MIC Market Operations Report

January 8, 2014

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- Horizontal lines on some of the charts in this report represent average *plus (or minus)* 1 standard deviation of the series for the previous 36 months (aside from the FTR Payout chart, which is set at 85% pursuant to the recommendation of the MIC). They are clearly labeled in the legends.
- The levels represented by these horizontal lines are intended to trigger an explanation by PJM staff when an observation above (or below) the threshold level is registered.
- An observation above (or below) the threshold level does not necessarily imply an extraordinary circumstance, neither does an observation that fails to exceed the threshold level preclude an explanation.
- PJM staff always welcomes questions about any of the observations or data presented in these charts.

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- Pursuant to FERC Order in Docket No. ER13-481-000 amending sections 1.10.2 and 3.2.3 of Attachment K-Appendix to PJM's OATT, the cost allocation methodology for Day-ahead Operating Reserves was changed as of December 1, 2012.
- Accordingly;
  - Day-ahead Operating Reserve Credits for resources scheduled to provide Reactive Services or Transfer Interface Control are no longer included in the Day-ahead Operating Reserve charges and are instead allocated to real-time load in the applicable benefiting zones as Reactive Services Charges.
  - Day-ahead Operating Reserve Credits for units that cleared DA or run in RT by PJM to provide Black Start support are now allocated to Network Customers in applicable zones based on network service peak load ratio share (same method as regular Black Start Charges) rather than as Day-ahead or Balancing Operating Reserve Charges.
- The following two charts were revamped to reflect these recent changes. In effect, Day-Ahead OR charges are split into two components (recovered via a PJM-wide rate vs. recovered locally/zonally). No change was made in the way Balancing OR charges are presented.

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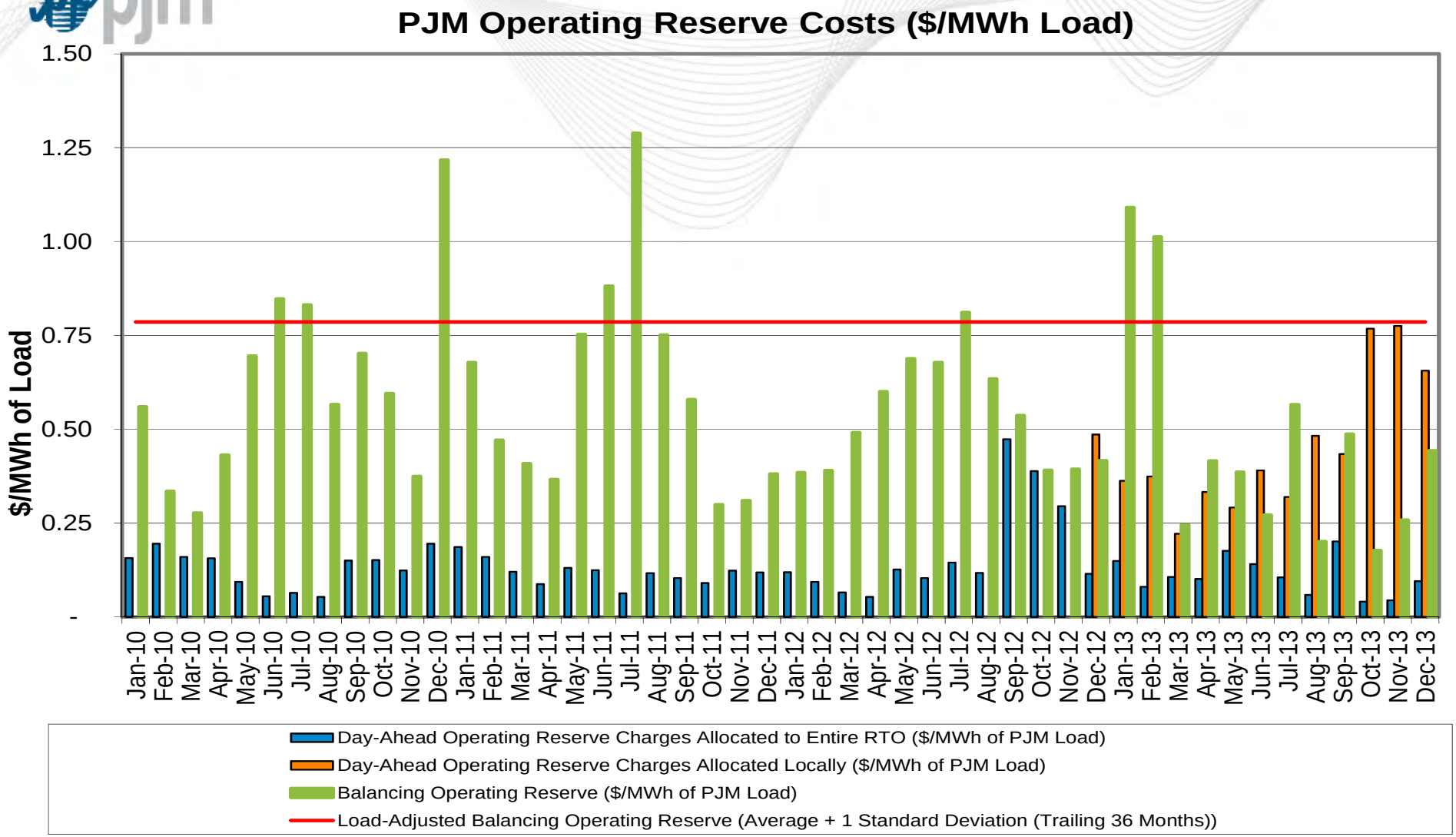
PJM Operating Reserve Costs



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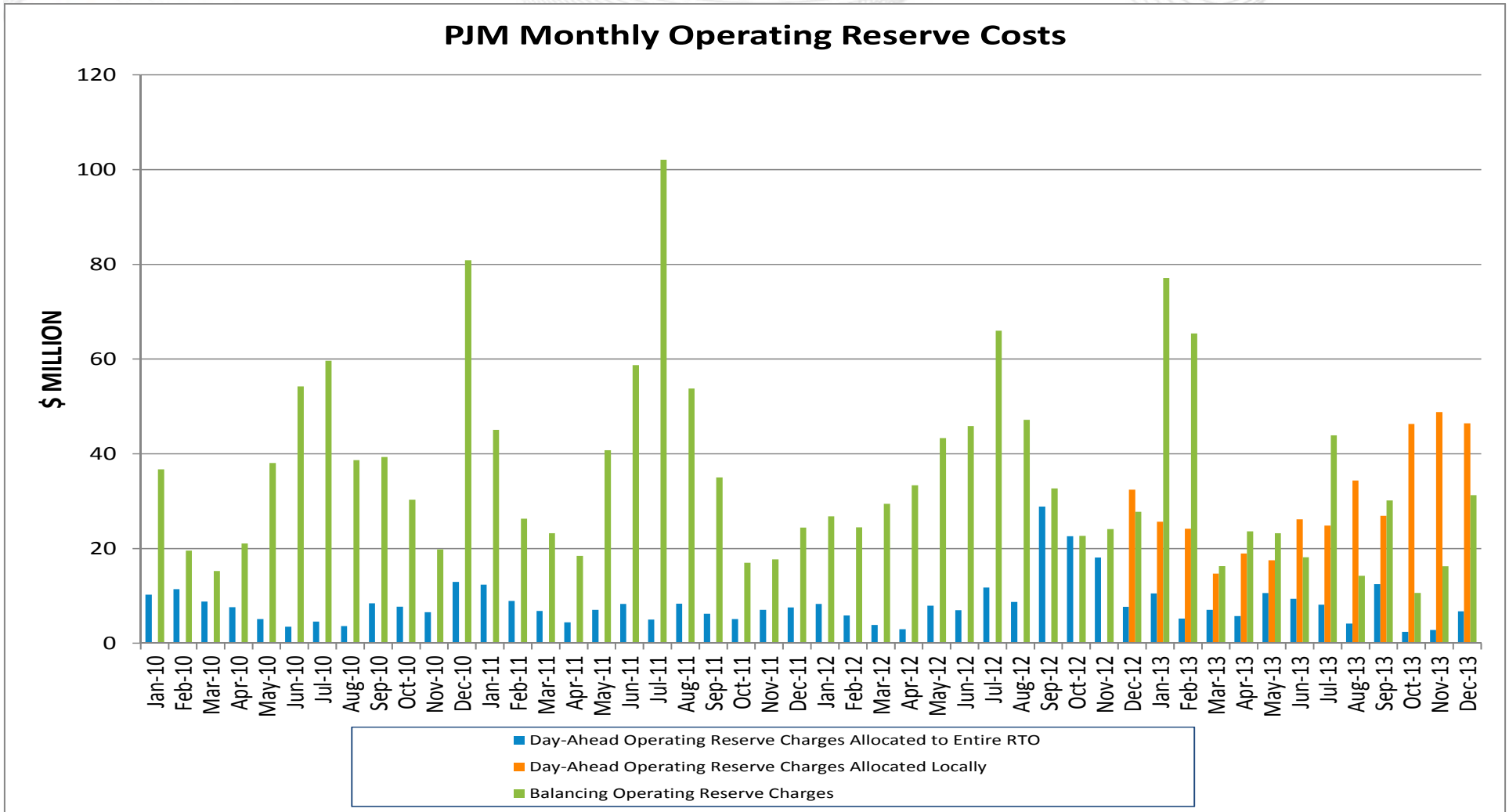
PJM Operating Reserve Costs



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- Beginning in December 2008, the daily Balancing Operating Reserves (BOR) rate was replaced with six different BOR rates: RTO BOR for Reliability Rate, RTO BOR for Deviations Rate, East BOR for Reliability Rate, East BOR for Deviations Rate, West BOR for Reliability Rate, West BOR for Deviations Rate.
- Reliability rates are charged to all real-time load and exports, whereas deviation rates, as before, are charged only to real-time deviations. RTO rates are charged to the whole footprint, whereas East and West rate adders are charged based on location.
- The table in the following slide shows average daily balancing operating reserves rates for each month since the implementation of the new regime.

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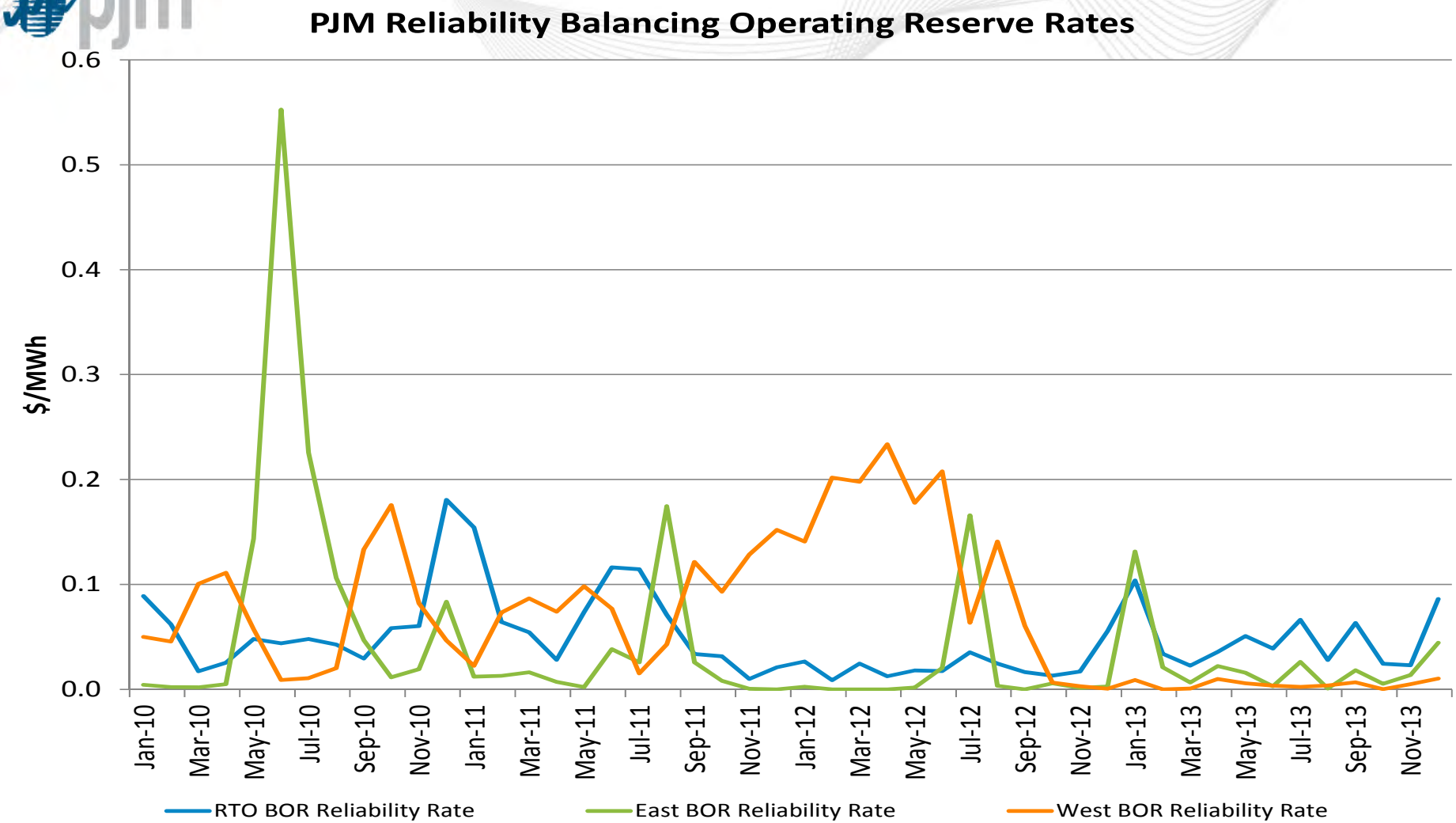
Balancing Operating Reserves



*Reliability rates are $/MWh of Real-Time Load plus Exports.

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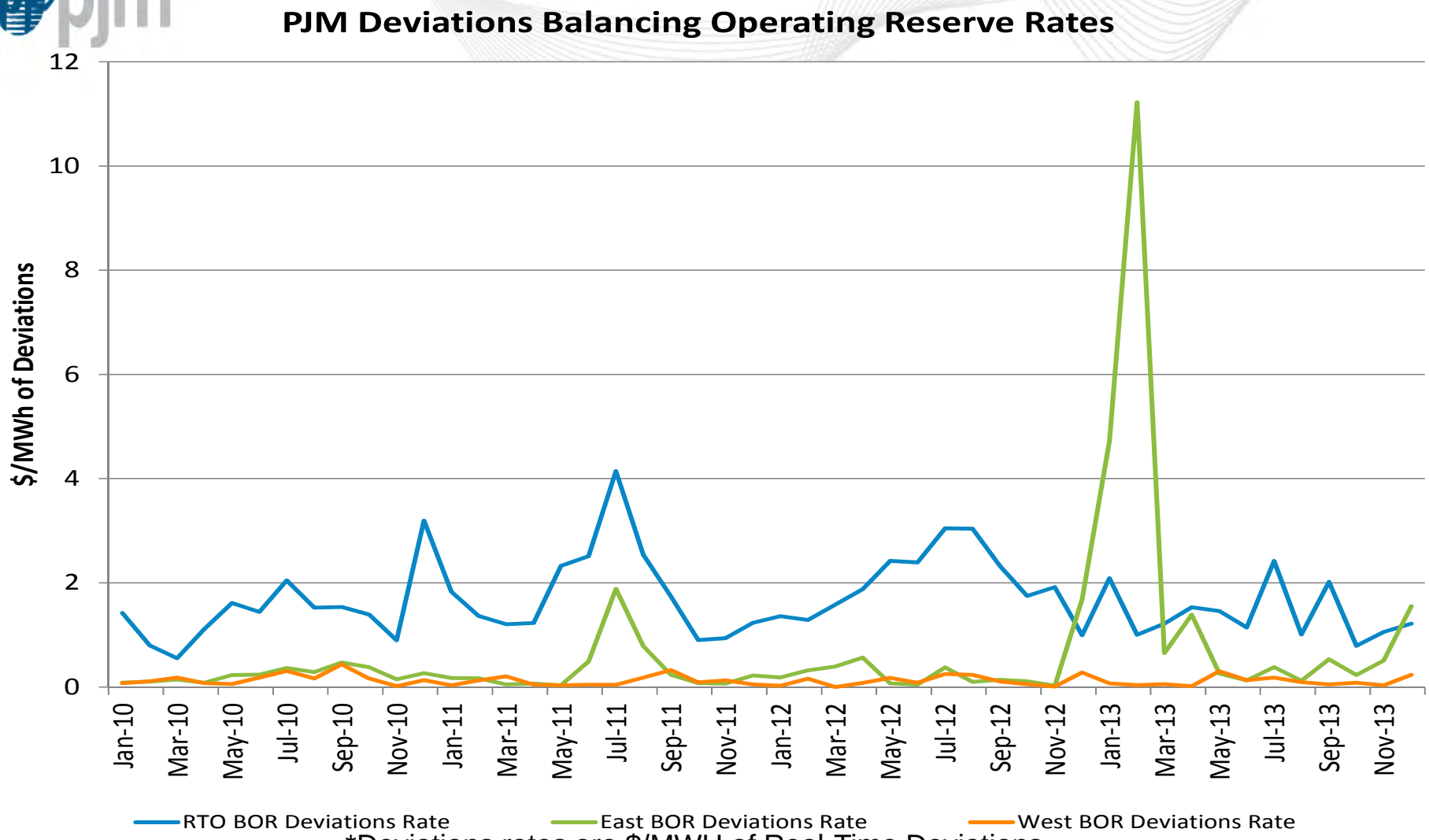
Balancing Operating Reserves



*Deviations rates are $/MWH of Real-Time Deviations.

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- Section 3.2.3(b)(iii) of Attachment K-Appendix of the PJM Open Access Transmission Tariff and the parallel provisions of Schedule 1 of the Operating Agreement provide, in relevant part, that:
  - PJM shall post on its Web site the aggregate amount of MWs committed that meet the criteria referenced in subsections (b)(i) and (b)(ii) hereof.
- The table in the next slide depicting daily Balancing Operating Reserve quantities, with breakdown by region and by reason, is presented to comply with the above mentioned Tariff requirement. This table enhances the data that PJM had already been posting by way of the "PJM Average Committed MWs Post Day Ahead" chart below in this report.
- These data will continue to be presented as part of the monthly MIC Market Operations Report in the future.

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Balancing Operating Reserves

Daily Balancing Operating Reserve Quantities by Region and by Reason (All Quantities are in MWHs)

	Allocation by Region			Allocation by Reason				
Date	RTO	East	West	RA Reliability	RA Deviations	RT Reliability	RT Deviations	Total
1-Dec-2013	18,622	23,222	1,564		24,464		18,944	43,408
2-Dec-2013	26,654	17,380			16,538	3,402	24,094	44,034
3-Dec-2013	30,577	20,115			16,731	1,244	32,717	50,692
4-Dec-2013	15,340	17,645			16,268	10,230	6,487	32,984
5-Dec-2013	39,677	3,827			9,543	1,868	32,093	43,504
6-Dec-2013	11,278	1,391			843	671	11,156	12,669
7-Dec-2013	22,801	15,788			15,788		22,801	38,590
8-Dec-2013	24,337		1,823			2,083	24,077	26,160
9-Dec-2013	77,223					2,220	75,002	77,223
10-Dec-2013	37,143	2	1,381			5,422	33,105	38,526
11-Dec-2013	32,478	1,624	329			9,362	25,069	34,431
12-Dec-2013	65,027	17,429	389	23,928	7,820	10,872	40,226	82,845
13-Dec-2013	67,270	4,120		16,938	8,795	3,227	42,429	71,389
14-Dec-2013	50,842	14,115			23,141	3,826	37,990	64,957
15-Dec-2013	87,051	15,096			13,163	13,954	75,029	102,146
16-Dec-2013	46,114	642	1,036		1,036	9,029	37,727	47,792
17-Dec-2013	38,500	2,567	10,202		5,452	3,650	42,167	51,269
18-Dec-2013	31,760	1,923	6,164		5,181	3,747	30,920	39,847
19-Dec-2013	53,163	235				7,229	46,169	53,398
20-Dec-2013	54,772	5,337			5,337	32,835	21,937	60,109
21-Dec-2013	68,858	1,803			1,675	27,587	41,399	70,661
22-Dec-2013	69,287	1,694			1,694	37,074	32,213	70,981
23-Dec-2013	51,721					33,494	18,227	51,721
24-Dec-2013	80,224	19,768				6,702	93,290	99,992
25-Dec-2013	47,010	29,307			9,423	47,161	19,733	76,317
26-Dec-2013	60,515	5,530	89			4,346	61,787	66,134
27-Dec-2013	48,367	11,155			8,305	32,289	18,929	59,523
28-Dec-2013	47,423	23,235			21,571	14,908	34,180	70,658
29-Dec-2013	46,583	8,359			8,359	35,498	11,085	54,942
30-Dec-2013	40,547					19,621	20,925	40,547
31-Dec-2013	47,418	630			630	233	47,185	48,048

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Balancing Operating Reserves

Daily Balancing Operating Reserve Dollars by Region and by Reason

	Allocation by Region			Allocation by Reason				
Date	RTO	East	West	RA Reliability	RA Deviations	RT Reliability	RT Deviations	Total
1-Dec-2013	80,817	406,186	31,060	-	432,851	-	85,213	518,064
2-Dec-2013	108,298	224,435	-	-	197,983	24,738	110,012	332,733
3-Dec-2013	159,179	417,883	-	-	331,627	51,762	193,673	577,061
4-Dec-2013	113,103	423,286	-	-	397,592	58,546	80,251	536,389
5-Dec-2013	553,283	54,668	-	-	233,477	31,383	343,091	607,951
6-Dec-2013	216,774	12,700	-	-	6,634	34,102	188,738	229,474
7-Dec-2013	408,914	871,498	-	-	871,498	-	408,914	1,280,412
8-Dec-2013	386,761	-	535,106	-	-	154,598	767,269	921,867
9-Dec-2013	330,185	-	-	-	-	45,026	285,159	330,185
10-Dec-2013	524,682	2,235	218,848	-	-	182,933	562,831	745,764
11-Dec-2013	1,331,099	104,963	153,641	-	-	511,318	1,078,385	1,589,703
12-Dec-2013	2,764,875	1,009,351	89,879	1,000,466	487,378	961,641	1,414,620	3,864,106
13-Dec-2013	1,600,667	257,810	-	555,717	723,935	100,078	478,747	1,858,477
14-Dec-2013	1,399,418	1,030,112	-	-	864,187	366,529	1,198,814	2,429,530
15-Dec-2013	516,643	410,837	-	-	316,728	133,343	477,409	927,481
16-Dec-2013	1,568,892	80,771	47,155	-	47,155	768,935	880,727	1,696,817
17-Dec-2013	292,100	148,283	187,388	-	96,621	143,860	387,290	627,771
18-Dec-2013	161,183	80,996	415,581	-	150,869	255,786	251,106	657,760
19-Dec-2013	1,280,422	10,448	-	-	-	443,493	847,376	1,290,869
20-Dec-2013	286,922	292,223	-	-	292,223	257,520	29,402	579,145
21-Dec-2013	234,333	38,310	-	-	25,305	148,989	98,349	272,642
22-Dec-2013	110,470	28,257	-	-	28,257	73,170	37,300	138,727
23-Dec-2013	512,324	-	-	-	-	341,335	170,989	512,324
24-Dec-2013	601,510	1,411,358	-	-	-	191,062	1,821,806	2,012,868
25-Dec-2013	700,655	1,069,058	-	-	197,837	635,155	936,721	1,769,713
26-Dec-2013	1,632,512	183,618	5,222	-	-	150,425	1,670,927	1,821,352
27-Dec-2013	312,124	648,015	-	-	179,819	222,838	557,482	960,139
28-Dec-2013	327,959	353,814	-	-	308,934	126,567	246,272	681,773
29-Dec-2013	371,796	230,494	-	-	230,494	316,777	55,019	602,290
30-Dec-2013	321,335	-	-	-	-	163,146	158,189	321,335
31-Dec-2013	476,197	5,024	-	-	5,024	3,903	472,295	481,221

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Balancing Operating Reserves

Daily BOR Lost Opportunity Cost Credits ($)

`	Wind LOC	Total PJM LOC
12/1/13		26,322
12/2/13	1,789	34,383
12/3/13		1,973
12/4/13	677	29,487
12/5/13	90	14,933
12/6/13		38,668
12/7/13		37,397
12/8/13		114,152
12/9/13		223,542
12/10/13	19,737	123,340
12/11/13		57,161
12/12/13		143,841
12/13/13		11,588
12/14/13		145,662
12/15/13		17,382
12/16/13		20,753
12/17/13	1,770	3,141
12/18/13	977	35,881
12/19/13		
12/20/13		
12/21/13	5,298	14,278
12/22/13		
12/23/13		4,607
12/24/13		8,527
12/25/13		
12/26/13		13,301
12/27/13		3,460
12/28/13		2,902
12/29/13		2,411
12/30/13		2,262
12/31/13		261
Total	**30,338**	**1,131,615**

Monthly BOR Lost Opportunity Cost Credits ($)

`	Wind MWh Reduced	Wind LOC	Total PJM LOC
Jun-2012	2,500	119,146	15,168,521
Jul-2012	548	63,805	30,854,363
Aug-2012	5,438	178,941	26,607,636
Sep-2012	17,169	840,720	21,283,678
Oct-2012	73,725	3,100,631	14,529,316
Nov-2012	6,032	238,288	18,293,317
Dec-2012	20,022	459,496	6,054,876
Jan-2013	52,680	844,976	10,668,548
Feb-2013	80,526	1,124,951	3,240,874
Mar-2013	43,351	407,879	5,823,969
Apr-2013	20,767	718,633	5,309,941
May-2013	51,855	1,855,955	8,182,123
Jun-2013	7,094	221,136	7,076,638
Jul-2013	1,223	50,236	20,205,260
Aug-2013	533	10,146	5,750,409
Sep-2013	2,856	136,687	13,117,856
Oct-2013	11,017	500,917	3,147,924
Nov-2013	11,362	372,439	2,131,485
Dec-2013	434	30,338	1,131,615

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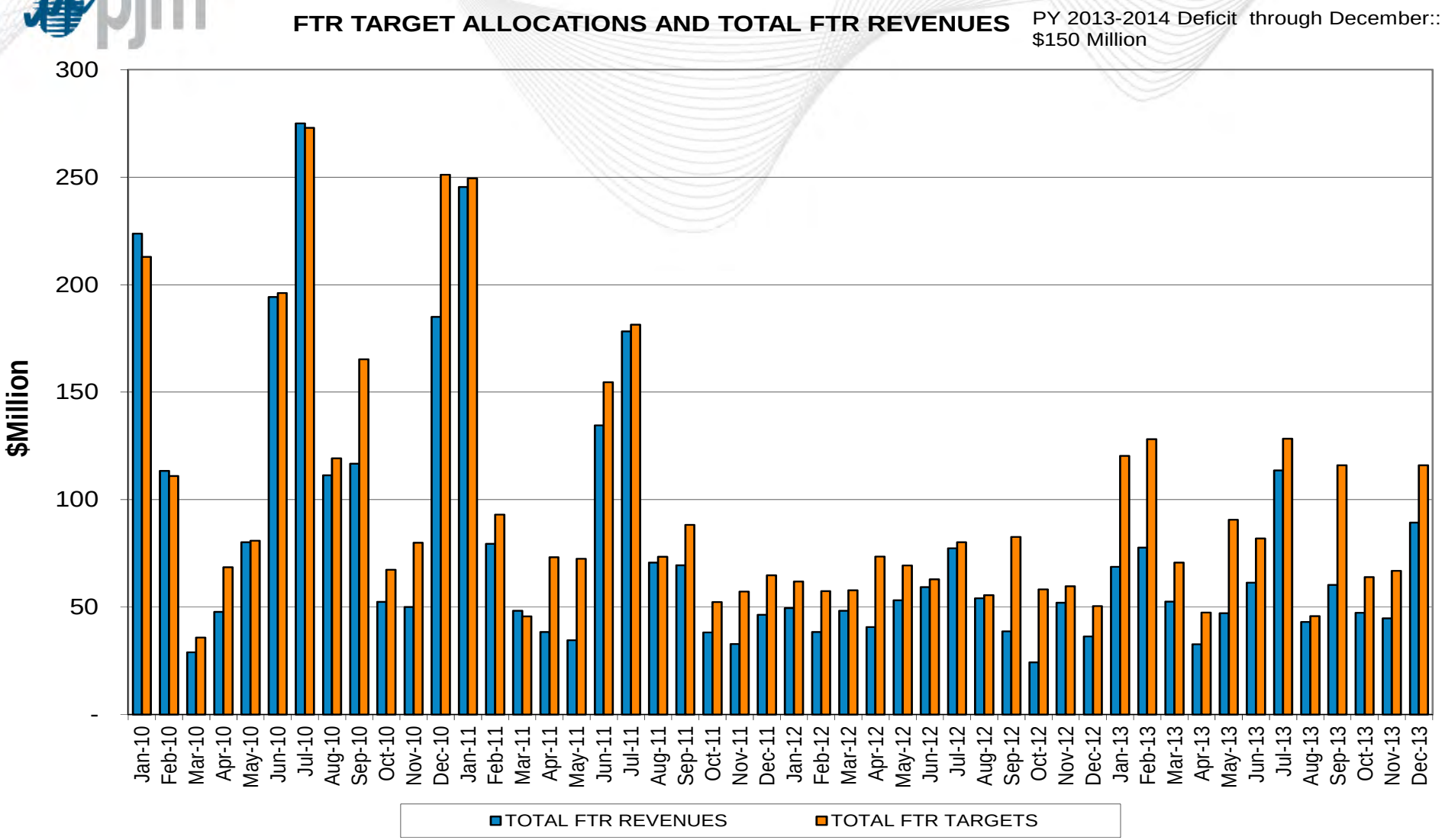
FTR Revenues vs. FTR Target Allocation



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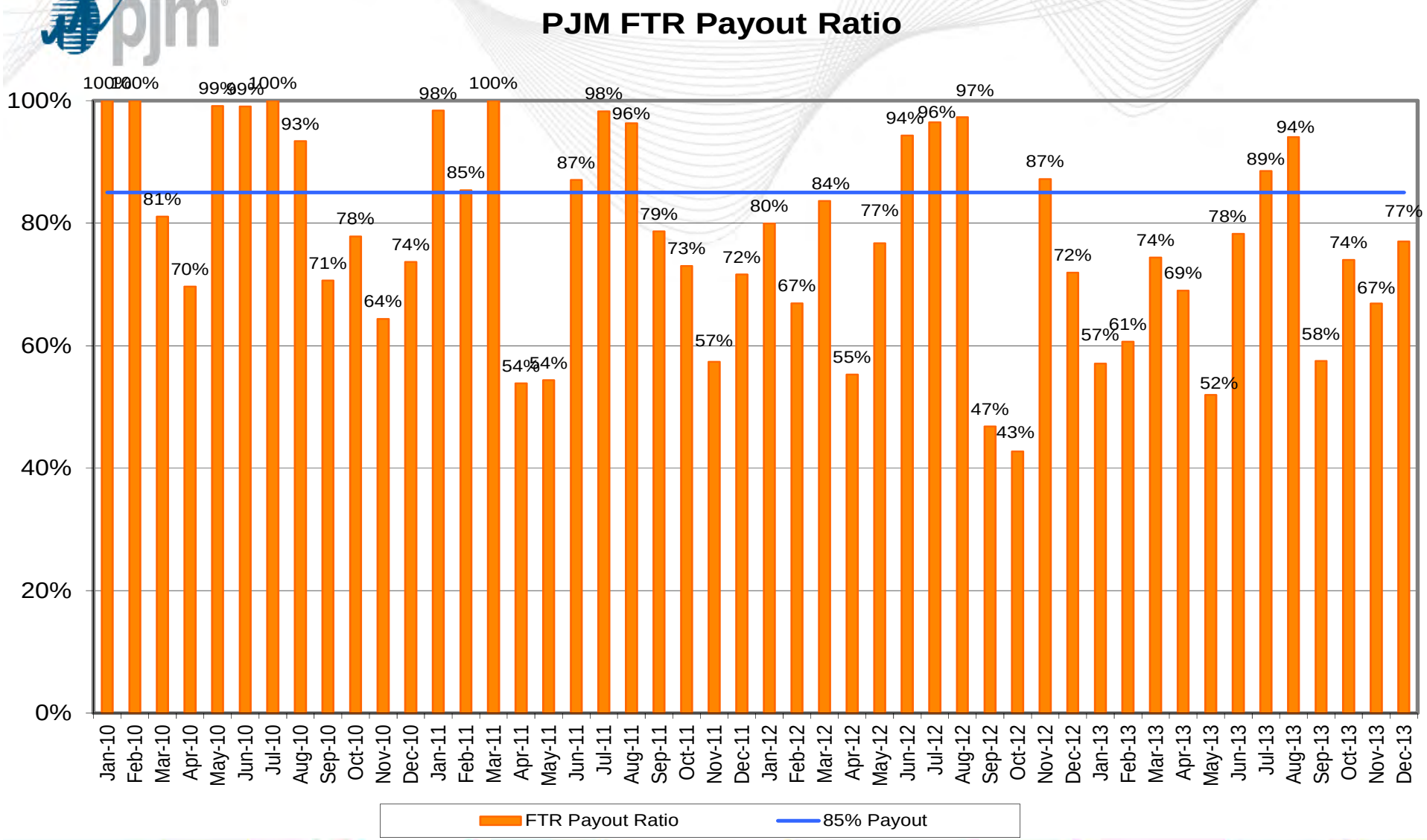
PJM FTR Payout Monthly



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- FTRs in December 2013 fell $26.6 million short of their targets, corresponding to a payout ratio of 77.0%. FTRs are 75.8% revenue-adequate through the first seven months of the 2013/2014 Planning Year with a $150 million shortfall. FTRs were 75.9% revenue-adequate with a $108 million shortfall through the first seven months of the 2012/2013 Planning Year.
- The transmission elements on which PJM incurred the largest revenue shortfall in December 2013 are listed below.
  - Breed-Wheatland 345kV (AEP) $4.6M
  - READINGT230KV REA-ROS (PSEG) $3.4M
  - WESCOSVI500KV 3 (PPL) $2.9M
  - BCPEP (BGE & PEPCO) $2.5M
  - Burr Oak-Plymouth 138 kV (MISO) $2.0M
  - ABSECON 69KV ABS-LEW1 (AECO) $1.9M
  - BERGENFI 230 KV BER-NEWO (PSEG) $1.6M
  - Monticello-East Winamac (MISO) $1.3M
  - Beaver Channel-Albany 161 (MISO) $1.3M
  - BRIDGEWA230KV BRI-MID (PSEG) $1.2M
  - 3ROCKY 115 KV 123A (DOM) $1.0M

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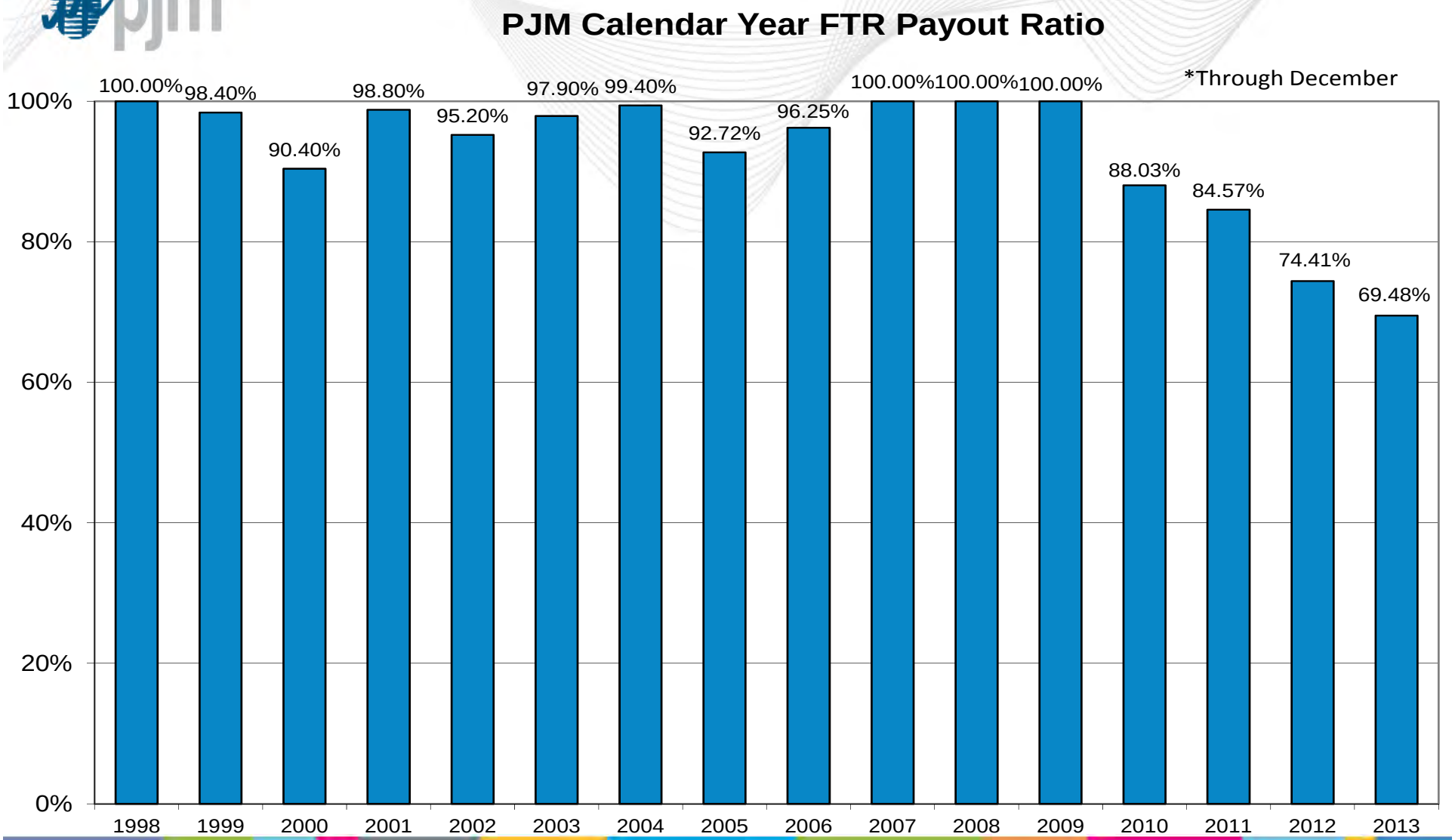
PJM FTR Payout Calendar Year



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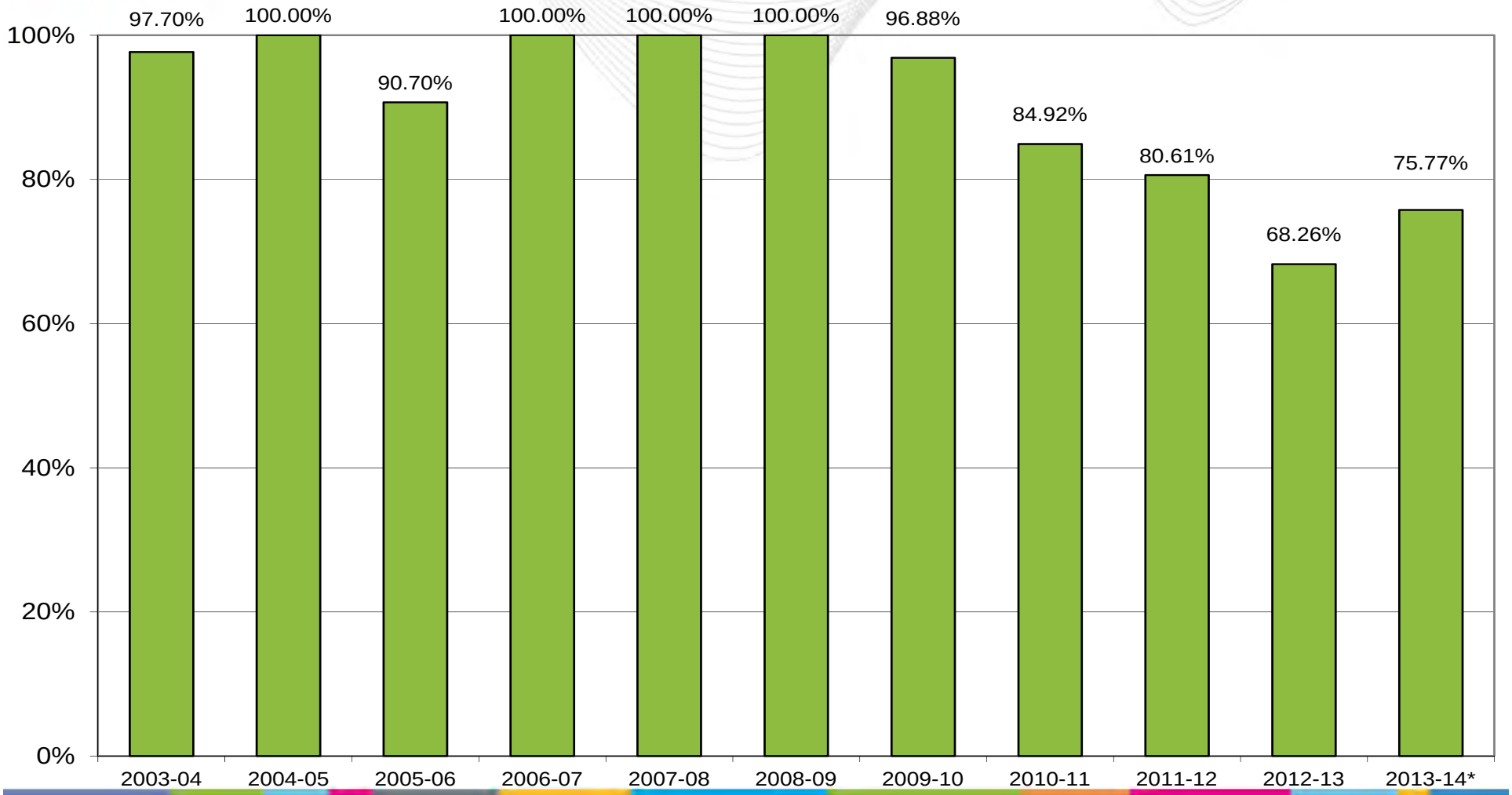
PJM FTR Payout Planning Year



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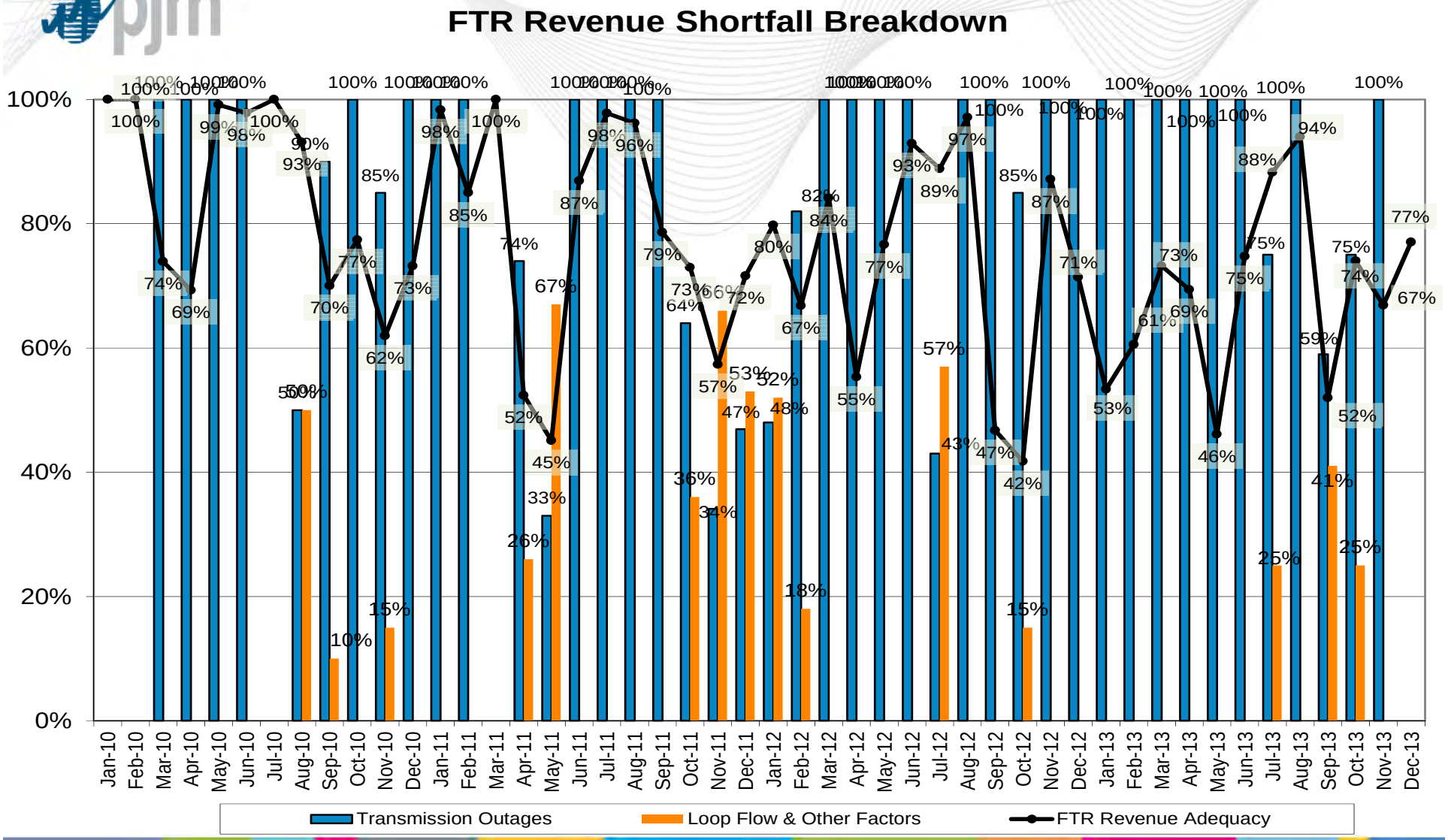
PJM FTR Revenue Shortfall Components



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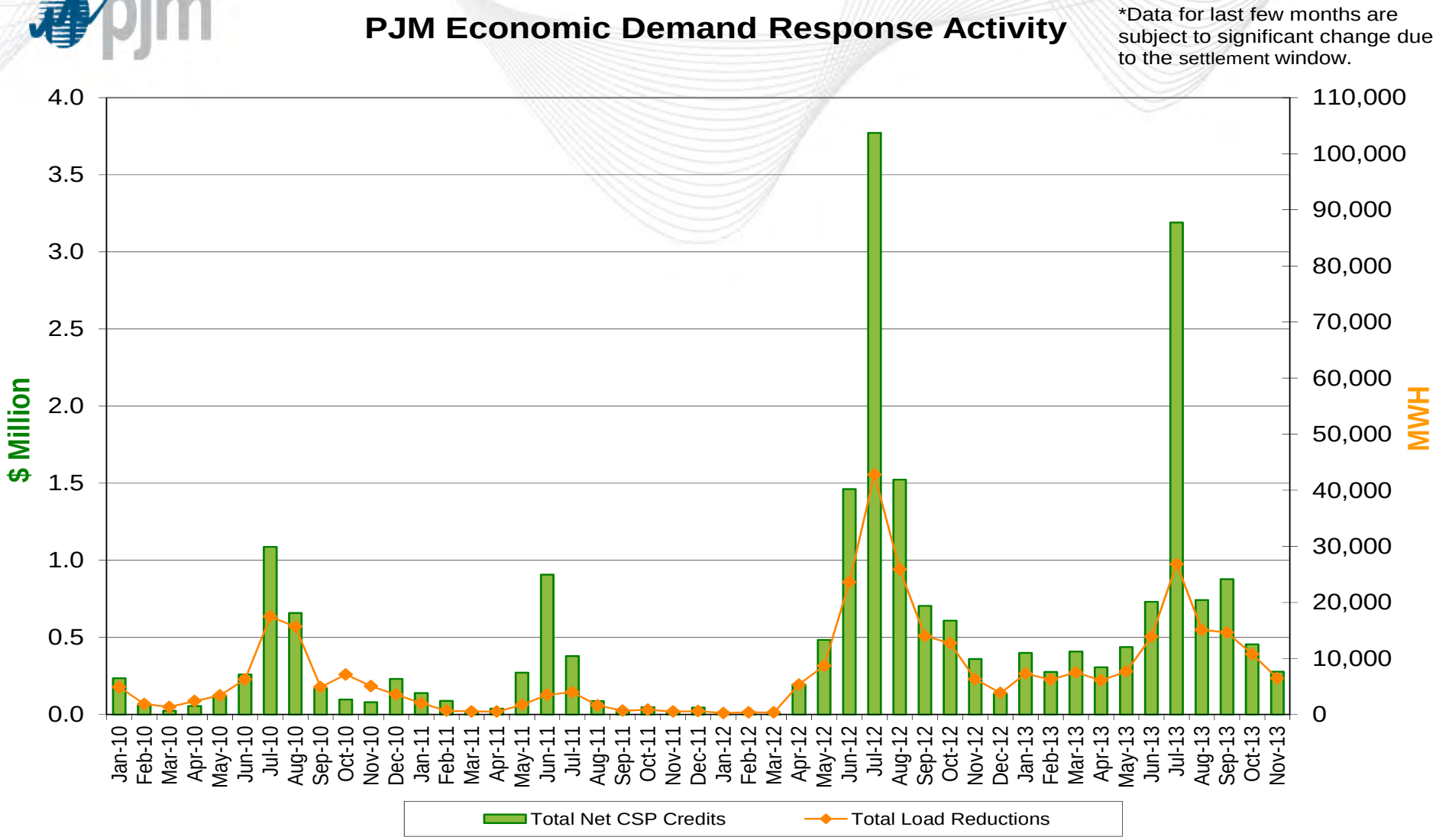
PJM DSR Activity



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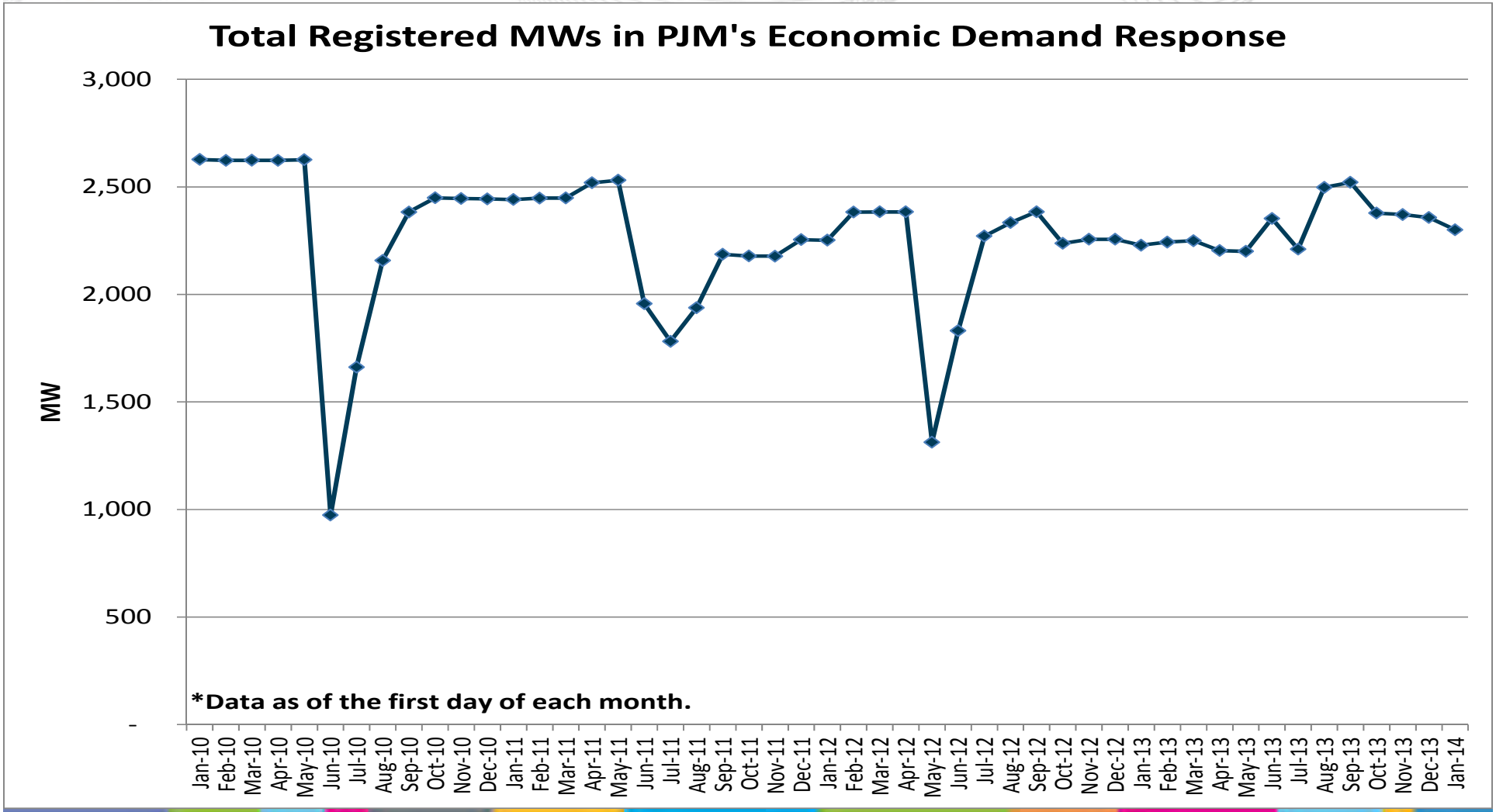
PJM DSR Registrations



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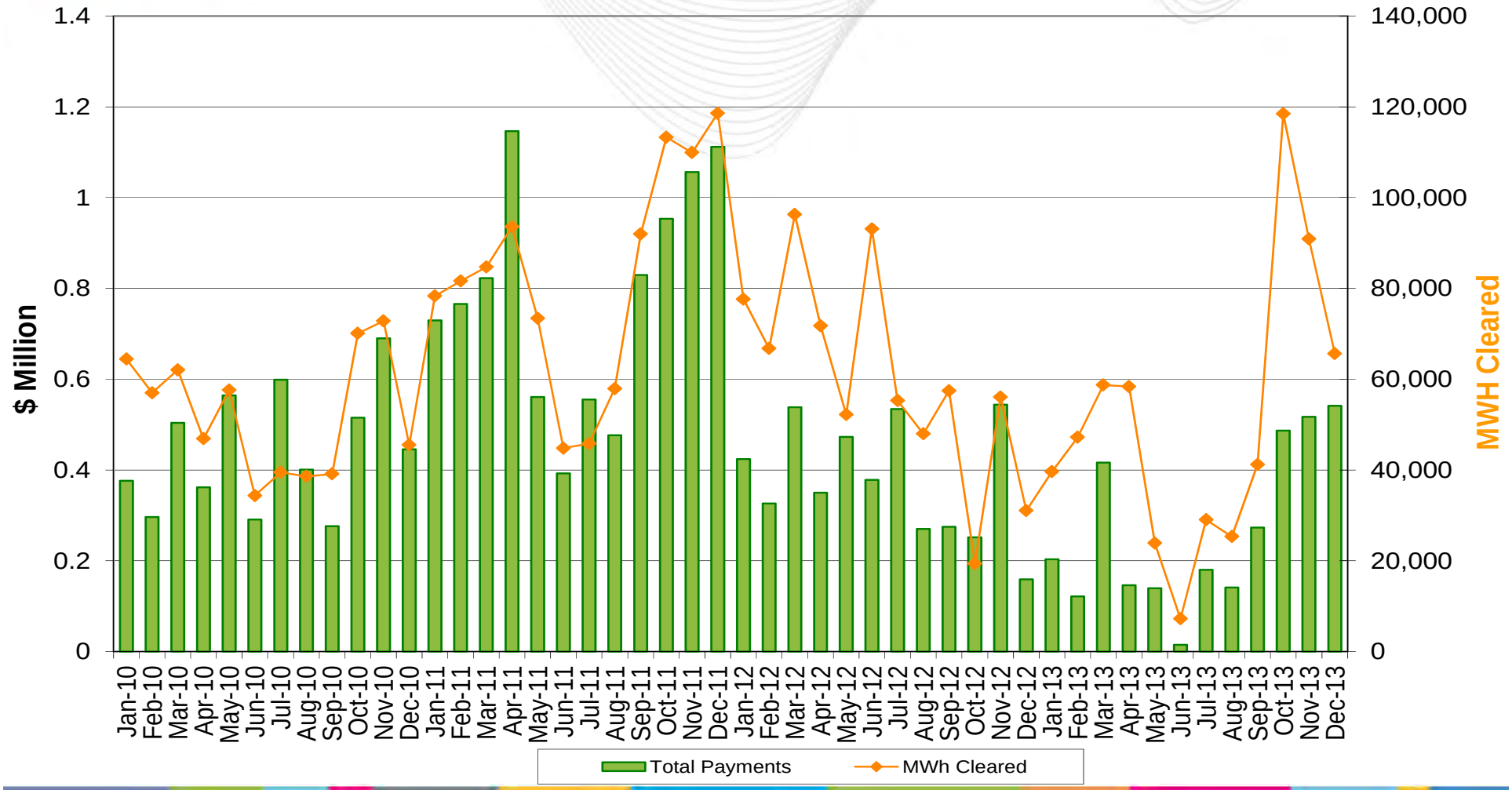
DSR as Synchronized Reserve

DSR Participation in PJM Synchronized Reserve Markets



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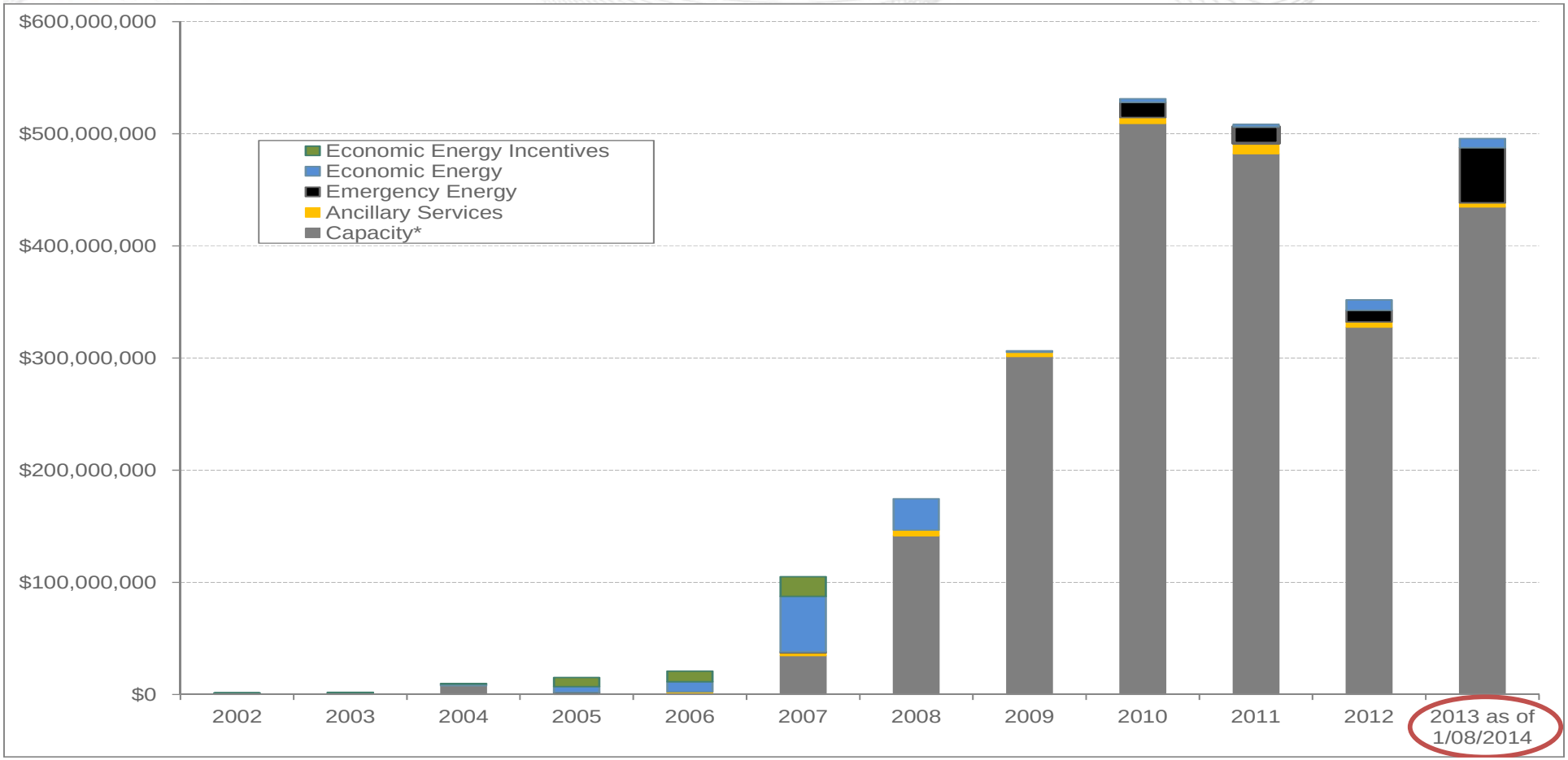
PJM Demand Side Response Estimated Revenue



*Capacity revenue prior RPM implementation on 6/1/07 estimated based on average daily ALM capacity credits and weighted average daily PJM capacity market clearing price.

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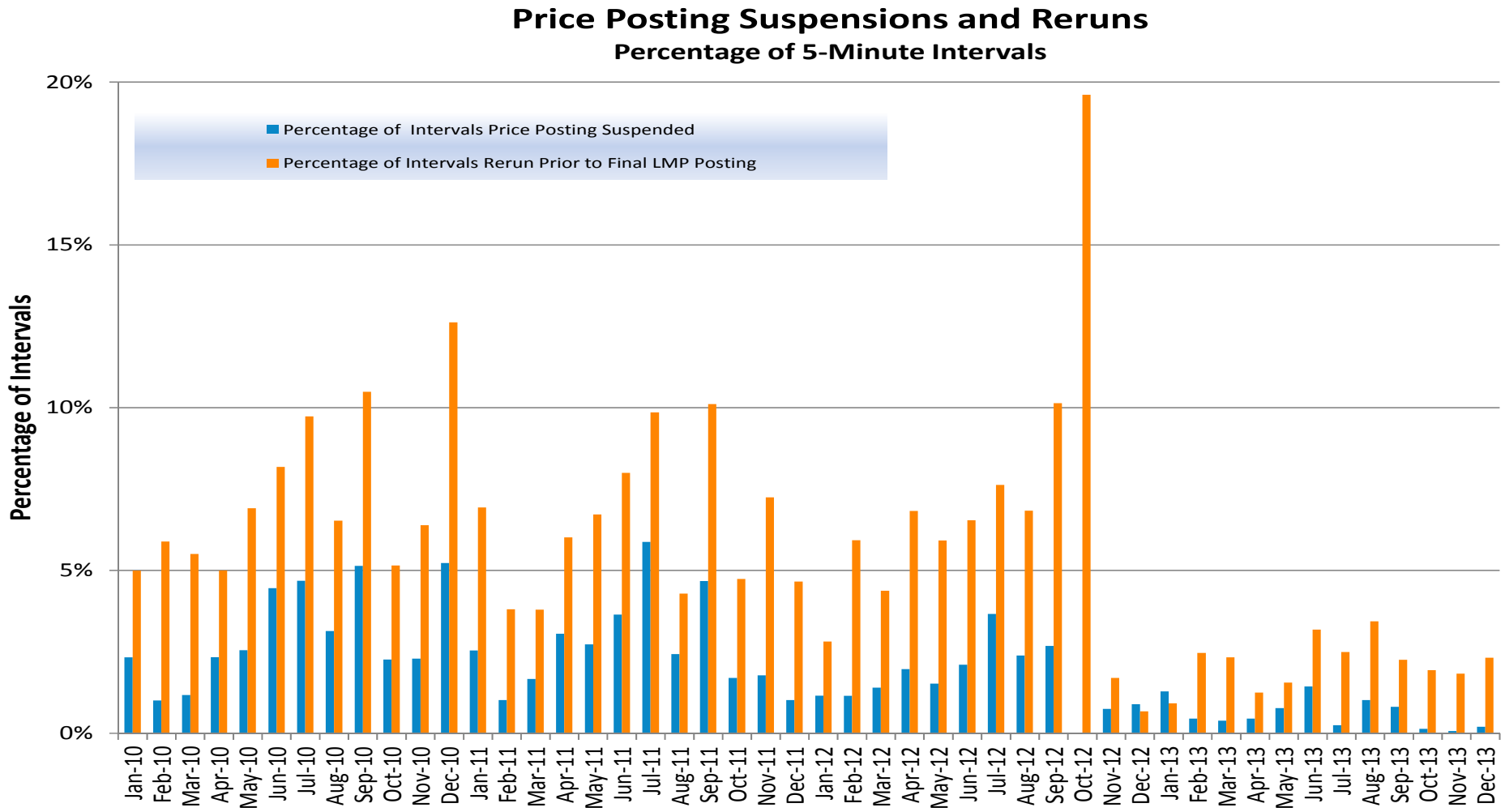
LMP Suspensions and Reruns



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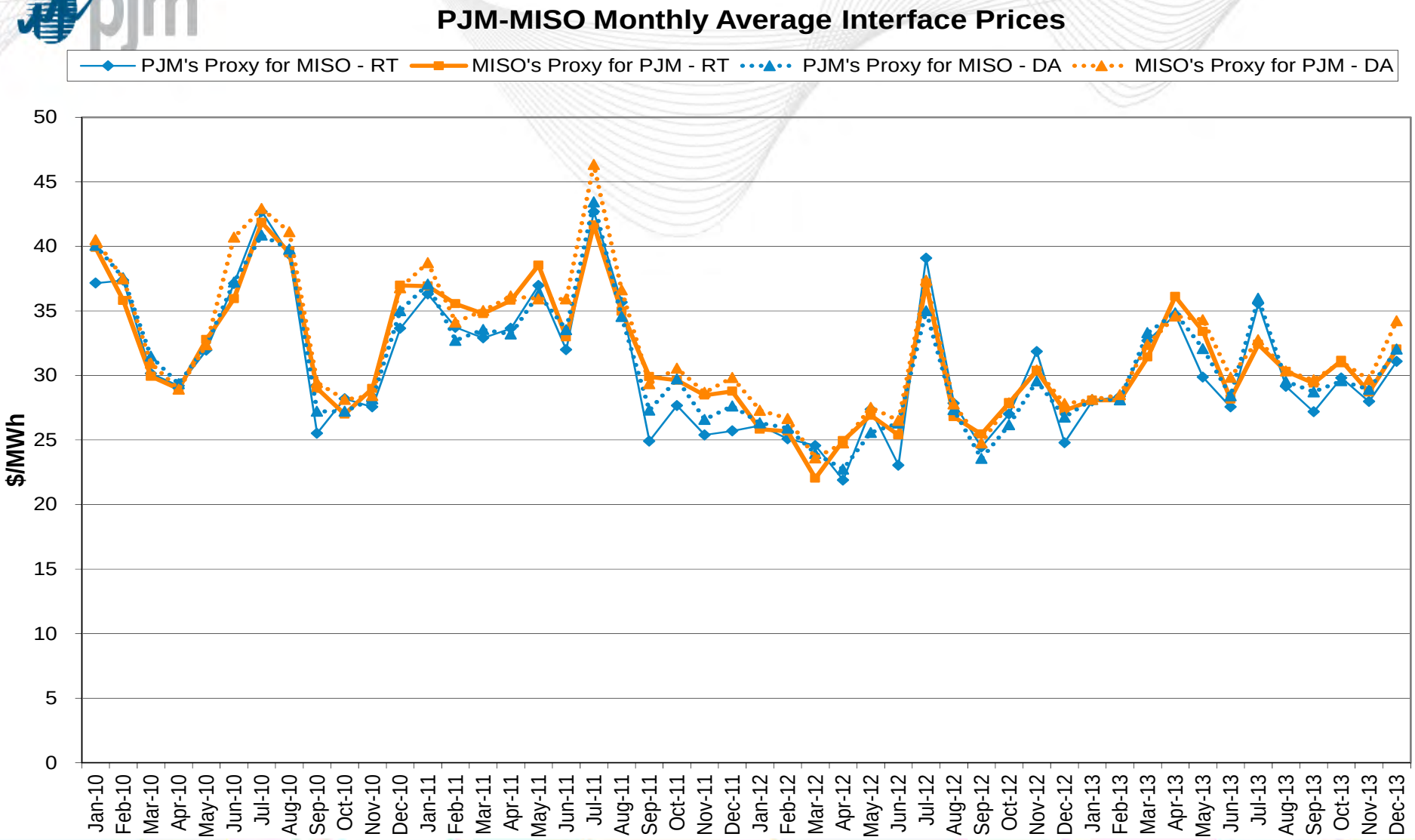
PJM-MISO Interface Pricing



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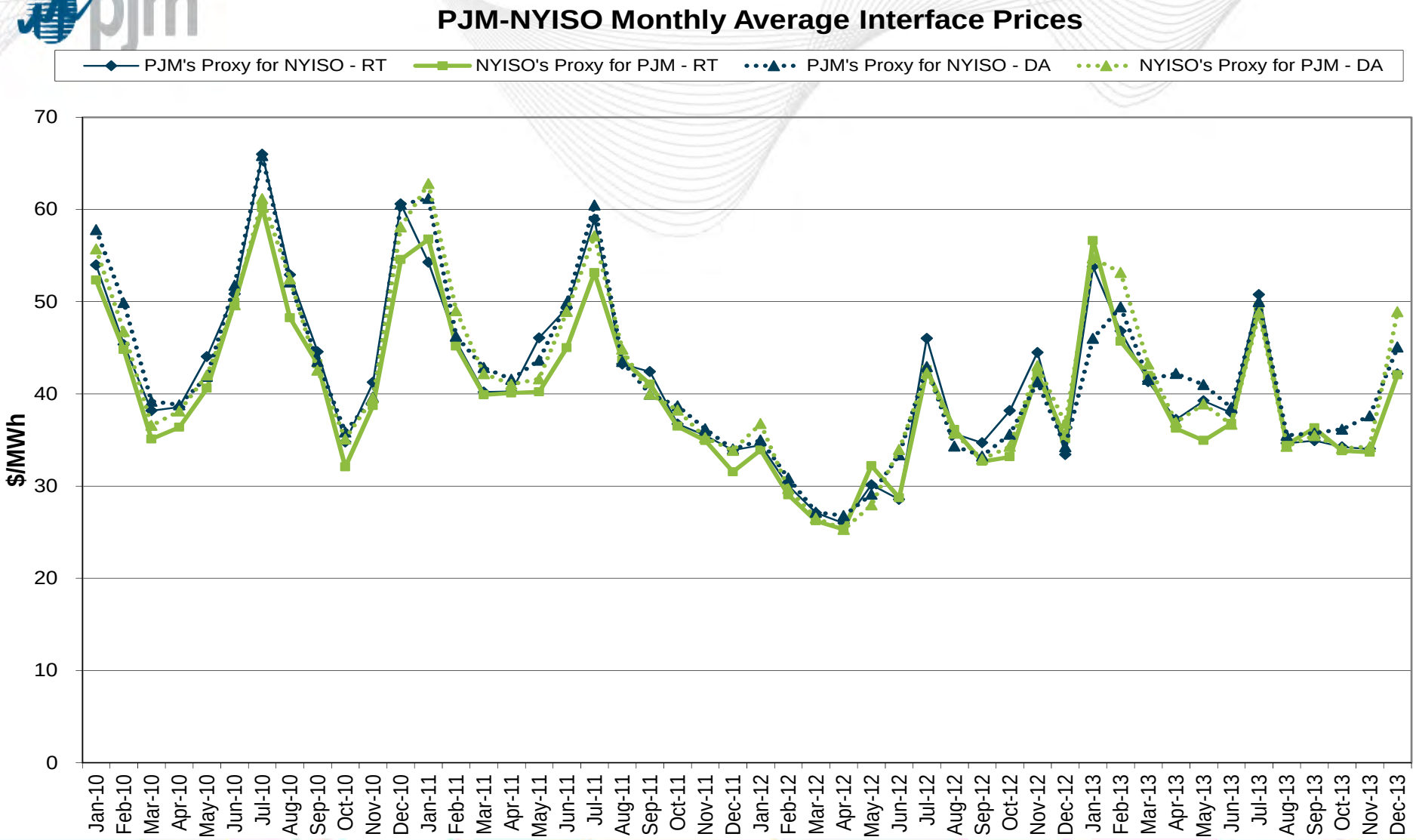
PJM-NYISO Interface Pricing



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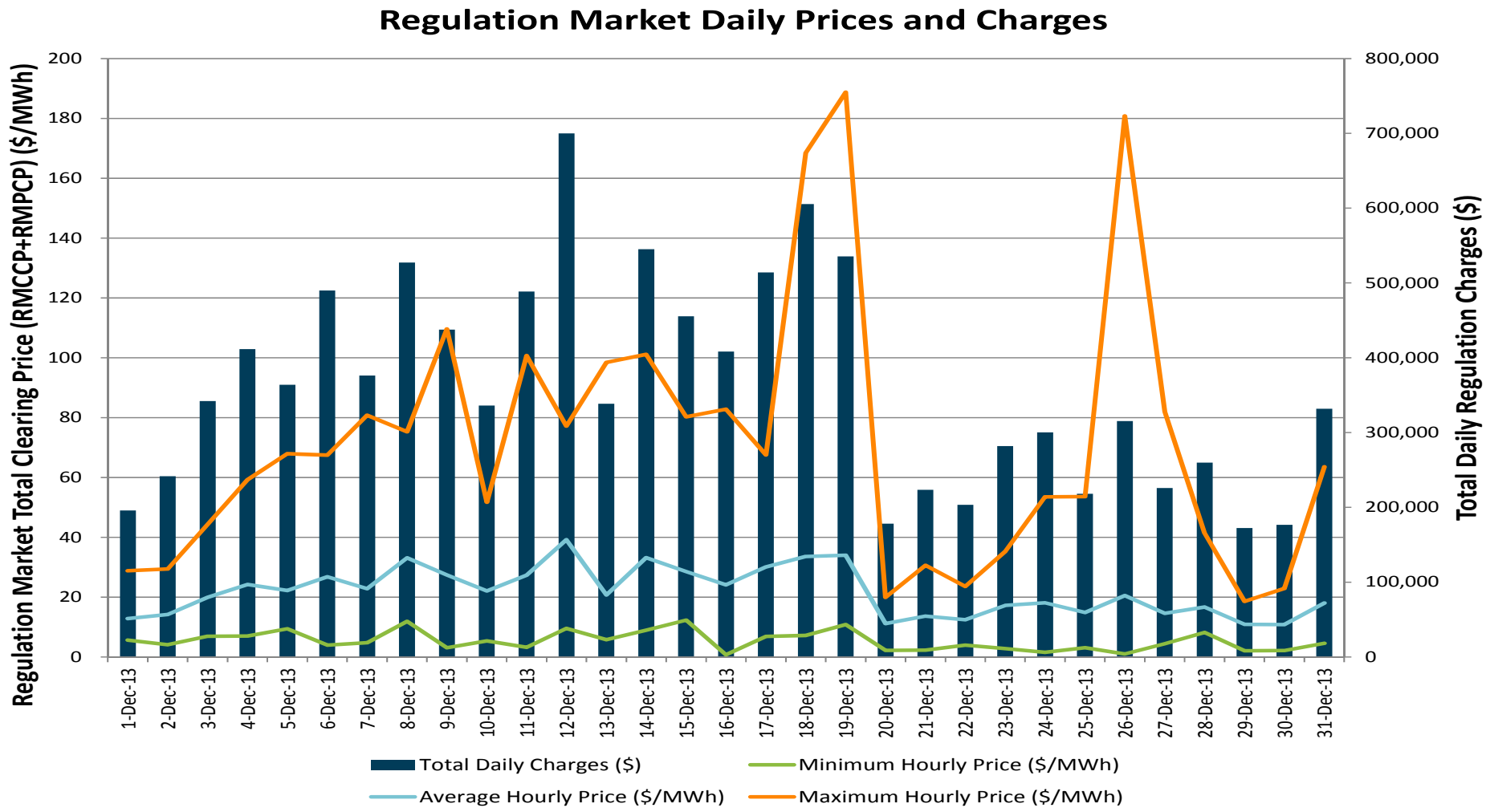
Regulation Market



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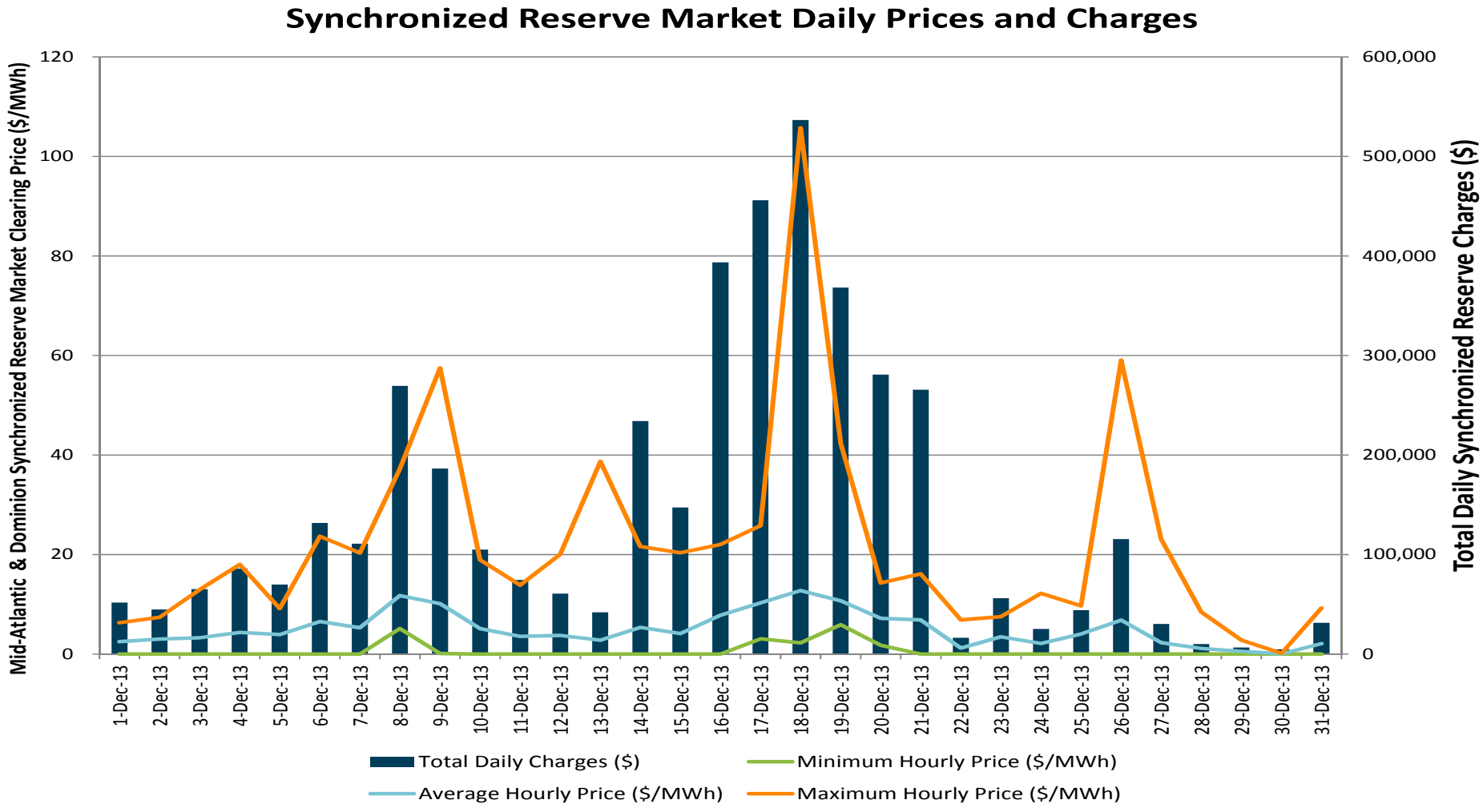
Synchronized Reserve Market



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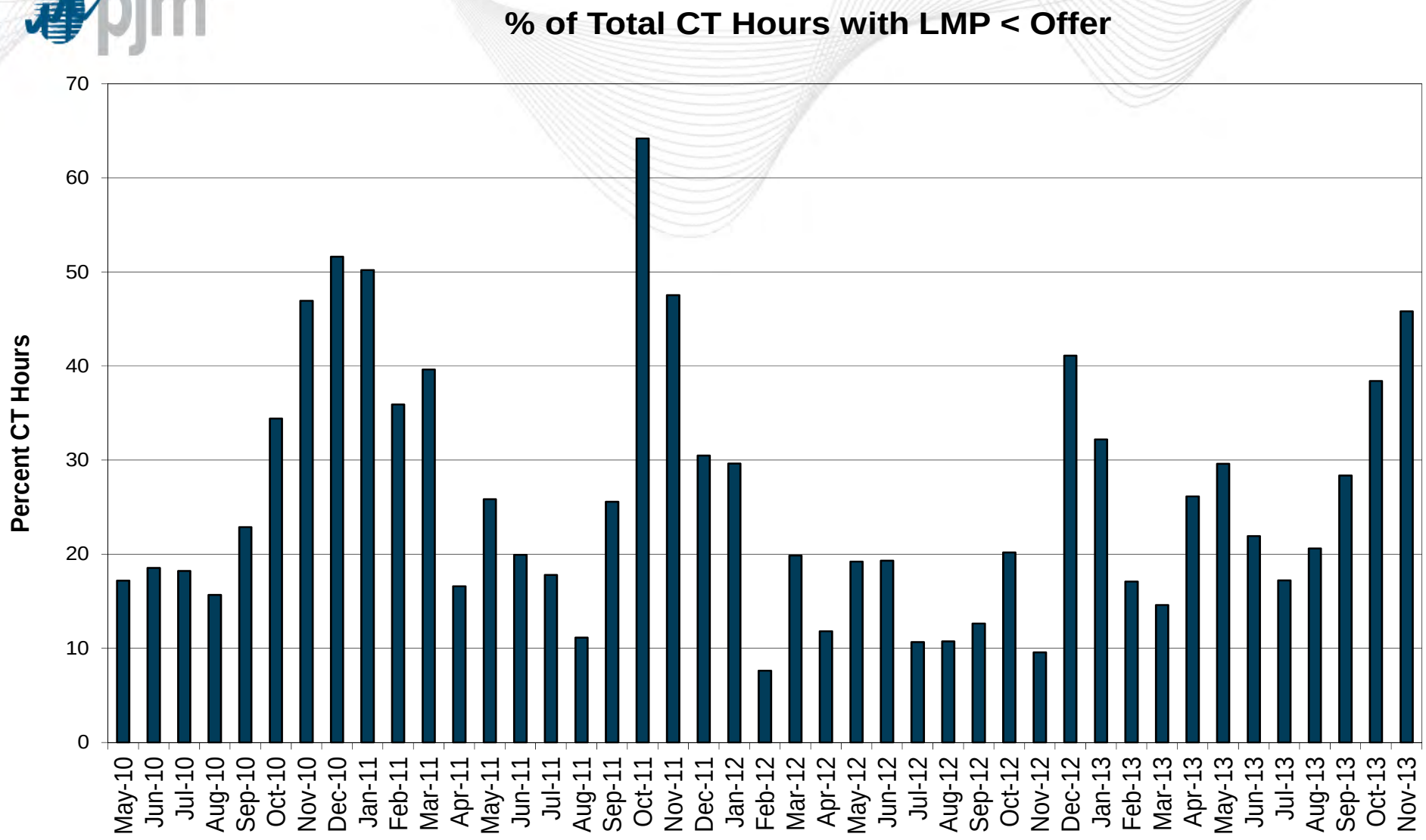
PJM CT Uneconomic Operation



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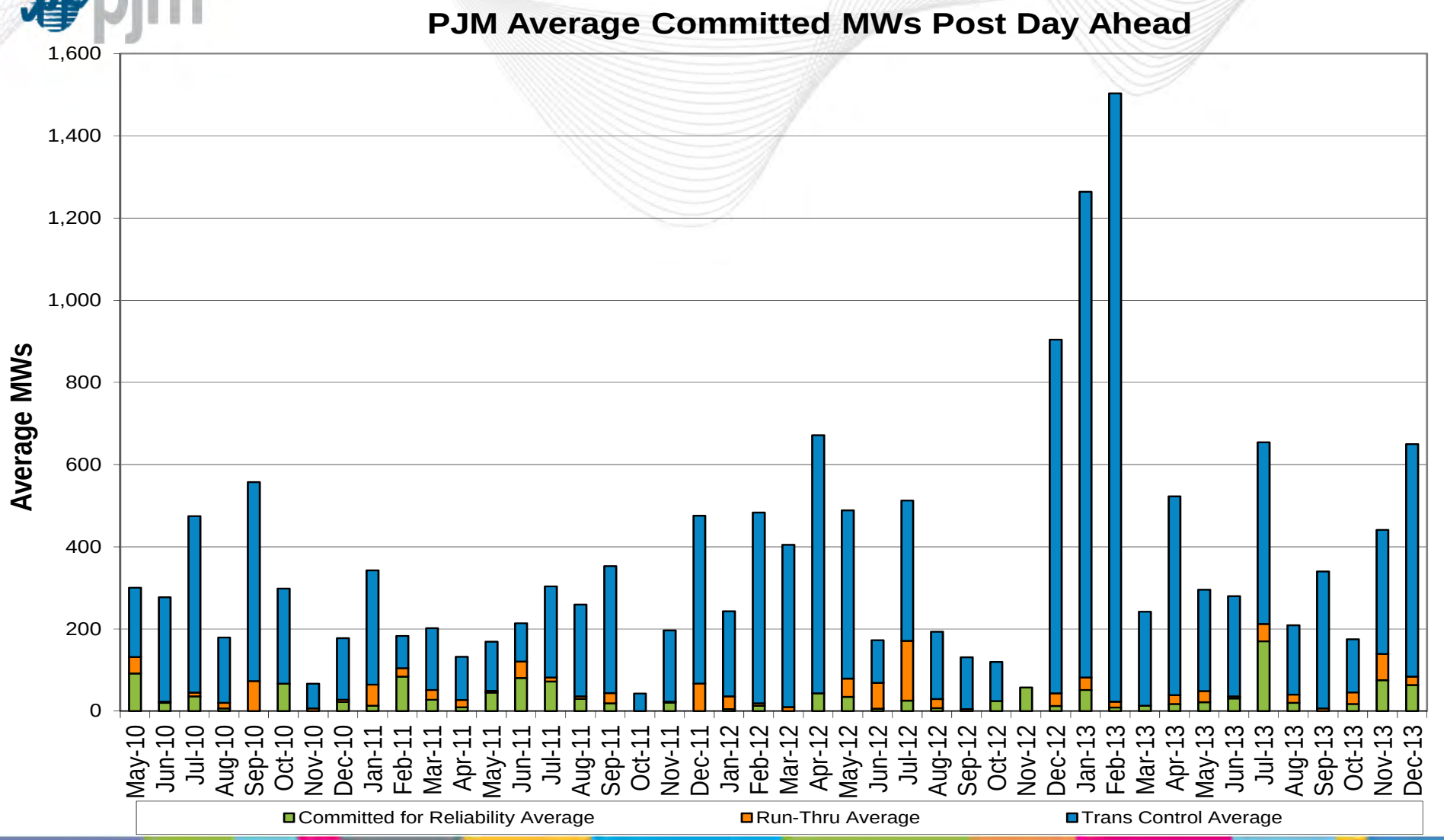
PJM Average Committed MWs Post Day Ahead



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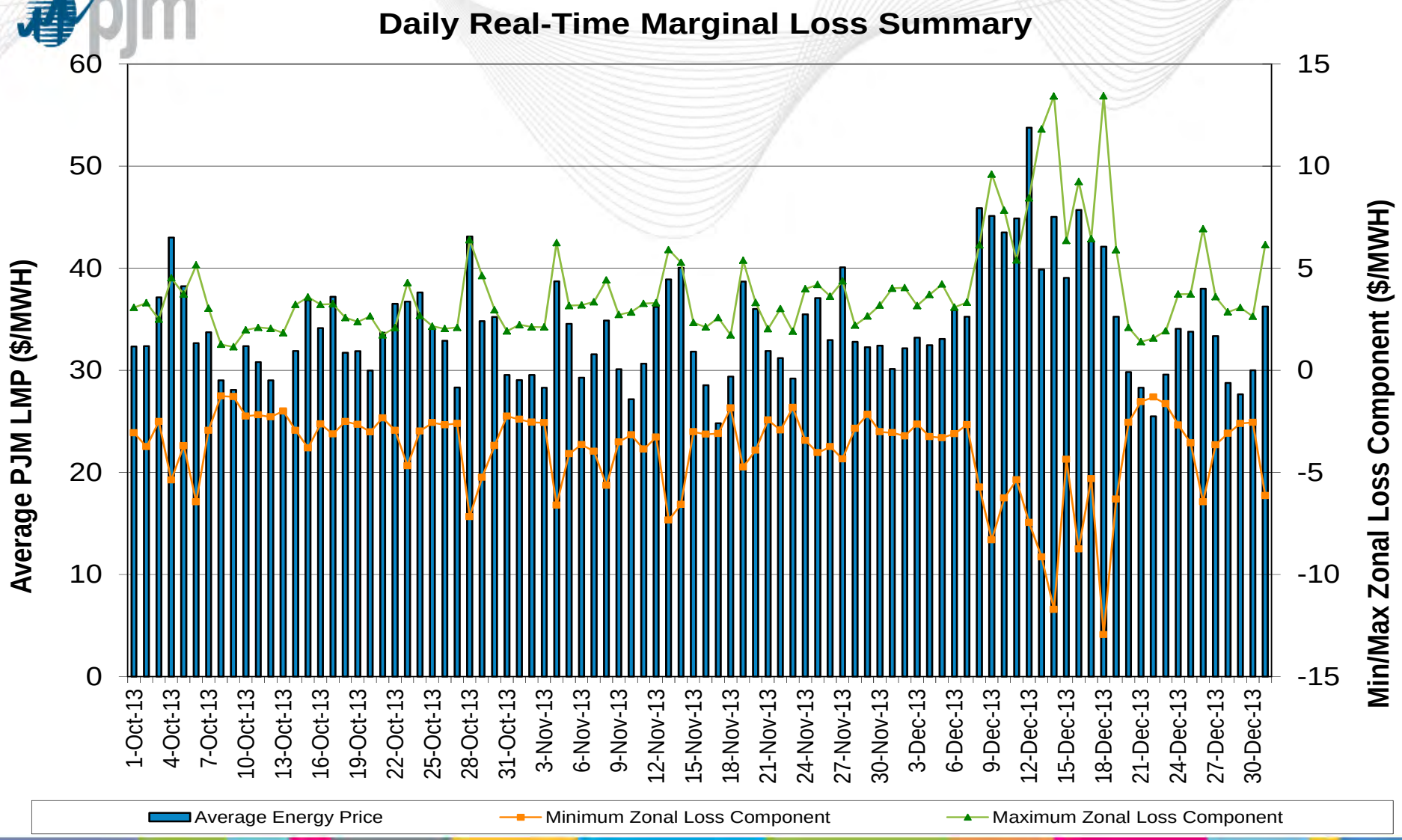
Real Time Marginal Loss Summary Data



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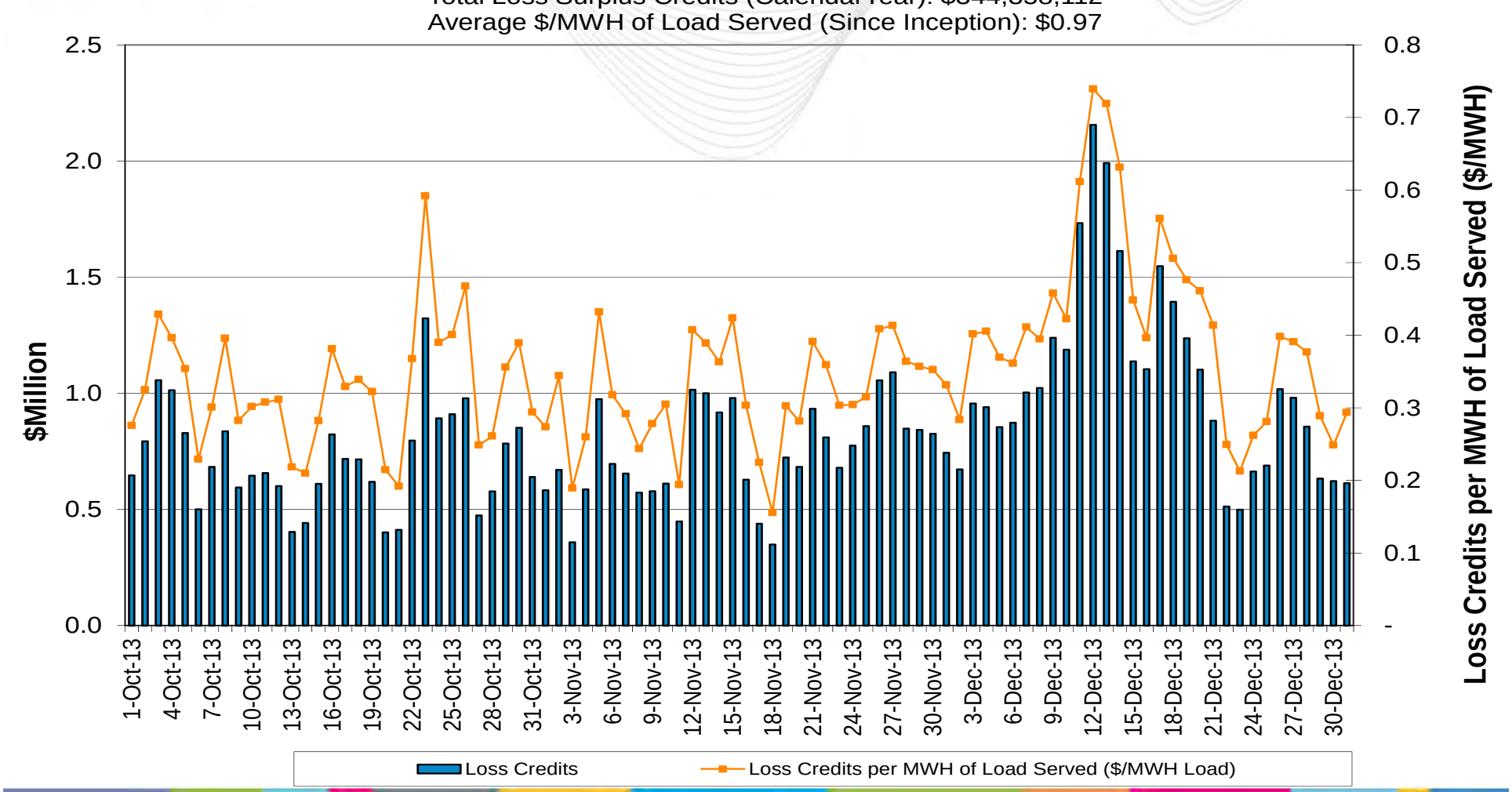
Marginal Loss - Loss Surplus Data



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