



Monitoring
Analytics

Analysis of the 2011/2012 and 2012/2013 ATSI Integration Auctions

The Independent Market Monitor for PJM

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Introduction

This report, prepared by the Independent Market Monitor for PJM (IMM or MMU), reviews the functioning of the 2011/2012 and 2012/2013 ATSI Integration Auctions and responds to questions raised by PJM members and market observers about that auction. The MMU prepares a report for each Reliability Pricing Model (RPM) auction.

On August 17, 2009, FirstEnergy Service Company filed on behalf of American Transmission Systems, Inc. (ATSI) with the Federal Energy Regulatory Committee (FERC) to withdraw its transmission assets from the Midwest Independent System Operator (MISO) and integrate those transmission assets into PJM as of June 1, 2011.¹ Because the 2011/2012 RPM Base Residual Auction (BRA) and the 2012/2013 RPM BRA occurred prior to the planned integration date of June 1, 2011, integration auctions were held for the 2011/2012 and 2012/2013 delivery years to procure capacity to meet the reliability requirements of participating load-serving entities (“LSEs”) under the specially approved Fixed Resource Requirement (FRR) plan. Four public utility LSEs affiliated with ATSI (the “ATSI Utilities”) are collectively responsible to meet the capacity obligation to PJM for LSEs participating in the FRR plan.² LSEs other than the ATSI Utilities serving load in the ATSI Zone had the option to participate or not participate in the FRR plan. All non affiliated LSEs, that are also competitive retail service providers without service areas, chose to participate, and a non affiliated LSE with its own service areas chose to partially participate. To the extent that an LSE chose to not participate, it has an obligation directly to PJM to meet the portion of its capacity obligation not covered under the FRR plan.

All existing generation resources located in PJM and the ATSI zone had a must offer requirement equal to their minimum available installed capacity (ICAP) position and up to their maximum available ICAP position.³ For First Incremental Auctions and, effective starting with the 2012/2013 delivery year, Second Incremental Auctions, minimum and maximum available ICAP positions are calculated. A capacity market seller’s resource-specific available ICAP position is determined by reducing the ICAP owned by unoffered ICAP MW in a previous RPM auction, RPM committed ICAP MW, and FRR committed ICAP MW, while considering other transactions, such as unit-specific bilateral sales/purchases, and locational unforced capacity (UCAP) transactions,

¹ See 129 FERC ¶ 61,249 (2009).

² The ATSI Utilities are The Cleveland Electric Illuminating Company, The Toledo Edison Company, Ohio Edison Company and Pennsylvania Power Company.

³ See 130 FERC ¶ 61,171 (2010) at P 16.

that occur for the given planning year. For generation resources, the distinction between the minimum and maximum available ICAP Position is based on how the RPM commitments, which are stated in UCAP terms, are converted to ICAP in order to determine the quantities eligible and required to be offered into subsequent auctions. Capacity market sellers must offer the minimum available ICAP position for a given resource in RPM Incremental Auctions occurring prior to equivalent demand forced outage rates (EFORds) being finalized for the delivery year. The minimum available ICAP position is determined by converting the RPM commitments to ICAP using the greater of the one-year EFORd at the time of the BRA, the five-year EFORd at the time of the BRA, or the sell offer EFORd from the BRA. The maximum available ICAP position is determined by converting the RPM commitments to ICAP using an EFORd of zero.

All existing RPM market power mitigation rules applied to the ATSI FRR Integration Auctions, and the MMU evaluated the competitiveness of the auctions.⁴ The MMU's relationship to PJM was somewhat different because these auctions were designed to procure capacity on behalf of the ATSI Utilities and not, as in the case of RPM auctions, to procure capacity for all load serving entities (LSEs) participating in RPM on a collective basis. The MMU monitored PJM in its role as auction manager and all participants in the auction, but, in addition, sought to ensure the integrity of the auctions for the ATSI Utilities, whose affiliate FirstEnergy Solutions, was among the participants in that auction. FERC prohibits undue preferences in such auctions, and has established standards for transparency, definition, evaluation and oversight that utilities must meet when they hold auctions open to participation by affiliates.⁵

As required under section IX.5 of the FRR Integration Auction Rules, the MMU certified the auction based on its having verified that the results were competitive, the three pivotal supplier test was correctly applied, the market clearing prices were calculated accurately and the process had been conducted with no undue preference for any participant. The MMU verified the reasonableness of offer data and calculated the derived offer caps based on submitted data, calculated unit net revenues, verified capacity exports, verified the reasons for MW not offered, verified that the submitted sell offer EFORds were less than or equal to the maximum EFORd values allowable and consistent with actual performance, verified clearing prices based on the ATSI zone reliability requirements and verified that the market structure tests were applied correctly. Section IX.2 of the FRR Integration Auction Rules required participants to obtain the agreement of the MMU on the calculation of cost-based offers, used as inputs

⁴ See *Id.* at P 82.

⁵ See *Allegheny Energy Supply Company, LLC*, 108 FERC ¶61,082 (2004); *Boston Edison Co. Re: Edgar Electric Energy Co.*, 55 FERC ¶61,382 at 62,167 (1991).

for market power mitigation, if such values exceeded predefined default levels, without any involvement from ATSI, the ATSI Utilities, or the auction manager.

All participants in the auctions failed the three pivotal supplier (TPS) test, as has been the case in every prior RPM auction, with one exception for a small number of MW. The result was that offer caps were applied to all sell offers of participants that did not pass the test, excluding sell offers for planned generation resources for the first delivery year, Demand Resources (DR), and Energy Efficiency (EE) resources.⁶ The offer caps are designed to reflect the marginal cost of capacity. Based on these facts, the MMU certified that the results of the 2011/2012 and 2012/2013 ATSI FRR Integration Auctions were competitive.

Offer Caps

Offer caps for the ATSI FRR Integration Auctions included avoidable costs less net revenues, opportunity costs, or, for resources with a previous RPM commitment for the relevant delivery year, an offer cap option of the 1.1 times the BRA clearing price.⁷ If the capacity resource owner failed the market structure test for the auction and the submitted sell offer exceeded the offer cap, market power mitigation measures were applied to existing generation resources such that the sell offer was set equal to the defined offer cap.

The opportunity cost option allows resource owners to input a documented export opportunity cost as the offer for the unit. If the relevant RPM market clears above the opportunity cost, the unit's capacity is sold in the RPM market. If the opportunity cost is greater than the clearing price, the unit's capacity does not clear in the RPM market and it is available for export.

Avoidable costs are the costs that a generation owner would not incur if the generating unit did not operate for the delivery year.⁸ In effect, avoidable costs are the costs that a generation owner would not incur if the generating unit were mothballed for the year.

⁶ Prior to November 1, 2009, existing DR and EE resources were subject to mitigation in RPM Auctions. See 129 FERC ¶ 61,081 (2009).

⁷ See 130 FERC ¶ 61,171 at P 23. The order states that "this alternative offer cap option (i.e., Section 6.4(g)) cannot, and does not, apply for: (i) units in the ATSI zone with no pre-existing RPM capacity obligations; (ii) units located in the PJM LDAs with no preexisting RPM capacity obligations in a relevant delivery year because they failed to clear; or (iii) units that did not exist at the time of the relevant base residual auctions, which are located in a PJM LDA."

⁸ See PJM OATT Attachment DD § 6.8 (b).

In the calculation of avoidable costs, there is no presumption that the unit would retire as the alternative to operating, although that possibility could be reflected if the owner documented that retirement was the alternative. Avoidable costs also include annual capital recovery associated with investments required to maintain a unit as a capacity resource. Avoidable cost based offer caps are defined to be the avoidable cost rate (ACR) less net revenues from all other PJM markets and unit-specific bilateral contracts. The specific components of avoidable costs are defined in the PJM Tariff.

Capacity resource owners could provide ACR data by providing their own unit-specific data or by selecting the default ACR. The technology specific default ACR values for both the mothball and the retirement options were calculated by the MMU based on available unit data, posted to the Monitoring Analytics Website and included in the tariff, in order to provide an alternative for owners that did not wish to calculate unit-specific ACR values or who believed that the default ACR values exceeded their unit-specific ACR values.

As shown in Table 1, 141 generation resources submitted offers in the 2011/2012 ATSI FRR Integration Auction compared to 1,125 generation resources offered in the 2011/2012 Base Residual Auction. The total includes three new wind resources (77.5 MW), one new steam unit (23.8 MW), and one new diesel resource (1.5 MW). As shown in Table 1, 173 generation resources submitted resources in the 2012/2013 ATSI FRR Integration Auction compared to 1,133 generation resources offered in the 2012/2013 Base Residual Auction. The total includes three new wind resources (69.6 MW) and one new steam unit (23.8 MW). There were 46 Demand Resources (DR) offered in both the 2011/2012 and 2012/2013 ATSI FRR Integration Auctions. There was one Energy Efficiency (EE) resource offered in the 2011/2012 ATSI FRR Integration Auction and two EE resources offered in the 2012/2013 ATSI FRR Integration Auction.

The MMU calculated 64 offer caps for the 2011/2012 ATSI FRR Integration Auction, of which 57 were based on the technology specific default (proxy) ACR values calculated by the MMU. Unit-specific offer caps were calculated for four resources (2.8 percent), all of which included an Avoidable Project Investment Recovery Rate (APIR) component. Owners submitted unit-specific cost data, the MMU calculated net revenue data for these units, and the MMU calculated the unit-specific offer caps based on that data. Of the 141 generation resources, 52 resources elected the 1.1 times the BRA clearing price offer cap option (36.9 percent), 5 planned generation resources had uncapped offers (3.5 percent) while the remaining 20 generation resources were price takers (14.3 percent), of

which the offers for 18 resources were zero and the offers for two resources were set to zero because no data were submitted.⁹

The MMU calculated 131 offer caps for the 2012/2013 ATSI FRR Integration Auction, of which 117 were based on the technology specific default (proxy) ACR values calculated by the MMU. Unit-specific offer caps were calculated for 12 resources (6.9 percent), all of which included an Avoidable Project Investment Recovery Rate (APIR) component. Owners submitted unit-specific cost data, the MMU calculated net revenue data for these units, and the MMU calculated the unit-specific offer caps based on that data. Of the 173 generation resources, 26 resources elected the 1.1 times the BRA clearing price offer cap option (15.0 percent) while the remaining 16 generation resources were price takers (9.3 percent), of which the offers for 13 resources were zero and the offers for three resources were set to zero because no data were submitted.

Table 1 ACR statistics: 2011/2012 and 2012/2013 ATSI FRR Integration Auctions

Calculation Type	2011/2012 ATSI FRR Integration Auction		2012/2013 ATSI FRR Integration Auction	
	Number of Resources	Percent of Generation Resources Offered	Number of Resources	Percent of Generation Resources Offered
Default ACR selected	57	40.4%	117	67.6%
ACR data input (APIR)	4	2.8%	12	6.9%
ACR data input (non-APIR)	0	0.0%	0	0.0%
Opportunity cost input	3	2.1%	2	1.2%
Default ACR and opportunity cost input	0	0.0%	0	0.0%
Generation resources with offer caps	64	45.3%	131	75.7%
Uncapped planned generation resources	5	3.5%	0	0.0%
Generators with 1.1 times BRA clearing price offer cap	52	36.9%	26	15.0%
Generation price takers	20	14.3%	16	9.3%
Generation resources offered	141	100.0%	173	100.0%
Uncapped demand resources	46		46	
Uncapped energy efficiency resources	1		2	
Total capacity resources offered	188		221	

⁹ Planned units are subject to mitigation only under specific conditions defined in the tariff. See PJM OATT Attachment DD § 6.5(a)(ii).

RPM Auction Results

MMU Methodology

The MMU reviewed the following inputs to and results of the 2011/2012 and 2012/2013 ATSI FRR Integration Auctions:¹⁰

- **Offer Cap** – Verified that the avoidable costs, opportunity costs and net revenues used to calculate offer caps were reasonable and properly documented and that only eligible resources elected the 1.1 times the BRA clearing price offer cap option;¹¹
- **Net Revenues** – Calculated actual unit-specific net revenue from PJM energy and ancillary service markets for each PJM generation capacity resource and from MISO energy markets for each ATSI zone generation capacity resource for the period from 2005 through 2007 for the 2011/2012 ATSI FRR Integration Auction and for the period 2006 through 2008 for the 2012/2013 ATSI FRR Integration Auction;¹²
- **Exported Resources** – Verified that capacity resources exported from PJM had firm external contracts or made documented opportunity cost offers;
- **Excused Resources** – Verified the specific reasons that capacity resources were excused from offering into the auction;
- **Maximum EFORd** – Verified that the sell offer EFORd levels for generation resources were less than or equal to the greater of the one-year EFORd or the five-year EFORd for the period ending September 30, 2007 for the 2011/2012 ATSI FRR Integration Auction and for the time period ending September 30, 2008 for the 2012/2013 ATSI FRR Integration Auction; Verified that sell offer EFORd levels for generation resources located in the ATSI zone or other generation resources that did not offer at the time of the BRA were less than or equal to the greater of the one-year or five-year EFORd for the period ending September 30, 2009;

¹⁰ Unless otherwise specified, all volumes and prices are in terms of unforced capacity (UCAP), which is calculated as installed capacity (ICAP) times (1-EFORd) for generation resources and as ICAP times the Demand Resource Factor and the Forecast Pool Requirement (FPR) for DR and EE resources. The EFORd values in this report are the sell offer EFORd values used in the relevant auction.

¹¹ See 130 FERC ¶ 61,171 at P 23.

¹² Markets for the MISO region opened on April 1, 2005. Since market net revenues did not exist for 12 calendar months in 2005, net revenues for resources in the ATSI footprint excluded 2005 for the 2011/2012 ATSI FRR Integration Auction.

- **Clearing Prices** – Verified that the auction clearing prices were accurate, based on submitted offers and the vertical demand curve at the ATSI zone’s Preliminary Unforced Capacity Obligation less the load serving entity (LSE) “opt-out” UCAP, including a cap set at 1.5 times the net Cost of New Entry (CONE), for the given delivery year;^{13, 14, 15, 16}
- **Market Structure Test** – Verified that the market power test was properly defined using the TPS test, that offer caps were properly applied and that the TPS test results were accurate.

Market Structure Tests

Only those participants that fail the market power test are subject to offer capping. As shown in Table 2, all participants failed the TPS test in both the 2011/2012 and 2012/2013 ATSI FRR Integration Auctions.¹⁷ The result was that offer caps were applied to all sell offers of participants that did not pass the test, excluding sell offers for planned generation resources for the first delivery year, DR, and EE resources. The supply considered in the TPS test for the market includes all supply from generation resources offered at less than or equal to 150 percent of the cost-based clearing price. The demand consists of the incremental MW needed in the LDA to relieve the constraint. As a result of the fact that DR and EE resources are no longer subject to market power mitigation, such resources are not included in the TPS test.¹⁸

Table 2 presents the results of the TPS test. A generation owner or owners are pivotal if the capacity of the owners’ generation facilities is needed to meet the demand for

¹³ See 129 FERC ¶ 61,249 at P 83.

¹⁴ See 130 FERC ¶ 61,171 at P 41.

¹⁵ See “ATSI Zone FRR Preliminary UCAP Obligations for 11/12 & 12/13 DYs,” (March 11, 2010) (Accessed July 22, 2010) <[http://www.pjm.com/markets-and-operations/market-integration/atsi/~media/markets-ops/atsi-integration/atsi-ucap-obligation-for-2011-2012-and-2012-2013.ashx](http://www.pjm.com/markets-and-operations/market-integration/atsi/~/media/markets-ops/atsi-integration/atsi-ucap-obligation-for-2011-2012-and-2012-2013.ashx)> (20.0 KB).

¹⁶ See 129 FERC ¶ 61,249 at P 61. LSEs, other than the ATSI Utilities, could opt-out of having their loads included in the ATSI FRR Integration Auctions subject to certain requirements.

¹⁷ See the 2009 *State of the Market Report for PJM*, Volume II, Section 2, “Energy Market, Part 1,” and Volume II, Appendix L, “Three Pivotal Supplier Test” for a more detailed discussion of market structure tests.

¹⁸ See 129 FERC ¶ 61,081 at P 31.

capacity. The results of the TPS are measured by the Residual Supply Index (RSI₃). The RSI_x is a general measure that can be used with any number of pivotal suppliers. The TPS test uses three pivotal suppliers. The subscript denotes the number of pivotal suppliers included in the test. If the RSI_x is less than or equal to 1.0, the supply owned by the specific generation owner, or owners, is needed to meet market demand and the generation owners are pivotal suppliers with a significant ability to influence market prices. If the RSI_x is greater than 1.0, the supply of the specific generation owner or owners is not needed to meet market demand and those generation owners have a reduced ability to unilaterally influence market price.¹⁹

Table 2 RSI Results: 2011/2012 and 2012/2013 ATSI FRR Integration Auctions²⁰

RPM Markets	RSI _{1.05}	RSI ₃	Total Participants	Failed RSI ₃ Participants
2011/2012 ATSI FRR Integration Auction				
RTO	0.18	0.07	21	21
2012/2013 ATSI FRR Integration Auction				
RTO	0.34	0.10	16	16

Auctions

Table 3 shows total offer data for the 2011/2012 and 2012/2013 ATSI FRR Integration Auctions. The offered values in the 2011/2012 ATSI FRR Integration Auction came from ATSI zone capacity resource offers (12,666.4 MW) and PJM capacity resource offers (1,570.4 MW), with factors used to determine this value including RPM commitments in the 2011/2012 BRA and 2011/2012 First Incremental Auction, capacity modifications to existing resources, new capacity, FRR commitments, exports, previously unoffered capacity while taking into consideration the EFORD level used for UCAP conversion, and excused capacity. Similarly, the offered values in the 2012/2013 ATSI FRR Integration Auction came from ATSI zone capacity resource offers (13,389.5 MW) and PJM capacity resource offers (5,259.0 MW), with factors used to determine this value including RPM commitments in the 2012/2013 BRA, capacity modifications to existing resources, new capacity, FRR commitments, exports, previously unoffered capacity while taking into consideration the EFORD level used for UCAP conversion. The

¹⁹ The market definition used for the TPS test includes all offers with costs less than or equal to 1.50 times the clearing price. The appropriate market definition to use for the one pivotal supplier test includes all offers with costs less than or equal to 1.05 times the clearing price. See *2009 State of the Market Report for PJM* (March 11, 2010), Appendix L, “Three Pivotal Supplier Test” for additional discussion.

²⁰ The RSI shown is the lowest RSI in the market.

demand curve for each auction was vertical at the ATSI zone’s Preliminary Unforced Capacity Obligation less the LSE “opt-out” UCAP, including a cap set at 1.5 times the net Cost of New Entry (CONE), for the given delivery year. As shown in Table 3, the demand curve for the 2011/2012 ATSI FRR Integration Auction was set at 12,583.2 MW for the 2011/2012 ATSI FRR Integration Auction and 13,038.7 MW for the 2012/2013 ATSI FRR Integration Auction. The cap was set at \$257.11 per MW-day for the 2011/2012 ATSI FRR Integration Auction and \$414.14 per MW-day for the 2012/2013 ATSI FRR Integration Auction. The intersection of supply and demand resulted in a resource clearing price of \$108.89 per MW-day for the 2011/2012 ATSI FRR Integration Auction. The intersection of supply and demand resulted in a resource clearing price of \$20.46 per MW-day for the 2012/2013 ATSI FRR Integration Auction.²¹

Table 3 Auction offer statistics: 2011/2012 and 2012/2013 ATSI FRR Integration Auctions

	2011/2012 ATSI FRR Integration Auction		2012/2013 ATSI FRR Integration Auction	
	ICAP (MW)	UCAP (MW)	ICAP (MW)	UCAP (MW)
ATSI zone generation offered	12,464.6	11,575.3	12,748.4	11,840.9
ATSI zone DR offered	1,053.5	1,089.9	1,487.2	1,536.0
ATSI zone EE offered	1.2	1.2	12.2	12.6
Non-ATSI zone generation offered	1,434.7	1,256.5	5,281.8	4,707.2
Non-ATSI zone DR offered	303.7	313.9	534.4	551.8
Non-ATSI zone EE offered	0.0	0.0	0.0	0.0
Total offered	15,257.7	14,236.8	20,064.0	18,648.5
Generation cleared	12,523.8	11,603.4	13,653.8	12,807.9
DR cleared	945.9	978.6	211.4	218.2
EE cleared	1.2	1.2	12.2	12.6
Total cleared	13,470.9	12,583.2	13,877.4	13,038.7
Total uncleared	1,786.8	1,653.6	6,186.6	5,609.8
ATSI zone FRR preliminary UCAP obligation		13,497.0		13,937.4
Opt-out UCAP		913.8		898.7
ATSI zone FRR preliminary UCAP obligation adjusted for opt-out		12,583.2		13,038.7
Resource clearing price (\$ per MW-day)		\$108.89		\$20.46

²¹ No figures are included in this report in deference to the FERC Order on data release, which prohibits the release of supply curves prior to 13 months after an RPM Auction even if masked using the required procedure. See *PJM Interconnection, L.L.C.*, 132 FERC ¶ 61,123 at P 78 (2010). On November 10, 2010, PJM filed in Docket No. ER11-2074-000 asking the Commission to permit immediate release of data to which the required masking is applied, and an order from the Commission on this request is currently pending.