to submit the transactions, the net profit from the transactions and the average bid price, which represents the maximum difference between the prices at the sink and source that the market participant is willing to pay for the transaction to be accepted in the Day-Ahead Market.

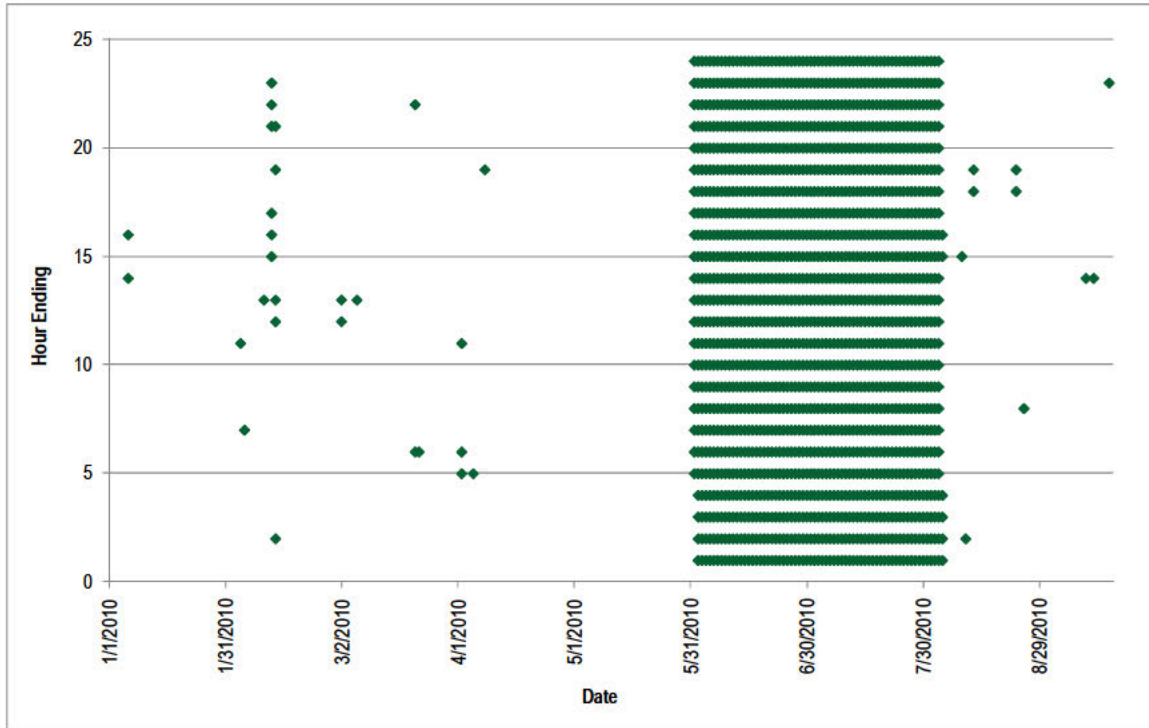
The market participants who engaged in equal and opposite trading only did so at the Midwest ISO Interface. By doing so, they ensured a net zero position, by matching equal and opposite buses as the source and sink, and were subject to only a single transmission reservation charge, as the export transmission reservation would be available at no charge. If market participants had done an equal and opposite transaction at any other interface, they would have incurred two transmission reservation charges and the potential for profiting from the marginal loss surplus allocation would have been reduced or potentially eliminated.

Table 9 Up-to congestion settlements for equal and opposite transactions (May 15, 2010, through September 17, 2010)

Company	MWh Submitted	Profit/Loss Before Transmission, Ancillary Services and MLSA	Cost of Transmission	Cost of Ancillary Services	Profit/Loss Before MLSA	Marginal Loss Surplus Allocation Received	Net Profit/Loss	Average Bid Price
Powhatan Energy Fund LLC	3,409,640	\$0	(\$2,284,458)	(\$742,351)	(\$3,026,810)	\$4,132,773	\$1,105,963	\$42.97
CU Fund Inc.	613,750	\$0	(\$411,213)	(\$129,841)	(\$541,053)	\$849,843	\$308,790	\$50.00
HEEP Fund, Inc.	170,482	\$0	(\$114,223)	(\$37,423)	(\$151,646)	\$206,639	\$54,993	\$42.94
Total	4,354,345	\$0	(\$2,917,411)	(\$943,387)	(\$3,860,798)	\$5,514,687	\$1,653,889	\$43.17

These market participants obtained approximately \$5.5 million in marginal loss surplus allocations, and profited by approximately \$1.7 million, by submitting equal and opposite up-to congestion transactions. The average bid price for these transactions is \$43.17, which resulted in approximately 4.4 million MWh of approved up-to congestion transactions.

Figure 6 Hours where equal and opposite up-to congestion transactions were submitted (January 1, 2010, through September 17, 2010)



The MMU is referring Powhatan Energy Fund, CU Fund, [REDACTED] Heep Fund and [REDACTED] for their activity of trading at equal and opposite buses. Although the net profits were smaller for this strategy, the fact that [REDACTED] also engaged in the SouthImp/SouthExp strategy and the other interfaces strategy is additional evidence that the activities here were intentional efforts to manipulate. Because there is no economic substance to the transactions involving the companies identified in Table 9, the Market Monitor finds sufficient credible evidence of a Market Violation, concludes its investigation of these five companies, and refers this matter to the Commission for such further action as the Commission deems appropriate. The Market Monitor will perform additional investigation of the involvement of these companies in this matter only at the direction of FERC staff. Table 9 also includes two market participants, [REDACTED], who gained what could be considered de minimis amounts from the identified manipulative behavior and who, in addition, did not gain significant profits under any of the four strategies identified in this referral. For that reason, the

Market Monitor is not referring these two participants at this time, but leaves to the Commission the decision of what, if any, level of activity is de minimis.

“But for” Transactions

Another group of transactions was identified based on the fact that the profitability of these transactions resulted solely from the marginal loss surplus allocation. These transactions are not wheeling transactions at the same LMP or close to equal LMP and are not equal and opposite transactions. However, based on the import or export pricing points and the internal bus within the PJM footprint, the transaction would have settled at a loss without a marginal loss surplus allocation. The transactions in this group would have settled at a loss because the day-ahead and real-time LMPs of the respective buses would not have resulted in a large enough profit to cover the , costs of transmission and ancillary services. Review of the bus combinations that received the largest amount of offers and the largest profits show that those combinations have had LMPs that were historically close. In the case of the similar interface strategy, there was reason to expect that the LMPs for imports and exports at the same or closely related interface pricing points would be close. In the case of the but for transactions, the after the fact analysis revealed that the transactions would not have been profitable but for the marginal loss surplus allocation and that the LMPs at the source and sink buses had been quite close historically.

Transactions with source and sink combinations that profited over \$10,000 from May 15, 2010, through September 17, 2010, were analyzed (representing two thirds of all transactions receiving a profit as a result of the marginal loss surplus allocation). These source and sink combinations had an average net balancing difference of only \$0.64 during the period from August 1, 2008 to May 15, 2010, and \$0.70 during the period from May 15, 2010, through September 17, 2010. These source and sink combinations had been selected by participants prior to the marginal loss surplus allocation methodology change. However, the bid volume and MWh volume significantly increased after the modifications on May 15, 2010. Table 10 shows the top 5 source and sink combinations that were profitable only as a result of the marginal loss surplus allocation, with the average bid volume in MWh prior to and after the modification to the marginal loss surplus allocation. Table 11 shows the companies that used these source and sink combinations and the profits obtained from submitting offers at these source and sink combinations. The up-to congestion transactions that profited only as a result of the marginal loss surplus allocation, excluding the wheeling up-to congestion transactions at the same interface, wheeling transactions at other interfaces where the LMPs were close to zero and equal and opposite up-to congestion transactions, netted an additional approximate \$0.9 million in profits when evaluated for the top five bus combinations.

Table 10 Top 5 buses that profited only as a result of the marginal loss surplus allocation with average real-time less day-ahead LMP, number of hours when bids were submitted and average bid volume (in MWh) prior to (August 1, 2008, to May 15, 2010) and after (May 15, 2010, through September 17, 2010) the modification to the loss surplus allocation methodology

Source	Sink	Net Profit/Loss	Average Real-Time LMP Less Day-Ahead LMP	Average Real-Time LMP Less Day-Ahead LMP	Number of hours submitted prior to	Number of hours submitted after	Average Bid Prior to May 15, 2010 (MWh)	Average Bid After May 15, 2010 (MWh)
			Prior to May 15, 2010 (MWh)	After May 15, 2010 (MWh)	May 15, 2010 (15,648 hours for this period)	May 15, 2010 (3,000 hours for this period)		
MISO	COMED	\$375,667	\$0.28	\$1.08	3,919	2,485	65	391
MISO	DAY	\$252,087	\$1.03	\$0.79	1,444	2,171	12	329
MISO	COOK	\$120,523	\$0.80	\$0.60	13,871	2,771	34	271
MISO	AEP-DAYTON HUB	\$82,509	\$0.74	\$0.63	3,196	2,725	55	168
MISO	ROCKPORT	\$74,263	\$0.33	\$0.41	315	820	68	335

Table 11 Summary of all market participants' profits obtained from transactions at the top 5 source sink combinations that profited solely from a marginal loss surplus allocation (May 15, 2010, through September 17, 2010)

	MISO / AEP-					TOTAL
	MISO / COMED	MISO / DAY	MISO / COOK	DAYTON HUB	MISO / ROCKPORT	
Powhatan Energy Fund LLC	\$309,223	\$199,880	\$102,910	\$576	\$69,016	\$681,605
CU Fund Inc.	\$43,812	\$41,164	\$3,889	\$0	\$0	\$88,865
HEEP Fund, Inc.	\$15,276	\$10,072	\$6,347	\$289	\$3,509	\$35,493
Total	\$375,667	\$252,087	\$120,523	\$82,509	\$74,263	\$905,049

Table 12 shows the total settlements for transactions that profited only as a result of the marginal loss surplus allocation (excluding the wheeling up-to congestion transactions at the same interface, wheeling transactions at other interfaces where the LMPs were close to zero and equal and opposite up-to congestion transactions). (See Appendix C for the complete settlements by company for all up-to congestion transactions that received a marginal loss surplus allocation, including the trading strategies that are identified in this report).

Table 12 includes a number of companies with very similar names. We request that FERC Office of Enforcement determine whether these are the same companies and/or have the same owner(s). The MMU cannot determine whether these are the same companies based on currently available information without asking such companies

transactions that create zero profit, require the purchase of non-firm transmission to effect, and derive their profitability solely from the allocation of the marginal loss surplus. In this referral, the Market Monitor includes only those market participants that submitted wheeling up-to congestion transactions at the same interface, wheeling up-to congestion transactions at other interfaces with LMPs which were close to equal and equal and opposite up-to congestion transactions. The Market Monitor has provided analysis of trading patterns which constitutes evidence of intent. The fact that a number of participants engaged in multiple strategies to gain a share of the marginal loss surplus allocation is further evidence of intent. The referred market participants using more than one of the identified strategies are: [REDACTED]

[REDACTED]. The Market Monitor continues to investigate additional market participants who engaged in transactions that would not have been profitable but for the allocation of marginal losses received. The Market Monitor will either refer these participants or inform the Commission if the Market Monitor does not plan to refer these participants.

Table 13 shows the three trading strategies identified in this referral and identifies each by a number for reference in other tables.

Table 13 Summary table of trading strategies

Strategy	Number
Up-To Congestion Strategy	
SouthIMP/SouthEXP	1
Other Interfaces	2
Equal and Opposite	3

Table 14 summarizes each of the market participant’s profits obtained by each of the up-to congestion trading strategies identified in this referral.

Table 14 Summary table of all companies that profited from the marginal loss surplus allocation while utilizing an identified up-to congestion trading strategy (May 15, 2010, through September 17, 2010)

COMPANY	SouthIMP / SouthEXP	Other Interfaces	Equal and Opposite	TOTAL	Referred
[REDACTED]					X
Powhatan Energy Fund LLC	\$0	\$0	\$1,105,963	\$1,105,963	X
[REDACTED]					X
CU Fund Inc.	\$0	\$0	\$308,790	\$308,790	X
HEEP Fund, Inc.	\$0	\$0	\$54,993	\$54,993	X
[REDACTED]					X
[REDACTED]					X
Total	\$2,787,579	\$1,264,721	\$1,653,889	\$5,706,189	

Appendix A

Table 15 Referred Market Participants¹⁷

Company	Contact Name	Phone Number	Trading Strategy Used
[REDACTED]	[REDACTED]	[REDACTED]	1,2
Powhatan Energy Fund LLC	Larry Eiben	804-564-6810	3
[REDACTED]	[REDACTED]	[REDACTED]	1,2,3
HEEP Fund Inc.	Alan Chen	936-447-9108	3
[REDACTED]	[REDACTED]	[REDACTED]	1,2,3
[REDACTED]	[REDACTED]	[REDACTED]	1
CU Fund Inc.	Houlian Chen	936-447-9108	3

¹⁷ The trading strategies identified in Appendix A are cross referenced in Table 13.

Appendix B

Table 16 Settlements for companies that submitted up-to congestion transactions that were profitable only due to the marginal loss surplus allocation and that are not currently being referred.

Company	MWh Submitted	Profit/Loss Before Transmission, Ancillary Services and MLSA	Cost of Transmission	Cost of Ancillary Services	Profit/Loss Before MLSA	Marginal Loss Surplus Allocation Received	Net Profit/Loss	Average Bid Price
[Redacted Data]								
Total	803,239	\$160,758	(\$538,170)	(\$182,899)	(\$560,311)	\$1,024,807	\$464,496	\$8.91

Appendix C

Table 17 Settlements, by company, of all up-to congestion transactions that received marginal loss surplus allocations.¹⁸

Company	MWh Submitted	Profit/Loss Before Transmission, Ancillary Services and MLSA	Cost of Transmission	Cost of Ancillary Services	Profit/Loss Before MLSA	Marginal Loss Surplus Allocation Received	Net Profit/Loss	Average Bid Price	Trading Strategy Used	Referred
Powerstar Energy Fund LLC	9 486 564	\$1 905 250.26	(\$6 359 997.68)	(\$2 082 702.16)	(\$6 533 449.58)	\$11 237 000.46	\$4 703 550.91	\$41.20	1 2 3 12 3	X X X
HEEP Fund Inc.	573 358	\$300 299.93	(\$384 149.86)	(\$128 843.02)	(\$212 692.94)	\$654 533.05	\$441 840.11	\$40.61	3 12 3 2 3	X X
CU Fund Inc.	1 344 200	(\$2 531 377.92)	(\$500 614.00)	(\$285 543.14)	(\$3 717 535.06)	\$1 838 613.90	-\$1 078 921.15	\$48.05	3 1 2	X X
Total	30 736 754	\$8 596 774.57	(\$20 593 625.31)	(\$6 626 961.68)	(\$18 663 412.43)	\$39 276 296.33	\$20 412 883.90	\$12.62		

¹⁸ The trading strategies identified in Appendix A are cross referenced in Table 13.

Appendix D Ancillary Services

There are additional charges associated with submitting up-to congestion bids in the PJM Energy Market. These additional charges represent ancillary service charges, and include Black start and Reactive charges associated with firm and non-firm transmission schedules, Schedule 9-3 (Market Support), Schedule 9-MMU (Market Monitoring Unit (MMU) Funding) and Schedule 9-AC2 (Advanced Second Control Center Charges).¹⁹

Black Start and Reactive Ancillary Charges

All Transmission Customers purchase these ancillary services from PJM to ensure the reliable operation of the PJM transmission system. The monthly customer charge is determined the same way for both ancillary services. The calculations are split into zonal and non-zonal service, as determined by the transmission usage.

The zonal charge is calculated using the following calculation:

$$\text{Ancillary Charge} = \text{Zone Revenue Requirement} * (\text{Zone Peak Transmission Use} / \text{Total Zone Peak Transmission Use}) * (\text{Total PJM Zone Peak Transmission Use} / (\text{Total PJM Zone Peak Transmission Use} + \text{Total PJM Non-Zone Peak Transmission Use}))$$

The non-zonal charge is calculated using the following calculation:

$$\text{Ancillary Charge} = \text{Zone Revenue Requirement} * (\text{Non-Zone Peak Transmission Use} / (\text{Total PJM Zone Peak Transmission Use} + \text{Total PJM Non-Zone Peak Transmission Use}))$$

Utilizing a single transaction to determine the per MWh black start and reactive ancillary service charge would not be representative of the activity seen during the timeframe analyzed, and therefore would not be a representative ancillary service charge. Therefore, to determine an appropriate charge for this example, an average per MWh ancillary service charge was calculated. During the period from May 15, 2010, through September 17, 2010, the average black start ancillary service charge for market participants that conducted up-to congestion transaction activity was \$0.009/MWh and the average reactive ancillary service charge was \$0.17/MWh. For the example, this would have resulted in additional charges totaling \$4.53 for the black start ancillary service and \$84.98 for the reactive ancillary service.

Schedule 9-3: Market Support

Market support services comprise all of the activities of PJM associated with supporting the operation of the PJM Energy Market and related functions. Some of these functions

¹⁹ Note: The ancillary service charges are not included in the totals presented in this referral.

include market modeling and scheduling functions, locational marginal pricing support and market settlements and billing. PJM provides these services to customers using point-to-point or Network Integration Transmission Service, generation providers and to all entities that submit offers to sell or bids to buy energy in the PJM Energy Market.

There are two components to the market support ancillary service as it relates to up-to congestion transactions. The first component is calculated based on the MWh of accepted bids, while the second component is calculated based on the number of bid/offer segments accepted. A bid/offer segment is defined as an hourly price/quantity pair submitted into the Day-Ahead Market. During the time period from May 15, 2010, through September 17, 2010, the first component charge was \$0.0399/MWh and the second component charge was \$0.0577/ bid/offer segment.

For the example, this would have resulted in additional charges totaling \$19.95 for the first component of this ancillary service and \$0.0577 for the second component for a total of \$20.01 for the market support ancillary service.

Schedule 9-MMU: Market Monitoring Unit (MMU) Funding

The Market Monitoring Unit (MMU) Funding Ancillary Service charge recovers the costs of providing market monitoring functions to the PJM region. PJM provides this service to all customers using point-to-point or Network Integration Service, generation providers, and to all entities that submit offers to sell or bids to buy energy in the PJM Energy Market

There are two components to the MMU funding ancillary service as it relates to up-to congestion transactions. The first component is calculated based on the MWh of accepted bids, while the second component is calculated based on the number of bid/offer segments accepted. A bid/offer segment is defined as an hourly price/quantity pair submitted into the Day-Ahead Market. During the time period from May 15, 2010, through September 17, 2010, the first component charge was \$0.005/MWh and the second component charge was \$0.004/ bid/offer segment.

For the example shown, this would have resulted in additional charges totaling \$2.50 for the first component of this ancillary service and \$0.004 for the second component.

Schedule 9-AC2: Advanced Second Control Center Charges

PJM recovers the costs of its planned advanced second control center (“AC2”) from the users of PJM services by way of additional monthly charges to each customer. There are two components to the advanced second control center ancillary service as it relates to up-to congestion transactions. The first component is calculated based on the MWh of accepted bids, while the second component is calculated based on the number of bid/offer segments accepted. A bid/offer segment is defined as an hourly price/quantity pair submitted into the Day-Ahead Market. The monthly accrued costs for the AC2

project differ each month. As such, the calculation for determining the first component of the charge is determined by multiplying the total accrued costs for the month for AC2 by 0.329, then dividing by the sum of the total MWh of energy delivered by all customers under point-to-point or Network Integration Transmission Service (not including wheel-through service), plus the total MWh of energy input into the transmission system by generation providers, plus the total MWh of accepted increment, decrement and up-to congestion bids. The resulting value is then applied to each market participant based on their MWh usage. The second component is also determined on a monthly basis, and is calculated by multiplying the total accrued costs for the month for AC2 by .004 and dividing by the total amount of all bid/offer segments of all parties submitting bid/offer segments for the month. This value is then applied to each market participant based on their individual bid/offer quantity.

As with the black start and reactive ancillary service charge, utilizing a single transaction to determine the appropriate per MWh charge would not be representative of the activity seen during the timeframe analyzed. As such, a similar average was taken to determine the appropriate MWh charge. During the period from May 15, 2010, through September 17, 2010, the average advanced second control center ancillary service charge was \$0.002/MWh. For the example show, this would have resulted in additional charges totaling \$1.02 for this ancillary service.