

## Financial Transmission and Auction Revenue Rights

In an LMP market, the lowest cost generation is dispatched to meet the load, subject to the ability of the transmission system to deliver that energy. When the lowest cost generation is remote from load centers, the physical transmission system permits that lowest cost generation to be delivered to load. This was true prior to the introduction of LMP markets and continues to be true in LMP markets. Prior to the introduction of LMP markets, contracts based on the physical rights associated with the transmission system were the mechanism used to provide for the delivery of low cost generation to load. Firm transmission customers who paid for the transmission system through rates were the beneficiaries of the system.

After the introduction of LMP markets, financial transmission rights permitted the loads which pay for the transmission system to continue to receive those benefits in the form of revenues which offset congestion to the extent permitted by the transmission system.<sup>1</sup> Financial transmission rights and the associated revenues were directly provided to loads in recognition of the fact that loads pay for the transmission system which permits low cost generation to be delivered to load and which creates the funds available to offset congestion costs in an LMP market.<sup>2</sup>

In PJM, Financial Transmission Rights (FTRs) were part of the market design from the inception of LMP markets on April 1, 1998.<sup>3</sup> In PJM, FTRs were available to network service and long-term, firm, point-to-point transmission service customers as an offset to congestion costs from the inception of locational marginal pricing (LMP) on April 1, 1998.

Effective June 1, 2003, PJM replaced the allocation of FTRs with an allocation of Auction Revenue Rights (ARRs) and an associated Annual FTR Auction.<sup>4,5</sup> Since then, all PJM members have been eligible to purchase FTRs in auctions.

<sup>1</sup> See 81 FERC ¶ 61,257, at 62,241 (1997).

<sup>2</sup> See *Id.* at 62, 259–62,260 & n. 123.

<sup>3</sup> *Id.*

<sup>4</sup> 102 FERC ¶ 61,276 (2003).

<sup>5</sup> 87 FERC ¶ 61,054 (1999).

On June 1, 2007, PJM implemented marginal losses in the calculation of LMP. Since then, FTRs have been valued based on the difference in congestion prices rather than the difference in LMPs. FTR funding has been based on both day ahead and balancing congestion revenues from its initial design.

PJM created the split between ARRs and FTRs in order to both continue to provide the appropriate protection against congestion for load, and to permit any excess transmission capacity on the system to be made available to those market participants who wished to use FTRs to speculate or to hedge positions. This separation substantively changed the definition of FTRs. FTRs no longer represent the rights of load to the congestion offset associated with the physical transmission system, but instead represent the potential offset to congestion costs associated with the excess capability of the transmission system to deliver energy over and above that assigned to ARRs.

The *2012 Quarterly State of the Market Report for PJM: January through March* focuses on the Monthly Balance of Planning Period FTR Auctions during the 2011 to 2012 planning period, which covers June 1, 2011, through May 31, 2012.

**Table 12–1 The FTR Auction Markets results were competitive (See 2011 SOM, Table 12–1)**

Market Element	Evaluation	Market Design
Market Structure	Competitive	
Participant Behavior	Competitive	
Market Performance	Competitive	Effective

- The market structure was evaluated as competitive because the FTR auction is voluntary and the ownership positions resulted from the distribution of ARRs and voluntary participation.
- Participant behavior was evaluated as competitive because there was no evidence of anti-competitive behavior.
- Performance was evaluated as competitive because it reflected the interaction between participant demand behavior and FTR supply, limited by PJM’s analysis of system feasibility.

- Market design was evaluated as effective because the market design provides a wide range of options for market participants to acquire FTRs and a competitive auction mechanism.

## Highlights

- On January 1, 2012, the Duke Energy Ohio and Kentucky (DEOK) Control Zone was integrated into the PJM footprint. DEOK zonal customers were eligible to participate in a direct allocation of FTRs effective from January 1, 2012 through May 31, 2012.
- The total cleared FTR buy bids from the Monthly Balance of Planning Period FTR Auctions for the first ten months of the 2011 to 2012 planning period increased by 22 percent from 1,681,158 MW to 2,049,614 MW compared to the first ten months of the 2010 to 2011 planning period.
- FTRs were paid at 83.2 percent for the first ten months of the 2011 to 2012 planning period.
- FTR profitability is the difference between the revenue received for an FTR and the cost of the FTR. FTRs were not profitable overall and were not profitable for either physical or financial entities in January through March 2012. Total FTR profits were -\$0.8 million for physical entities and -\$11.3 million for financial entities. Self scheduled FTRs were the source of \$40.8 million of the FTR profits for physical entities.

## Conclusion

The annual ARR allocation provides firm transmission service customers with the financial equivalent of physically firm transmission service, without requiring physical transmission rights that are difficult to define and enforce. The fixed charges paid for firm transmission services result in the transmission system which provides physically firm transmission service. With the creation of ARRs, FTRs no longer serve their original function of providing firm transmission customers with the financial equivalent of physically firm transmission service. FTR holders, with the creation of ARRs, do not have the right to financially firm transmission service. FTR holders do not have the right to revenue adequacy.

## Financial Transmission Rights

FTRs are financial instruments that entitle their holders to receive revenue or require them to pay charges based on locational congestion price differences in the Day-Ahead Energy Market across specific FTR transmission paths. Effective June 1, 2007, PJM added marginal losses as a component in the calculation of LMP.<sup>6</sup> The value of an FTR reflects the difference in congestion prices rather than the difference in LMPs, which includes both congestion and marginal losses. Auction market participants are free to request FTRs between any pricing nodes on the system, including hubs, control zones, aggregates, generator buses, load buses and interface pricing points. FTRs are available to the nearest 0.1 MW. The FTR target allocation is calculated hourly and is equal to the product of the FTR MW and the congestion price difference between sink and source that occurs in the Day-Ahead Energy Market. The value of an FTR can be positive or negative depending on the sink minus source congestion price difference, with a negative difference resulting in a liability for the holder. The FTR target allocation is a cap on what FTR holders can receive. Revenues above that level are used to fund FTRs which received less than their target allocations.

Depending on the amount of FTR revenues collected, FTR holders with a positively valued FTR may receive congestion credits between zero and their target allocations. Revenues to fund FTRs come from both day-ahead congestion charges on the transmission system and balancing congestion charges. FTR holders with a negatively valued FTR are required to pay charges equal to their target allocations. When FTR holders receive their target allocations, the associated FTRs are fully funded. The objective function of all FTR auctions is to maximize the bid-based value of FTRs awarded in each auction.

FTRs can be bought, sold and self scheduled. Buy bids are FTRs that are bought in the auctions; sell offers are existing FTRs that are sold in the auctions; and self scheduled bids are FTRs that have been directly converted from ARRs in the Annual FTR Auction.

<sup>6</sup> For additional information on marginal losses, see the 2011 State of the Market Report for PJM, Volume II, Section 10, "Congestion and Marginal Losses," at "Marginal Losses."

There are two FTR hedge type products: obligations and options. An obligation provides a credit, positive or negative, equal to the product of the FTR MW and the congestion price difference between FTR sink (destination) and source (origin) that occurs in the Day-Ahead Energy Market. An option provides only positive credits and options are available for only a subset of the possible FTR transmission paths.

There are three FTR class type products: 24-hour, on peak and off peak. The 24-hour products are effective 24 hours a day, seven days a week, while the on peak products are effective during on peak periods defined as the hours ending 0800 through 2300, Eastern Prevailing Time (EPT) Mondays through Fridays, excluding North American Electric Reliability Council (NERC) holidays. The off peak products are effective during hours ending 2400 through 0700, EPT, Mondays through Fridays, and during all hours on Saturdays, Sundays and NERC holidays.

PJM operates an Annual FTR Auction for all participants. In addition PJM conducts Monthly Balance of Planning Period FTR Auctions for the remaining months of the planning period, which allows participants to buy and sell residual transmission capability. PJM also runs a Long Term FTR Auction for the three consecutive planning years immediately following the planning year during which the Long Term FTR Auction is conducted. FTR options are not available in the Long Term FTR Auction. A secondary bilateral market is also administered by PJM to allow participants to buy and sell existing FTRs. FTRs can also be exchanged bilaterally outside PJM markets.

FTR buy bids and sell offers may be made as obligations or options and as any of the three class types. FTR self scheduled bids are available only as obligations and 24-hour class types, consistent with the associated ARRs, and only in the Annual FTR Auction.

As one of the measures to address underfunding, effective August 5, 2011, PJM no longer allows FTR buy bids to clear with a price of zero unless there is at least one constraint in the auction which affects the FTR path.

## Market Structure

Any PJM member can participate in the Long Term FTR Auction, the Annual FTR Auction and the Monthly Balance of Planning Period FTR Auctions.

## Supply and Demand

### Monthly Balance of Planning Period FTR Auctions

The residual capability of the PJM transmission system after the Long Term and Annual FTR Auctions are concluded is offered in the Monthly Balance of Planning Period FTR Auctions. These are single-round monthly auctions that allow any transmission service customers or PJM members to bid for any FTR or to offer for sale any FTR that they currently hold. Market participants can bid for or offer monthly FTRs for any of the next three months remaining in the planning period, or quarterly FTRs for any of the quarters remaining in the planning period. FTRs in the auctions include obligations and options and 24-hour, on peak or off peak products.<sup>7</sup>

### Secondary Bilateral Market

Market participants can buy and sell existing FTRs through the PJM-administered, bilateral market, or market participants can trade FTRs among themselves without PJM involvement. Bilateral transactions that are not done through PJM can involve parties that are not PJM members. PJM has no knowledge of bilateral transactions that are done outside of PJM's bilateral market system.

For bilateral trades done through PJM, the FTR transmission path must remain the same, FTR obligations must remain obligations, and FTR options must remain options. However, an individual FTR may be split up into multiple, smaller FTRs, down to increments of 0.1 MW. FTRs can also be given different start and end times, but the start time cannot be earlier than the original FTR start time and the end time cannot be later than the original FTR end time.

<sup>7</sup> See PJM, "Manual 6: Financial Transmission Rights," Revision 12 (July 1, 2009), p. 39.

## Credit Issues

### Default

There were three participants that defaulted during 2012 and 4 default events. The average default for 2012 was \$47,188 with a maximum default of \$111,600. Of all the defaults two were based on collateral and two were based on payments. All of the defaulting participants were financial companies. Two of the defaults were promptly cured and two are outstanding as of the last report.<sup>8</sup> These defaults were not related to FTR positions.

### Patterns of Ownership

The ownership concentration of cleared FTR buy bids resulting from the 2011 to 2012 Annual FTR Auction was low for peak, off peak FTR obligations and moderately concentrated for 24-hour FTR obligations. The ownership concentration was highly concentrated for peak, off peak and 24-hour FTR buy bid options for the same time period. The overall ownership structure of FTRs and the ownership of prevailing flow and counter flow FTRs is descriptive and is not necessarily a measure of actual or potential FTR market structure issues, as the ownership positions result from competitive auctions. The percentage of FTR ownership shares may change when FTR owners buy or sell FTRs in the Monthly Balance of Planning Period FTR Auctions or secondary bilateral market.

In order to evaluate the ownership of prevailing flow and counter flow FTRs, the MMU categorized all participants owning FTRs in PJM as either physical or financial. Physical entities include utilities and customers which primarily take physical positions in PJM markets. Financial entities include banks and hedge funds which primarily take financial positions in PJM markets. International market participants that primarily take financial positions in PJM markets are generally considered to be financial entities even if they are utilities in their own countries.

For the Monthly Balance of Planning Period Auctions of January through March 2012, financial entities purchased 85.0 percent of prevailing flow and

84.9 percent of counter flow FTRs for 2012. Financial entities owned 65.6 percent of all prevailing and counter flow FTRs, including 60.0 percent of all prevailing flow FTRs and 79.8 percent of all counter flow FTRs.

Table 12-2 presents the Monthly Balance of Planning Period FTR Auction market cleared FTRs for January through March 2012 by trade type, organization type and FTR direction.

**Table 12-2 Monthly Balance of Planning Period FTR Auction patterns of ownership by FTR direction: January through March 2012 (See 2011 SOM, Table 12-6)**

Trade Type	Organization Type	FTR Direction		All
		Prevailing Flow	Counter Flow	
Buy Bids	Physical	15.0%	15.1%	15.0%
	Financial	85.0%	84.9%	85.0%
	Total	100.0%	100.0%	100.0%
Sell Offers	Physical	23.5%	4.8%	15.7%
	Financial	76.5%	95.2%	84.3%
	Total	100.0%	100.0%	100.0%

Table 12-3 presents the daily FTR net position ownership for January through March 2012 by FTR direction.

**Table 12-3 Daily FTR net position ownership by FTR direction: January through March 2012 (See 2011 SOM, Table 12-7)**

Organization Type	FTR Direction		All
	Prevailing Flow	Counter Flow	
Physical	40.0%	20.2%	34.4%
Financial	60.0%	79.8%	65.6%
Total	100.0%	100.0%	100.0%

<sup>8</sup> Email to Members Committee, "PJM Settlement Member Credit Exposure and Default Disclosure Report – March 2012," April 10, 2012.

## Market Performance

### Volume

In the Monthly Balance of Planning Period FTR Auctions for the first ten months (June 2011 through March 2012) of the 2011 to 2012 planning period, total participant FTR sell offers were 5,330,537 MW, up from 3,622,316 MW for the same period during the 2010 to 2011 planning period. The total FTR buy bids from the Monthly Balance of Planning Period FTR Auctions for the first ten months of the 2011 to 2012 (June 2011 through March 2012) planning period increased 29.7 percent from 12,615,413 MW, during the same time period of the prior planning period, to 16,367,977 MW. For the first ten months of the 2011 to 2012 planning period, FTR auctions cleared 2,049,614 MW (12.5 percent) of FTR buy bids and 604,749 MW (11.3 percent) of sell offers.

Table 12-4 provides the Monthly Balance of Planning Period FTR market volume for the first three months of 2012, the entire 2010 to 2011 planning period and the first ten months of the 2011 to 2012 planning period.

**Table 12-4 Monthly Balance of Planning Period FTR Auction market volume: January through March 2012 (See 2011 SOM, Table 12-11)**

Monthly Auction	Hedge Type	Trade Type	Bid and Requested Count	Bid and Requested Volume (MW)	Cleared Volume (MW)	Cleared Volume %	Uncleared Volume (MW)	Uncleared Volume %
Jan-12	Obligations	Buy bids	185,712	1,024,729	146,344	14.3%	878,385	85.7%
		Sell offers	75,415	421,756	48,770	11.6%	372,986	88.4%
	Options	Buy bids	2,721	215,626	1,680	0.8%	213,946	99.2%
		Sell offers	5,615	45,756	10,572	23.1%	35,184	76.9%
Feb-12	Obligations	Buy bids	207,775	1,039,918	147,207	14.2%	892,711	85.8%
		Sell offers	80,631	375,855	47,609	12.7%	328,246	87.3%
	Options	Buy bids	2,247	194,423	2,620	1.3%	191,804	98.7%
		Sell offers	5,299	42,130	8,241	19.6%	33,889	80.4%
Mar-12	Obligations	Buy bids	197,115	893,900	156,694	17.5%	737,206	82.5%
		Sell offers	77,440	400,030	50,162	12.5%	349,868	87.5%
	Options	Buy bids	3,463	232,307	5,079	2.2%	227,228	97.8%
		Sell offers	5,869	60,228	11,952	19.8%	48,276	80.2%
2010/2011*	Obligations	Buy bids	2,378,154	12,888,263	1,975,624	15.3%	10,912,639	84.7%
		Sell offers	709,605	3,448,995	311,688	9.0%	3,137,308	91.0%
	Options	Buy bids	16,090	1,403,272	67,536	4.8%	1,335,736	95.2%
		Sell offers	60,091	568,271	147,251	25.9%	421,021	74.1%
2011/2012**	Obligations	Buy bids	2,555,847	13,958,148	1,994,133	14.3%	11,964,014	85.7%
		Sell offers	994,870	4,702,004	460,567	9.8%	4,241,436	90.2%
	Options	Buy bids	35,439	2,409,829	55,481	2.3%	2,354,349	97.7%
		Sell offers	93,911	628,533	144,181	22.9%	484,352	77.1%

\* Shows Twelve Months for 2010/2011; \*\* Shows ten months ended 31-Mar-2012 for 2011/2012

Table 12-5 presents the buy-bid, bid and cleared volume of the Monthly Balance of Planning Period FTR Auction, and the effective periods for the volume.

**Table 12-5 Monthly Balance of Planning Period FTR Auction buy-bid, bid and cleared volume (MW per period): January through March 2012 (See 2011 SOM, Table 12-12)**

Monthly Auction	MW Type	Current Month	Second Month	Third Month	Q1	Q2	Q3	Q4	Total
Jan-12	Bid	649,775	210,717	168,284				211,578	1,240,355
	Cleared	110,546	15,316	8,624				13,537	148,024
Feb-12	Bid	651,268	240,292	189,159				153,622	1,234,341
	Cleared	103,278	20,608	15,634				10,307	149,827
Mar-12	Bid	570,266	266,873	208,586				80,482	1,126,207
	Cleared	117,447	22,710	16,217				5,400	161,773

On January 1, 2012 the Duke Energy Ohio and Kentucky (DEOK) zone was integrated into PJM. DEOK zonal customers were eligible to participate in a direct allocation of FTRs effective from January 1, 2012 through May 31, 2012. For a transitional period, those customers that receive, and pay for, firm transmission service that sources or sinks in the newly integrated PJM control zone may elect to receive a direct allocation of FTRs instead of an allocation of ARR.

Table 12-6 lists the volume of directly allocated FTRs requested and granted for the DEOK control zone. This FTR volume is not included in the monthly data above. In the DEOK zone, 5,396 MW of FTRs were requested and 4,616 MW (86 percent) cleared. These FTRs are effective only from the date of integration to the end of the current planning period, January 1, 2012 through May 31, 2012.

**Table 12-6 Directly allocated FTR volume for DEOK Control Zone: January 1, 2012 through May 31, 2012<sup>9</sup> (New Table)**

Planning Period*	Bid and Requested Count	Bid and Requested Volume (MW)	Cleared Volume (MW)	Cleared Volume (%)	Uncleared Volume (MW)	Uncleared Volume (%)
2011/2012	519	5,396	4,616	86%	781	14%

\*Effective January 1, 2012 through May 31, 2012

Figure 12-1 shows the cleared auction volume as a percent of the total FTR cleared volume by calendar months for June 2004 through March 2012. FTR

<sup>9</sup> The volume data presented in Table 12-6 are not included in the monthly FTR ownership, volume or revenue data.

volume is broken into the calendar month that it is effective, with Long Term and Annual FTR auction volume contributing a constant amount to each calendar month in its effective planning period.

**Figure 12-1 Cleared auction volume (MW) as a percent of total FTR cleared volume by calendar month: June 2004 through March 2012 (See 2011 SOM, Figure 12-2)**

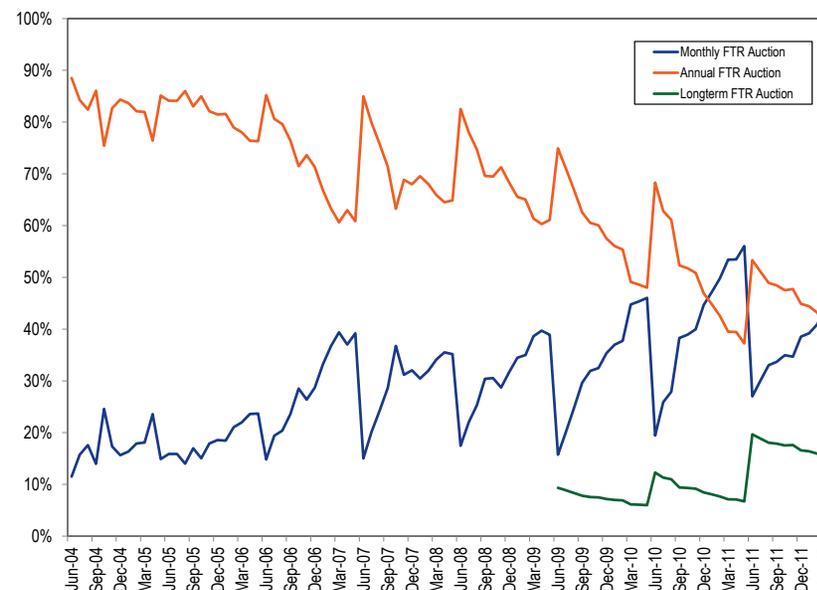


Table 12-7 provides the Secondary bilateral FTR market volume for the entire 2010 to 2011 planning period and the first ten months of the 2011 to 2012 planning period.

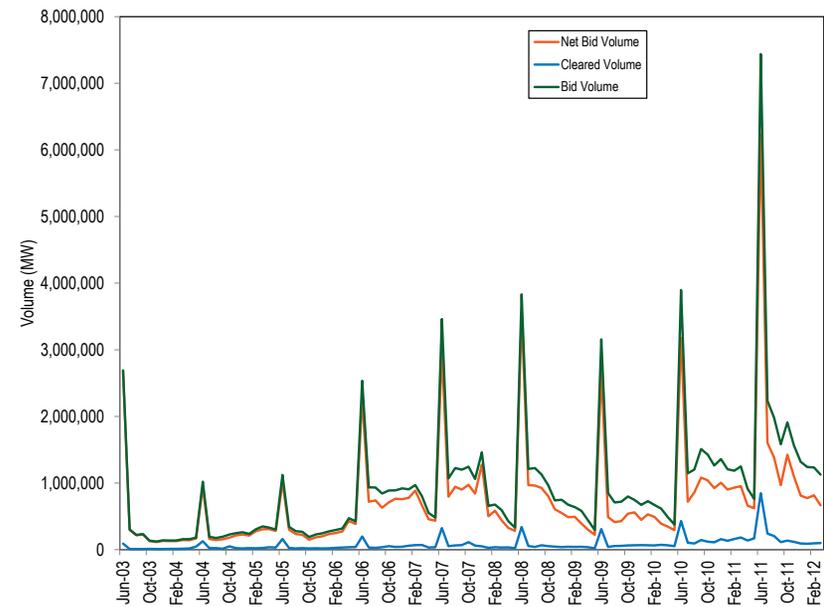
Table 12-7 Secondary bilateral FTR market volume: Planning periods 2010 to 2011 and 2011 to 2012<sup>10</sup> (See 2011 SOM, Table 12-13)

Planning Period	Hedge Type	Class Type	Volume (MW)
2010/2011	Obligation	24-Hour	1,687
		On Peak	10,035
		Off Peak	12,313
		Total	24,034
		Option	24-Hour
		On Peak	0
		Off Peak	0
		Total	20
2011/2012*	Obligation	24-Hour	216
		On Peak	11,916
		Off Peak	4,228
		Total	16,360
		Option	24-Hour
		On Peak	8,965
		Off Peak	6,330
		Total	15,296

\* Shows ten months ended 31-Mar-2012

Figure 12-2 shows the historic FTR bid, cleared and net bid volume from June 2003 through December 2011 for Long Term, Annual and Monthly Balance of Planning Period Auctions. Cleared volume represents the volume of FTRs buy and sell offers that were accepted. The net bid volume includes the total buy, sell and self-scheduled offers in a given auction, counting sell offers as a negative volume. The bid volume is the total of all bid and self-scheduled offers in a given auction whether or not they cleared, excluding sell offers.

Figure 12-2 Long Term, Annual and Monthly FTR Auction bid and cleared volume: June 2003 through March 2012<sup>11</sup> (See 2011 SOM, Figure 12-3)



## Price

The weighted-average buy-bid FTR price in the Monthly Balance of Planning Period FTR Auctions for the first ten months of the 2011 to 2012 planning period was \$0.10, down from \$0.13 per MW in the first ten months of the 2010 to 2011 planning period.

Table 12-8 shows the weighted-average cleared buy-bid price in the Monthly Balance of Planning Period FTR Auctions by bidding period for January 2011 through December 2011.

<sup>10</sup> The 2011 to 2012 planning period covers bilateral FTRs that are effective for any time between June 1, 2011 through March 31, 2012, which originally had been purchased in a Long Term FTR Auction, Annual FTR Auction or Monthly Balance of Planning Period FTR Auction.

<sup>11</sup> The previous 3<sup>rd</sup> Quarter *State of the Market Report* did not contain volume data for Long Term FTR Auctions.

**Table 12-8 Monthly Balance of Planning Period FTR Auction cleared, weighted-average, buy-bid price per period (Dollars per MW): January through March 2012 (See 2011 SOM, Table 12-16)**

Monthly Auction	Current Month	Second Month	Third Month	Q1	Q2	Q3	Q4	Total
Jan-12	\$0.10	\$0.15	\$0.04				\$0.13	\$0.11
Feb-12	\$0.11	\$0.09	\$0.11				\$0.16	\$0.12
Mar-12	\$0.06	\$0.13	\$0.11				\$0.01	\$0.07

## Revenue

### Monthly Balance of Planning Period FTR Auction Revenue

The Monthly Balance of Planning Period FTR Auctions generated \$24.8 million in net revenue for all FTRs for the first ten months of the 2011 to 2012 planning period, up from \$22.4 million for the same time period in the 2010 to 2011 planning period.

Table 12-9 shows Monthly Balance of Planning Period FTR Auction revenue data by trade type, hedge type and class type for January through March 2012.

**Table 12-9 Monthly Balance of Planning Period FTR Auction revenue: January through March 2012 (See 2011 SOM, Table 12-20)**

Monthly Auction	Hedge Type	Trade Type	Class Type			
			24-Hour	On Peak	Off Peak	All
Jan-12	Obligations	Buy bids	\$524,730	\$3,220,163	\$2,694,130	\$6,439,023
		Sell offers	\$273,645	\$2,111,566	\$1,753,975	\$4,139,186
	Options	Buy bids	\$47,640	\$250,066	\$185,282	\$482,989
		Sell offers	\$3,520	\$1,158,143	\$803,885	\$1,965,548
Feb-12	Obligations	Buy bids	\$738,466	\$3,603,048	\$2,051,190	\$6,392,705
		Sell offers	\$157,900	\$3,038,310	\$1,577,337	\$4,773,546
	Options	Buy bids	\$0	\$289,791	\$229,111	\$518,902
		Sell offers	\$0	\$648,876	\$439,093	\$1,087,969
Mar-12	Obligations	Buy bids	\$52,294	\$2,878,603	\$1,411,063	\$4,341,960
		Sell offers	\$205,654	\$1,869,094	\$670,898	\$2,745,647
	Options	Buy bids	\$9,004	\$170,196	\$109,643	\$288,843
		Sell offers	\$0	\$613,978	\$496,981	\$1,110,960
2010/2011*	Obligations	Buy bids	\$6,072,755	\$77,744,027	\$59,368,920	\$143,185,702
		Sell offers	\$7,528,597	\$41,402,197	\$35,920,274	\$84,851,069
	Options	Buy bids	\$37,176	\$3,175,707	\$2,322,130	\$5,535,014
		Sell offers	\$1,880,624	\$21,872,336	\$15,718,885	\$39,471,845
2011/2012**	Obligations	Buy bids	\$10,794,948	\$66,219,326	\$40,265,486	\$117,279,760
		Sell offers	\$4,412,095	\$41,804,004	\$25,072,374	\$71,288,473
	Options	Buy bids	\$117,492	\$4,339,293	\$3,129,241	\$7,586,026
		Sell offers	\$9,737	\$17,588,565	\$11,226,300	\$28,824,602
Total			\$6,490,608	\$11,166,050	\$7,096,053	\$24,752,711

\* Shows twelve Months for 2010/2011; \*\* Shows ten months ended 31-Mar-2012 for 2011/2012

Figure 12-3 summarizes total revenue associated with all FTRs, regardless of source, to the FTR sinks that produced the largest positive and negative revenue in the Monthly Balance of Planning Period FTR Auctions during the first ten months of the 2011 to 2012 planning period.

Figure 12-3 Ten largest positive and negative revenue producing FTR sinks purchased in the Monthly Balance of Planning Period FTR Auctions: Planning period 2011 to 2012 through March 31, 2012 (See 2011 SOM, Figure 12-11)

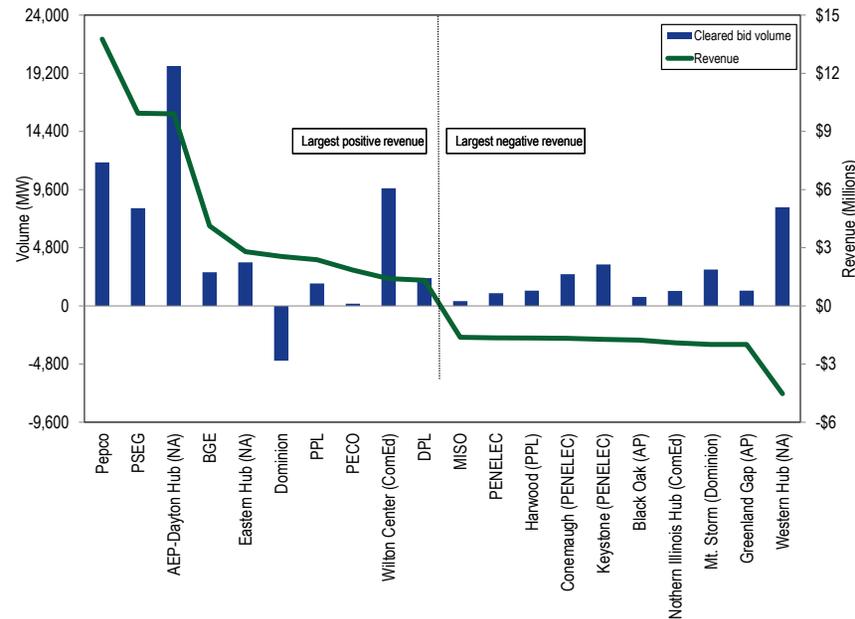
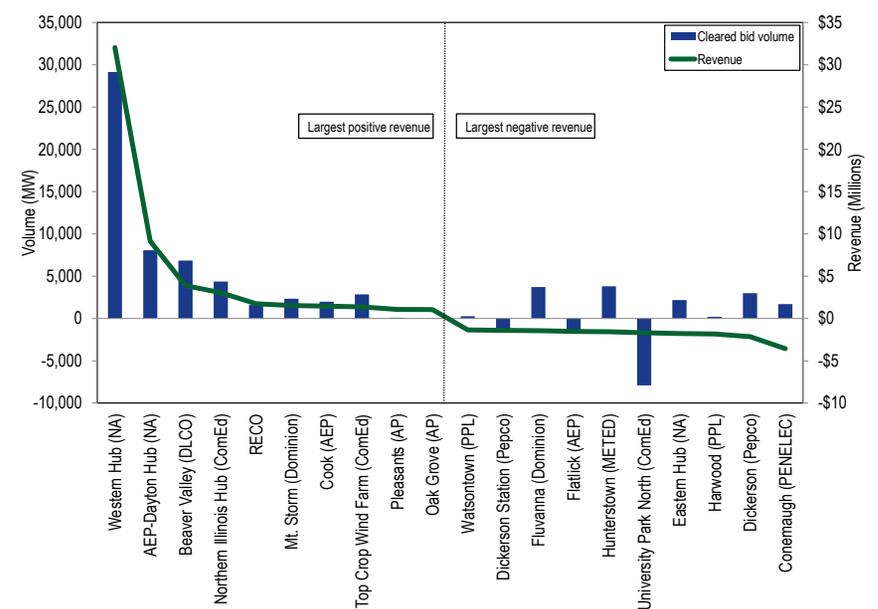


Figure 12-4 summarizes total revenue associated with all FTRs, regardless of sink, from the FTR sources that produced the largest positive and negative revenue from the Monthly Balance of Planning Period FTR Auctions during the first ten months of the 2011 to 2012 planning period.

Figure 12-4 Ten largest positive and negative revenue producing FTR sources purchased in the Monthly Balance of Planning Period FTR Auctions: Planning period 2011 to 2012 through March 31, 2012 (See 2011 SOM, Figure 12-12)



## Revenue Adequacy

Congestion revenue is created in an LMP system when all loads pay and all generators receive their respective LMPs. When load pays more than the amount that generators receive, excluding losses, positive congestion revenue exists and is available to cover the target allocations of FTR holders. The load MW exceed the generation MW in constrained areas because part of the load is served by imports using transmission capability into the constrained areas. That is why load, which pays for the transmission capability, receives ARR to offset congestion in the constrained areas. Generating units that are the source of such imports are paid the price at their own bus which does not reflect congestion in constrained areas. Generation in constrained areas receives the congestion price and all load in constrained areas pays the congestion price. As a result, load congestion payments are greater than the congestion-related

payments to generation.<sup>12</sup> In general, FTR revenue adequacy exists when the sum of congestion credits is as great as the sum of congestion across the positively valued FTRs.

Revenue adequacy must be distinguished from the adequacy of FTRs as an offset against congestion. Revenue adequacy is a narrower concept that compares the revenues available to cover congestion to the target allocations across specific paths for which FTRs were available and purchased. The adequacy of FTRs as an offset against congestion compares FTR revenues to total congestion on the system as a measure of the extent to which FTRs offset the actual, total congestion across all paths paid by market participants, regardless of the availability or purchase of FTRs.

FTRs are paid each month from congestion revenues, both day ahead and balancing, FTR auction revenues and excess revenues carried forward from prior months and distributed back from later months. At the end of a planning period, if some months remain not fully funded, an uplift charge is collected from any FTR market participants that hold FTRs during the planning period based on their pro rata share of total net positive FTR target allocations, excluding any charge to FTR holders with a net negative FTR position for the planning year. For the 2010 to 2011 planning period, FTRs were not fully funded and thus an uplift charge was collected.

FTR revenues are primarily comprised of hourly congestion revenue, from the day ahead and balancing markets, and net negative congestion. FTR revenues also include ARR excess which is the difference between ARR target allocations and FTR auction revenues. Competing use revenues are based on the Unscheduled Transmission Service Agreement between the New York Independent System Operator (NYISO) and PJM. This agreement sets forth the terms and conditions under which compensation is provided for transmission service in connection with transactions not scheduled directly or otherwise prearranged between NYISO and PJM. Congestion revenues appearing in Table 12-10 include both congestion charges associated with PJM facilities and

<sup>12</sup> For an illustration of how total congestion revenue is generated and how FTR target allocations and congestion receipts are determined, see Table G-1, "Congestion revenue, FTR target allocations and FTR congestion credits: Illustration," *MMU Technical Reference for PJM Markets*, at "Financial Transmission and Auction Revenue Rights."

those associated with reciprocal, coordinated flowgates in the MISO whose operating limits are respected by PJM.<sup>13</sup> The operating protocol governing the wheeling contracts between Public Service Electric and Gas Company (PSE&G) and Consolidated Edison Company of New York (Con Edison) resulted in a reimbursement of \$0.2 million in congestion charges to Con Edison in the 2011 to 2012 planning period through March 31, 2012.<sup>14,15</sup>

For the current planning period, no charges have been made to the Day Ahead Operating Reserves. These charges may be necessary if the hourly congestion revenues are negative at the end of the month. If this happens, charges are made and allocated as additional Day-Ahead Operating Reserves charges during the month. This means that within an hour, the congestion dollars collected from load were less than the congestion dollars paid to generation. This is accounted for as a charge, which is allocated to Day-Ahead Operating Reserves. This type of adjustment is infrequent, occurring only three times in the 2010 to 2011 planning period.

FTRs were paid at 83.2 percent of the target allocation level for the first ten months of the 2011 to 2012 planning period. Congestion revenues are allocated to FTR holders based on FTR target allocations. PJM collected \$705.9 million of FTR revenues during the first ten months of the 2011 to 2012 planning period, and \$1,430.7 million during the 2010 to 2011 planning period. For the first ten months of the 2011 to 2012 planning period, the top sink and top source with the highest positive FTR target allocations were AEP without Mon Power and the Western Hub. Similarly, the top sink and top source with the largest negative FTR target allocations were AEP without Mon Power and Kammer.

Table 12-10 presents the PJM FTR revenue detail for all of the 2010 to 2011 planning period and the first ten months of the 2011 to 2012 planning period.

<sup>13</sup> See "Joint Operating Agreement between the Midwest Independent System Operator, Inc. and PJM Interconnection, L.L.C." (December 11, 2008), Section 6.1 <<http://www.pjm.com/~Media/documents/agreements/joa-complete.ashx>>. (Accessed March 13, 2012)

<sup>14</sup> 111 FERC ¶ 61,228 (2005).

<sup>15</sup> See the *2010 State of the Market Report for PJM*, Volume II, Section 4, "Interchange Transactions," at "Con Edison and PSE&G Wheeling Contracts" and Appendix E, "Interchange Transactions" at Table D-2, "Con Edison and PSE&G wheel settlements data: Calendar year 2010."

**Table 12-10 Total annual PJM FTR revenue detail (Dollars (Millions)): Planning periods 2010 to 2011 and 2011 to 2012 (See 2011 SOM, Table 12-21)**

Accounting Element	2010/2011	2011/2012*
<b>ARR information</b>		
ARR target allocations	\$1,031.0	\$819.1
FTR auction revenue	\$1,097.8	\$909.8
ARR excess	\$66.9	\$90.7
<b>FTR targets</b>		
FTR target allocations	\$1,687.6	\$849.9
<b>Adjustments:</b>		
Adjustments to FTR target allocations	(\$1.8)	(\$1.0)
Total FTR targets	\$1,685.8	\$848.9
<b>FTR revenues</b>		
ARR excess	\$66.9	\$90.7
Competing uses	\$0.1	\$0.1
<b>Congestion</b>		
Net Negative Congestion (enter as negative)	(\$59.5)	(\$49.8)
Hourly congestion revenue	\$1,464.9	\$597.0
Midwest ISO M2M (credit to PJM minus credit to Midwest ISO)	(\$47.8)	(\$71.2)
Consolidated Edison Company of New York and Public Service Electric and Gas Company Wheel (CEPSW) congestion credit to Con Edison (enter as negative)	(0.8)	(\$0.2)
<b>Adjustments:</b>		
Excess revenues carried forward into future months	\$0.0	\$0.0
Excess revenues distributed back to previous months	\$4.6	\$0.0
Other adjustments to FTR revenues	\$2.3	(\$0.3)
<b>Total FTR revenues</b>	<b>\$1,430.7</b>	<b>\$705.9</b>
Excess revenues distributed to other months	(\$4.6)	\$0.0
Net Negative Congestion charged to DA Operating Reserves	\$7.3	\$0.0
Excess revenues distributed to CEPSW for end-of-year distribution	\$0.0	\$0.0
Excess revenues distributed to FTR holders	\$0.0	\$0.0
<b>Total FTR congestion credits</b>	<b>\$1,433.4</b>	<b>\$705.9</b>
Total congestion credits on bill (includes CEPSW and end-of-year distribution)	\$1,434.2	\$706.2
<b>Remaining deficiency</b>	<b>\$252.4</b>	<b>\$142.9</b>

\* Shows ten months ended 31-Mar-12

FTR target allocations are based on hourly prices in the Day-Ahead Energy Market for the respective FTR paths and equal the revenue required to compensate FTR holders fully for congestion on those specific paths. FTR credits are paid to FTR holders and, depending on market conditions, can be less than the target allocations. Table 12-11 lists the FTR revenues, target allocations, credits, payout ratios, congestion credit deficiencies and excess congestion charges by month. At the end of the 12-month planning period,

excess congestion charges are used to offset any monthly congestion credit deficiencies.

The total row in Table 12-11 is not the simple sum of each of the monthly rows because the monthly rows may include excess revenues carried forward from prior months and excess revenues distributed back from later months.

**Table 12-11 Monthly FTR accounting summary (Dollars (Millions)): Planning periods 2010 to 2011 and 2011 to 2012 (See 2011 SOM, Table 12-22)**

Period	FTR Revenues (with adjustments)	FTR Target Allocations	FTR Payout Ratio (original)	FTR Credits (with adjustments)	FTR Payout Ratio (with adjustments)	Monthly Credits Excess/Deficiency (with adjustments)
Jun-11	\$134.6	\$154.6	86.9%	\$134.6	87.1%	(\$20.0)
Jul-11	\$178.2	\$181.4	97.8%	\$178.2	98.3%	(\$3.1)
Aug-11	\$70.6	\$73.4	96.2%	\$70.6	96.2%	(\$2.8)
Sep-11	\$69.4	\$88.3	78.6%	\$69.4	78.7%	(\$18.8)
Oct-11	\$37.5	\$52.3	73.0%	\$37.5	71.7%	(\$14.8)
Nov-11	\$32.8	\$57.1	57.4%	\$32.8	57.4%	(\$24.4)
Dec-11	\$46.4	\$64.8	71.6%	\$46.4	71.6%	(\$18.4)
Jan-12	\$49.4	\$61.8	79.8%	\$49.4	80.0%	(\$12.4)
Feb-12	\$38.4	\$57.4	66.8%	\$38.4	66.8%	(\$19.1)
Mar-12	\$48.7	\$57.8	84.2%	\$48.7	84.2%	(\$9.2)
Summary for Planning Period 2011 to 2012 through March 31, 2012						
Total	\$705.9	\$848.9		\$705.9	83.2%	(\$142.9)

Figure 12-5 shows the original FTR payout ratio with adjustments by month, excluding excess revenue distribution, for January 2004 through December 2011. The months with payout ratios above 100 percent are overfunded and the months with payout ratios under 100 percent are underfunded. Figure 12-5 also shows the payout ratio after distributing excess revenue across months within the planning period. If there are excess revenues in a given month, the excess is distributed to other months within the planning period that were revenue deficient. The payout ratios for months in the 2011 to 2012 planning period may change if excess revenue is collected in the remainder of the planning period.

Figure 12-5 FTR payout ratio with adjustments by month, excluding and including excess revenue distribution: January 2004 to March 2012 (See 2011 SOM, Figure 12-13)

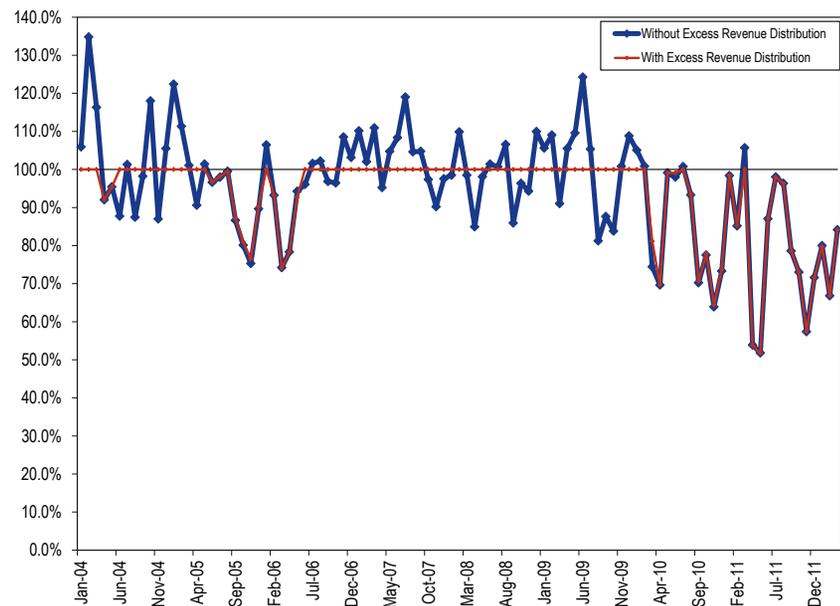


Table 12-12 shows the FTR payout ratio by planning period from the 2003 to 2004 planning period forward.

Table 12-12 FTR payout ratio by planning period (See 2011 SOM, Table 12-23)

Planning Period	FTR Payout Ratio
2003/2004	97.7%
2004/2005	100.0%
2005/2006	90.7%
2006/2007	100.0%
2007/2008	100.0%
2008/2009	100.0%
2009/2010	96.9%
2010/2011	85.0%
2011/2012*	83.2%

\* through March 31, 2012

Figure 12-6 shows the ten largest positive and negative FTR target allocations, summed by sink, for the 2011 to 2012 planning period through March 31, 2012.

Figure 12-6 Ten largest positive and negative FTR target allocations summed by sink: Planning period 2011 to 2012 through March 31, 2012 (See 2011 SOM, Figure 12-14)

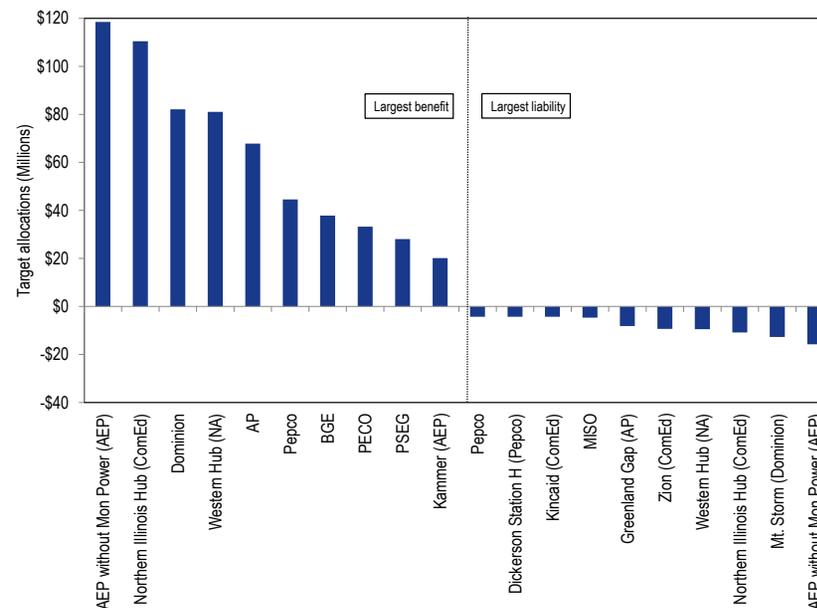


Figure 12-7 shows the ten largest positive and negative FTR target allocations, summed by source, for the 2011 to 2012 planning period through March 31, 2012.

Figure 12-7 Ten largest positive and negative FTR target allocations summed by source: Planning period 2011 to 2012 through March 31, 2012 (See 2011 SOM, Figure 12-15)

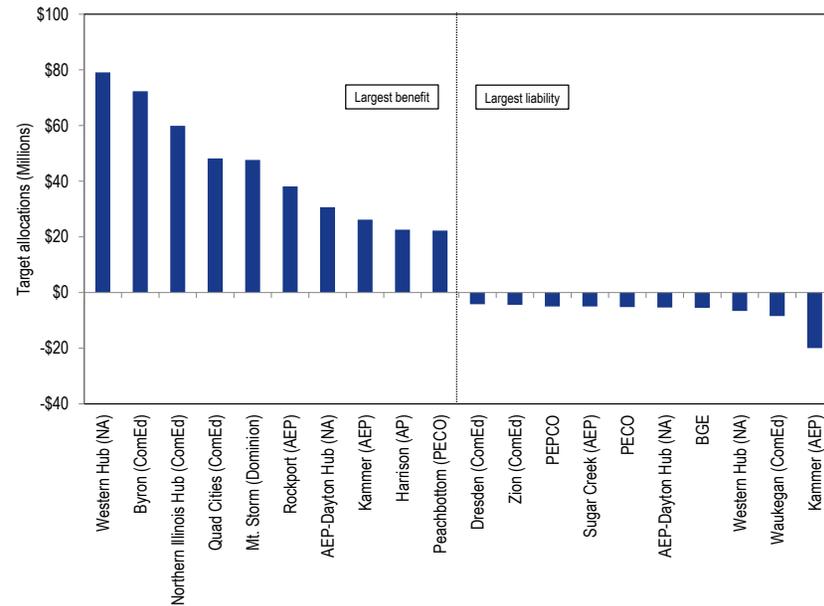
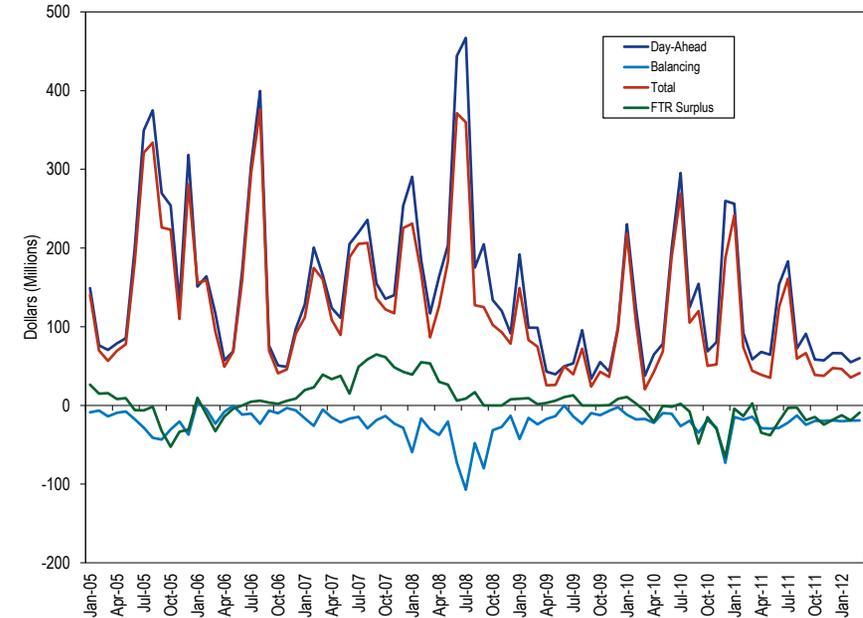


Figure 12-8 shows the FTR surplus, collected day-ahead, balancing and total congestion payments from January 2005 through March 2012.

Figure 12-8 FTR Surplus and the collected Day-Ahead, Balancing and Total congestion: January 2005 through March 2012 (New Figure)



## Profitability

FTR profitability is the difference between the revenue received for an FTR and the cost of the FTR. For a prevailing flow FTR, the FTR credits are the revenue that an FTR holder receives, after adjusting by the FTR payout ratio for the planning period, and the auction price is the cost. For a counter flow FTR, the auction price is the revenue that an FTR holder receives and the FTR credits are the cost to the FTR holder. The cost of self scheduled FTRs is zero. ARR holders that self schedule FTRs purchase the FTRs in the Annual FTR Auction, but ARR holders receive offsetting ARR credits that equal the purchase price of the FTRs Table 12-13 lists FTR profits by organization type and FTR direction for the 2011 calendar year. FTR profits are the sum of the daily FTR credits, including self scheduled FTRs, minus the daily FTR auction costs for each FTR held by an organization. The FTR target allocation is equal

to the product of the FTR MW and congestion price differences between sink and source in the Day-Ahead Energy Market. The FTR credits do not include after the fact adjustments. The daily FTR auction costs are the product of the FTR MW and the auction price divided by the time period of the FTR in days, but self scheduled FTRs have zero cost. FTRs were not profitable overall, with -\$0.8 million in profits for physical entities, of which \$40.8 million was from self scheduled FTRs, and -\$11.3 million for financial entities.

Table 12-13 shows FTR profits by organization from January through March 2012.

**Table 12-13 FTR profits by organization type and FTR direction: January through March 2012 (See 2011 SOM, Table 12-24)**

Organization Type	FTR Direction				All
	Prevailing Flow	Self Scheduled Prevailing Flow	Counter Flow	Self Scheduled Counter Flow	
Physical	(\$66,276,740)	\$40,787,177	\$24,660,450	\$19,487	(\$809,625)
Financial	(\$61,989,880)	NA	\$50,667,748	NA	(\$11,322,132)
Total	(\$128,266,619)	\$40,787,177	\$75,328,198	\$19,487	(\$12,131,757)

Table 12-14 lists the monthly FTR profits in the 2011 calendar year by organization type.

**Table 12-14 Monthly FTR profits by organization type: January through March 2012 (See 2011 SOM, Table 12-25)**

Month	Organization Type			Total
	Physical	Self Scheduled FTRs	Financial	
Jan	(\$15,741,321)	\$14,779,795	(\$1,887,863)	(\$2,849,389)
Feb	(\$14,797,921)	\$13,247,875	(\$795,248)	(\$2,345,293)
Mar	(\$11,077,047)	\$12,778,994	(\$8,639,021)	(\$6,937,074)
Total	(\$41,616,289)	\$40,806,664	(\$11,322,132)	(12,131,757)

## Auction Revenue Rights

ARRs are financial instruments that entitle the holder to receive revenues or to pay charges based on nodal price differences determined in the Annual FTR Auction.<sup>16</sup> These price differences are based on the bid prices of participants in the Annual FTR Auction which relate to their expectations about the level of congestion in the Day-Ahead Energy Market. The auction clears the set of feasible FTR bids which produce the highest net revenue. In other words, ARR revenues are a function of FTR auction participants' expectations of locational congestion price differences in the Day-Ahead Energy Market.

ARRs are available only as obligations (not options) and 24-hour products. ARR are available to the nearest 0.1 MW. The ARR target allocation is equal to the product of the ARR MW and the price difference between sink and source from the Annual FTR Auction. An ARR value can be positive or negative depending on the price difference between sink and source, with a negative difference resulting in a liability for the holder. The ARR target allocation represents the revenue that an ARR holder should receive. ARR credits can be positive or negative and can range from zero to the ARR target allocation. If the combined net revenues from the Long Term, Annual and Monthly Balance of Planning Period FTR Auctions are greater than the sum of all ARR target allocations, ARRs are fully funded. If these revenues are less than the sum of all ARR target allocations, available revenue is proportionally allocated among all ARR holders.

When a new control zone is integrated into PJM, firm transmission customers in that control zone may choose to receive either an FTR allocation or an ARR allocation before the start of the Annual FTR Auction for two consecutive planning periods following their integration date. After the transition period, such participants receive ARRs from the annual allocation process and are not eligible for directly allocated FTRs. Network Service Users and Firm Transmission Customers cannot choose to receive both an FTR allocation and an ARR allocation. This selection applies to the participant's entire portfolio of ARRs that sink into the new control zone. During this transitional period,

<sup>16</sup> These nodal prices are a function of the market participants' annual FTR bids and binding transmission constraints. An optimization algorithm selects the set of feasible FTR bids that produces the most net revenue.

the directly allocated FTRs are reallocated as load shifts between LSEs within the transmission zone.

## Market Structure

ARRs have been available to network service and firm, point-to-point transmission service customers since June 1, 2003, when the annual ARR allocation was first implemented for the 2003 to 2004 planning period. The initial allocation covered the Mid-Atlantic Region and the AP Control Zone. For the 2006 to 2007 planning period, the choice of ARRs or direct allocation FTRs was available to eligible market participants in the AEP, DAY, DLCO and Dominion control zones. For the 2007 to 2008 and subsequent planning periods through the 2010 to 2011 planning period, all eligible market participants were allocated ARRs. For the 2011 to 2012 planning period, the choice of ARRs or direct allocation FTRs was available to eligible market participants in the ATSI control zone.

## ARR Reassignment for Retail Load Switching

Current PJM rules provide that when load switches between LSEs during the planning period, a proportional share of associated ARRs that sink into a given control or load aggregation zone is automatically reassigned to follow that load.<sup>17</sup> ARR reassignment occurs daily only if the LSE losing load has ARRs with a net positive economic value to that control zone. An LSE gaining load in the same control zone is allocated a proportional share of positively valued ARRs within the control zone based on the shifted load. ARRs are reassigned to the nearest 0.001 MW and any MW of load may be reassigned multiple times over a planning period. Residual ARRs are also subject to the rules of ARR reassignment. This practice supports competition by ensuring that the offset to congestion follows load, thereby removing a barrier to competition among LSEs and, by ensuring that only ARRs with a positive value are reassigned, preventing an LSE from assigning poor ARR choices to other LSEs. However, when ARRs are self scheduled as FTRs, these underlying self scheduled FTRs do not follow load that shifts while the ARRs do follow

load that shifts, and this may diminish the value of the ARR for the receiving LSE compared to the total value held by the original ARR holder.

There were 41,069 MW of ARRs associated with approximately \$753,500 of revenue that were reassigned in the first ten months of the 2011 to 2012 planning period. There were 56,296 MW of ARRs associated with approximately \$1,043,700 of revenue that were reassigned for the full twelve months of the 2010 to 2011 planning period.

Table 12-15 summarizes ARR MW and associated revenue automatically reassigned for network load in each control zone where changes occurred between June 2010 and March 2012.

**Table 12-15 ARRs and ARR revenue automatically reassigned for network load changes by control zone: June 1, 2010, through March 31, 2012 (See 2011 SOM, Table 12-29)**

Control Zone	ARRs Reassigned (MW-day)		ARR Revenue Reassigned [Dollars (Thousands) per MW-day]	
	2010/2011 (12 months)	2011/2012 (10 months)*	2010/2011 (12 months)	2011/2012 (10 months)*
AECO	887	436	\$6.0	\$4.7
AEP	961	5,919	\$21.4	\$117.9
AP	4,992	1,401	\$481.1	\$319.4
ATSI	0	2,920	\$0.0	\$13.0
BGE	3,359	2,599	\$50.5	\$45.6
ComEd	3,064	3,215	\$60.2	\$58.0
DAY	193	382	\$0.6	\$0.6
DLCO	5,502	8,213	\$25.7	\$10.3
DPL	2,252	3,415	\$20.4	\$15.2
Dominion	0	1	\$0.0	\$0.0
JCPL	3,490	1,075	\$28.8	\$9.9
Met-Ed	3,947	1,178	\$51.9	\$20.7
PECO	12,284	1,751	\$89.2	\$21.7
PENELEC	3,745	1,042	\$53.5	\$21.0
PPL	5,734	3,339	\$74.4	\$37.6
PSEG	3,416	1,907	\$52.8	\$30.7
Pepco	2,470	2,277	\$27.3	\$27.2
RECO	143	57	\$0.1	\$0.0
Total	56,296	41,069	\$1,043.7	\$753.5

\* Through 31-Mar-12

<sup>17</sup> See PJM, "Manual 6: Financial Transmission Rights," Revision 12 (July 1, 2009), p. 28.

## Market Performance

### Revenue

As ARRs are allocated to qualifying customers rather than sold, there is no ARR revenue comparable to the revenue that results from the FTR auctions.

### Revenue Adequacy

As with FTRs, revenue adequacy for ARRs must be distinguished from the adequacy of ARRs as an offset to congestion. Revenue adequacy is a narrower concept that compares the revenues available to ARR holders to the value of ARRs as determined in the Annual FTR Auction. ARRs have been revenue adequate for every auction to date. Customers that self schedule ARRs as FTRs have the same revenue adequacy characteristics as all other FTRs.

The adequacy of ARRs as an offset to congestion compares ARR revenues to total congestion sinking in the participant's load zone as a measure of the extent to which ARRs offset market participants' actual, total congestion into their zone. Customers that self schedule ARRs as FTRs provide the same offset to congestion as all other FTRs.

ARR holders will receive \$947.3 million in credits from the Annual FTR Auction during the 2011 to 2012 planning period, with an average hourly ARR credit of \$1.05 per MW. During the comparable 2010 to 2011 planning period, ARR holders received \$1,028.8 million in ARR credits, with an average hourly ARR credit of \$1.15 per MW.

Table 12-16 lists ARR target allocations and net revenue sources from the Annual and Monthly Balance of Planning Period FTR Auctions for the 2010 to 2011 and the 2011 to 2012 (through March 31, 2012) planning periods.

**Table 12-16 ARR revenue adequacy (Dollars (Millions)): Planning periods 2010 to 2011 and 2011 to 2012 (See 2011 SOM, Table 12-33)**

	2010/2011	2011/2012
Total FTR auction net revenue	\$1,074.3	\$1,054.4
Annual FTR Auction net revenue	\$1,049.8	\$1,029.6
Monthly Balance of Planning Period FTR Auction net revenue*	\$24.5	\$24.8
ARR target allocations	\$1,028.8	\$947.3
ARR credits	\$1,028.8	\$947.3
Surplus auction revenue	\$45.5	\$107.1
ARR payout ratio	100%	100%
FTR payout ratio*	85.0%	83.2%

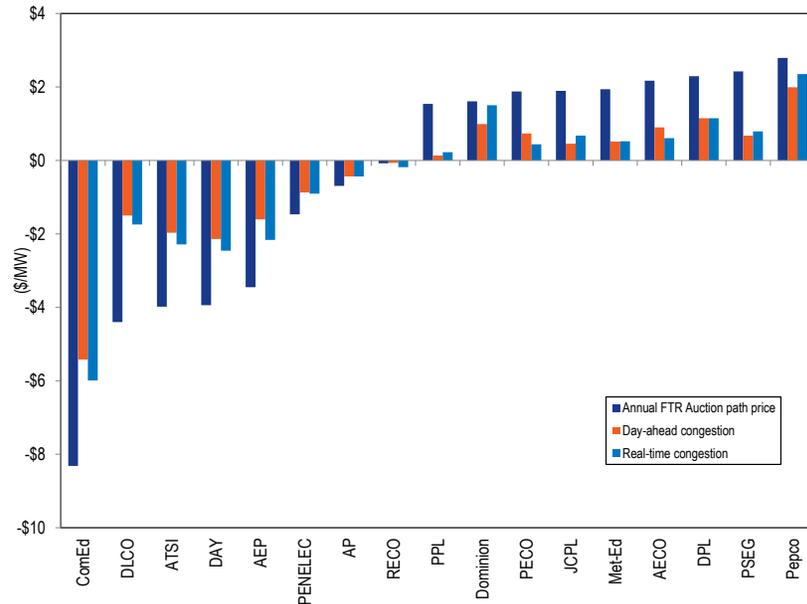
\* Shows twelve months for 2010/2011 and ten months ended 31-Mar-11 for 2011/2012

## ARR and FTR Revenue and Congestion

### FTR Prices and Zonal Price Differences

As an illustration of the relationship between FTRs and congestion, Figure 12-9 shows Annual FTR Auction prices and an approximate measure of day-ahead and real-time congestion for each PJM control zone for the 2011 to 2012 planning period through March 31, 2012. The day-ahead and real-time congestion are based on the difference between zonal congestion prices and Western Hub congestion prices.

Figure 12-9 Annual FTR Auction prices vs. average day-ahead and real-time congestion for all control zones relative to the Western Hub<sup>18</sup>: Planning period 2011 to 2012 through March 31, 2012 (See 2011 SOM, Figure 12-16)



### Effectiveness of ARR as an Offset to Congestion

One measure of the effectiveness of ARRs as an offset to congestion is a comparison of the revenue received by the holders of ARRs and the congestion paid by the holders of ARRs in both the Day-Ahead Energy Market and the Balancing Energy Market. The revenue which serves as an offset for ARR holders comes from the FTR auctions while the revenue for FTR holders is provided by the congestion payments from the Day-Ahead Energy Market and the balancing energy market. During the first ten months of the 2011 to 2012 planning period, the total revenues received by the holders of all ARRs and FTRs offset more than 100 percent of the total congestion costs within PJM.

<sup>18</sup> DEOK was integrated into PJM on January 1, 2012 so was not available in the 2011 to 2012 Annual FTR Auction and therefore is not included in Figure 12-9.

The comparison between the revenue received by ARR holders and the actual congestion experienced by these ARR holders in the Day-Ahead Energy Market and the balancing energy market is presented by control zone in Table 12-17. ARRs and self scheduled FTRs that sink at an aggregate are assigned to a control zone if applicable.<sup>19</sup> Total revenue equals the ARR credits and the FTR credits from ARRs which are self scheduled as FTRs. The ARR credits do not include the ARR credits for the portion of any ARR that was self scheduled as an FTR since ARR holders purchase self scheduled FTRs in the Annual FTR Auction and that revenue is then paid back to the ARR holders, netting the transaction to zero. ARR credits are calculated as the product of the ARR MW (excludes any self scheduled FTR MW) and the cleared price for the ARR path from the Annual FTR Auction.

FTR credits equal FTR target allocations adjusted by the FTR payout ratio. The FTR target allocation is equal to the product of the FTR MW and the congestion price differences between sink and source that occur in the Day-Ahead Energy Market. FTR credits are paid to FTR holders and may be less than the target allocation. The FTR payout ratio was 83.2 percent of the target allocation for the 2011 to 2012 planning period through March 31, 2012.

The “Congestion” column shows the amount of congestion in each control zone from the Day-Ahead Energy Market and the balancing energy market and includes only the congestion costs incurred by the organizations that hold ARRs or self scheduled FTRs. The last column shows the difference between the total revenue and the congestion for each ARR control zone sink.

<sup>19</sup> For Table 12-17 through Table 12-19, aggregates are separated into their individual bus components and each bus is assigned to a control zone. The “External” Control Zone includes all aggregate sinks that are external to PJM or buses that cannot otherwise be assigned to a specific control zone.

**Table 12-17 ARR and self scheduled FTR congestion offset (in millions) by control zone: Planning period 20101 to 2012 through March 31, 2012<sup>20</sup> (See 2011 SOM, Table 12-34)**

Control Zone	ARR Credits	Self-Scheduled FTR Credits	Total Revenue	Congestion	Total Revenue - Congestion Difference	Percent Hedged
AECO	\$10.2	\$0.0	\$10.2	\$25.5	(\$15.3)	40.0%
AEP	\$8.9	\$112.2	\$121.1	\$129.4	(\$8.3)	93.6%
APS	\$93.4	\$39.6	\$133.0	\$25.1	\$107.9	>100%
ATSI	\$12.3	\$0.0	\$12.3	(\$1.9)	\$14.2	>100%
BGE	\$37.9	\$2.3	\$40.2	\$30.7	\$9.5	>100%
ComEd	\$120.2	\$0.0	\$120.2	(\$207.0)	\$327.2	>100%
DAY	\$2.7	\$1.2	\$3.9	\$1.4	\$2.5	>100%
DEOK	\$0.0	\$0.0	\$0.0	\$0.5	(\$0.5)	7.3%
DLCO	\$3.5	\$0.0	\$3.5	\$8.4	(\$4.9)	42.1%
Dominion	\$7.3	\$71.1	\$78.4	\$18.0	\$60.4	>100%
DPL	\$14.2	\$1.7	\$15.9	\$30.2	(\$14.3)	52.7%
External	\$5.7	\$1.5	\$7.3	\$12.6	(\$5.4)	57.5%
JCPL	\$16.1	\$0.9	\$17.0	\$34.0	(\$17.0)	49.9%
Met-Ed	\$13.8	\$2.6	\$16.4	\$14.9	\$1.5	>100%
PECO	\$23.7	\$13.0	\$36.7	\$21.2	\$15.5	>100%
PENELEC	\$21.3	\$4.7	\$26.0	\$20.9	\$5.1	>100%
Pepco	\$44.3	\$4.3	\$48.7	\$71.3	(\$22.6)	68.3%
PPL	\$22.8	\$2.1	\$24.9	\$29.9	(\$5.0)	83.3%
PSEG	\$54.2	\$1.0	\$55.3	\$21.5	\$33.8	>100%
RECO	(\$0.6)	\$0.0	(\$0.6)	\$1.5	(\$2.1)	0.0%
Total	\$512.2	\$270.1	\$782.3	\$288.2	\$494.1	>100%

### Effectiveness of ARRs and FTRs as an Offset to Congestion

Table 12-18 compares the revenue for ARR and FTR holders and the congestion in both the Day-Ahead Energy Market and the balancing energy market for the 2011 to 2012 planning period through March 31, 2012. This compares the total offset provided by all ARRs and all FTRs to the total congestion costs within each control zone. ARRs and FTRs that sink at an aggregate or a bus are assigned to a control zone if applicable. ARR credits are calculated as the product of the ARR MW and the cleared price of the ARR path from the Annual FTR Auction. The “FTR Credits” column represents the total FTR target allocation for FTRs that sink in each control zone from the applicable FTRs from the Long Term FTR Auction, Annual FTR Auction, the Monthly Balance

<sup>20</sup> The “External” zone was labeled as “PJM” in previous State of the Market Reports. The name was changed to “External” to clarify that this component of congestion is accrued on energy flows between external buses and PJM interfaces.

of Planning Period FTR Auctions, and any FTRs that were self scheduled from ARRs, adjusted by the FTR payout ratio. The FTR target allocation is equal to the product of the FTR MW and congestion price differences between sink and source that occur in the Day-Ahead Energy Market. FTR credits are the product of the FTR target allocations and the FTR payout ratio. The FTR payout ratio was 83.2 percent of the target allocation for the 2011 to 2012 planning period through March 31, 2012. The “FTR Auction Revenue” column shows the amount paid for FTRs that sink in each control zone from the applicable FTRs from the Long Term FTR Auction, the Annual FTR Auction, the Monthly Balance of Planning Period FTR Auctions and any ARRs that were self scheduled as FTRs. ARR holders that self schedule FTRs purchased the FTRs in the Annual FTR Auction and that revenue was then paid back to those ARR holders through ARR credits on a monthly basis throughout the planning period, ultimately netting the transaction to zero. The total ARR and FTR hedge is the sum of the ARR credits and the FTR credits minus the FTR auction revenue. The “Congestion” column shows the total amount of congestion in the Day-Ahead Energy Market and the Balancing Energy Market in each control zone.<sup>21</sup> The last column shows the difference between the total ARR and FTR hedge and the congestion cost for each control zone.

<sup>21</sup> The total zonal congestion numbers were calculated as of March 2, 2012 and may change as a result of continued PJM billing updates. The total zonal congestion differs from the March 2, 2012 PJM total congestion by \$4.2 Million, or 0.3 percent (.003).

Table 12-18 ARR and FTR congestion offset (in millions) by control zone: Planning period 2011 to 2012 through March 31, 2012 (See 2011 SOM, Table 12-35)

Control Zone	ARR Credits	FTR Credits	FTR Auction Revenue	Total ARR and FTR Offset	Congestion	Total Offset - Congestion Difference	Percent Offset
AECO	\$10.2	\$10.2	\$18.4	\$2.0	\$18.9	(\$16.9)	10.7%
AEP	\$172.4	\$179.4	\$171.4	\$180.4	\$150.8	\$29.6	>100%
APS	\$173.4	\$68.0	\$127.2	\$114.1	\$73.5	\$40.6	>100%
ATSI	\$12.3	\$8.7	\$0.0	\$21.0	(\$3.4)	\$24.4	>100%
BGE	\$41.1	\$86.2	\$42.1	\$85.2	\$48.5	\$36.8	>100%
ComEd	\$133.9	\$107.9	\$88.5	\$153.4	\$197.1	(\$43.7)	77.8%
DAY	\$5.4	\$3.5	\$3.3	\$5.6	\$3.3	\$2.4	>100%
DEOK	\$0.1	\$3.2	\$0.0	\$3.3	\$0.1	\$3.3	>100%
DLCO	\$3.6	\$11.2	\$2.3	\$12.5	\$10.5	\$2.0	>100%
Dominion	\$167.2	\$86.4	\$166.0	\$87.6	\$75.0	\$12.7	>100%
DPL	\$15.6	\$25.3	\$27.7	\$13.2	\$19.5	(\$6.3)	67.6%
External	\$9.4	(\$1.7)	\$2.6	\$5.0	(\$53.9)	\$59.0	>100%
JCPL	\$18.0	\$18.8	\$35.2	\$1.6	\$25.6	(\$24.0)	6.2%
Met-Ed	\$19.0	\$13.6	\$28.7	\$3.9	\$2.8	\$1.1	>100%
PECO	\$36.5	\$41.9	\$36.5	\$42.0	\$14.7	\$27.3	>100%
PENELEC	\$29.2	\$50.7	\$73.3	\$6.6	\$38.4	(\$31.8)	17.1%
Pepco	\$52.6	\$89.5	\$144.9	(\$2.8)	\$56.4	(\$59.2)	0.0%
PPL	\$26.9	\$12.6	\$35.4	\$4.1	(\$3.1)	\$7.3	>100%
PSEG	\$56.6	\$27.2	\$105.4	(\$21.6)	\$11.3	(\$32.9)	0.0%
RECO	(\$0.6)	(\$3.1)	(\$11.1)	\$7.3	\$1.4	\$5.9	>100%
Total	\$982.9	\$839.6	\$1,097.8	\$724.8	\$687.3	\$37.4	>100%

Table 12-19 shows the total offset due to ARRs and FTRs for the entire 2010 to 2011 planning period and the first ten months of the 2011 to 2012 planning period.

Table 12-19 ARR and FTR congestion hedging (in millions): Planning periods 2010 to 2011 and 2011 to 2012 through March 31, 2012<sup>22</sup> (See 2011 SOM, Table 12-36)

Planning Period	ARR Credits	FTR Credits	FTR Auction Revenue	Total ARR and FTR Offset	Congestion	Total Offset - Congestion Difference	Percent Offset
2010/2011	\$1,029.3	\$1,431.9	\$1,097.8	\$1,363.3	\$1,401.9	(\$38.5)	97.3%
2011/2012*	\$982.9	\$839.6	\$1,097.8	\$724.8	\$687.3	\$37.4	>100%

\* Shows ten months ended 31-Mar-12

<sup>22</sup> The FTR credits do not include after-the-fact adjustments. For the 2011 to 2012 planning period, the ARR credits were the total credits allocated to all ARR holders for the first ten months (June 2011 through March 2012) of this planning period, and the FTR Auction Revenue includes the net revenue in the Monthly Balance of Planning Period FTR Auctions for the first ten months of this planning period and the portion of Annual FTR Auction revenue distributed to the first ten months.

