

# Market Monitor Report

MC Webinar

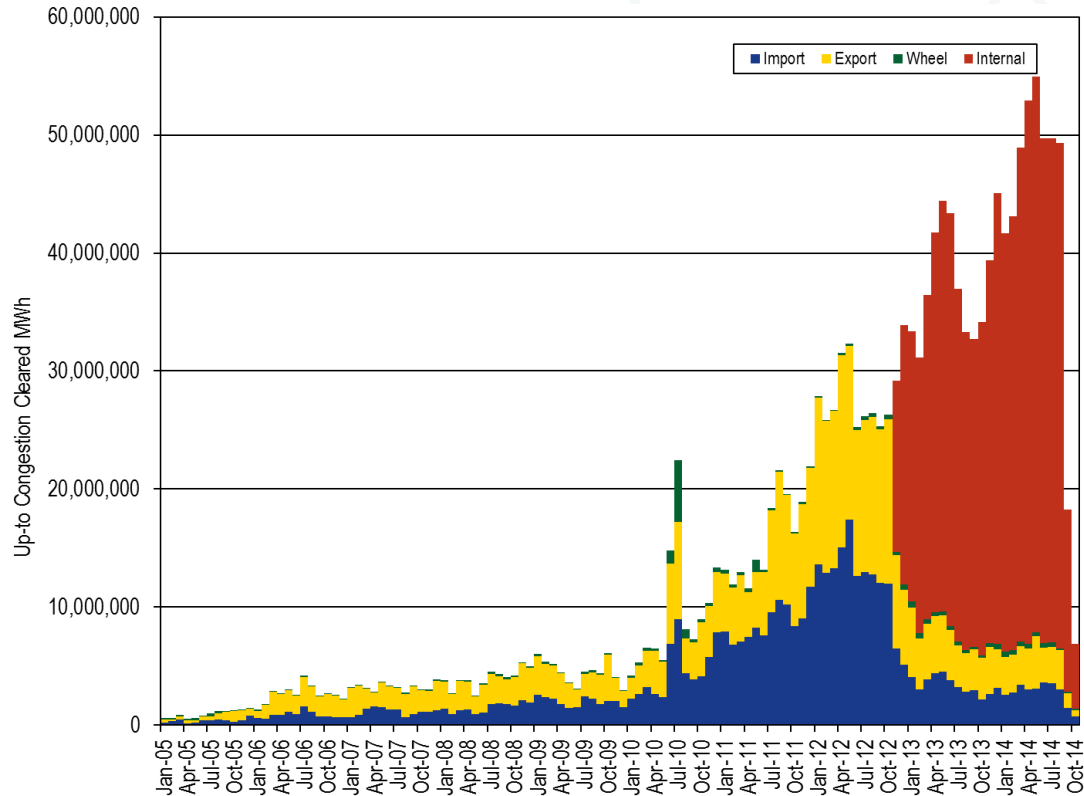
November 17, 2014

Joseph Bowring

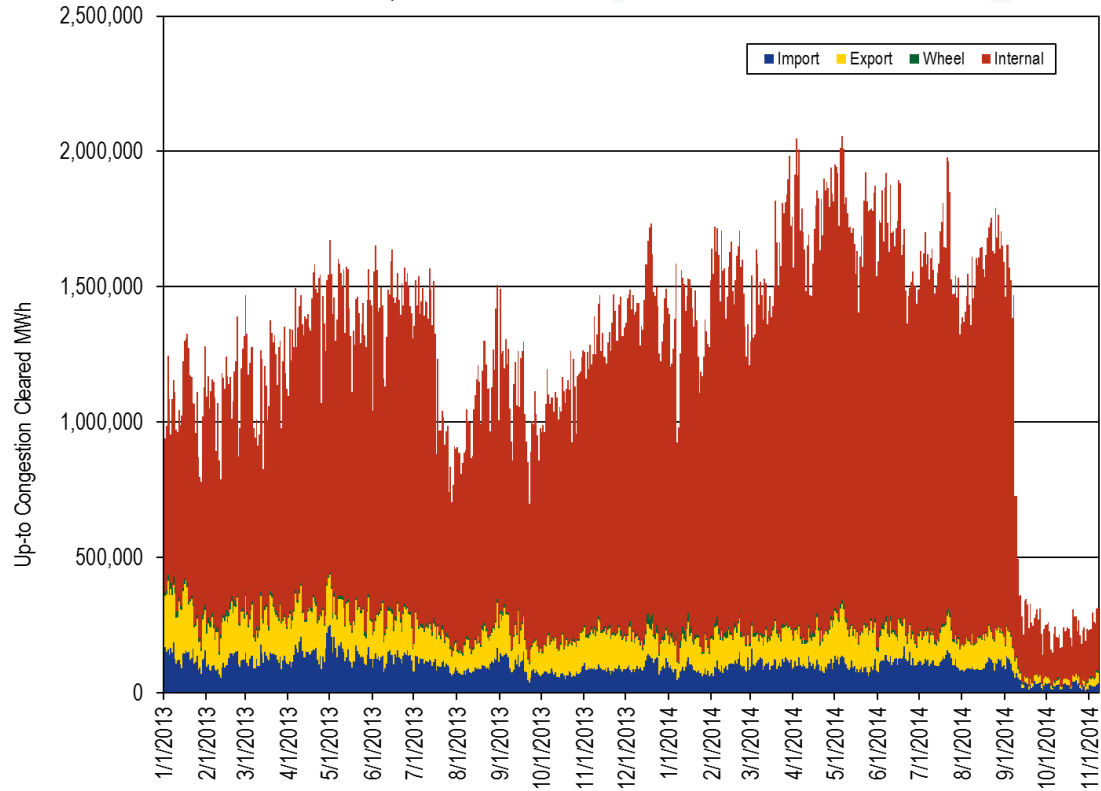


Monitoring Analytics

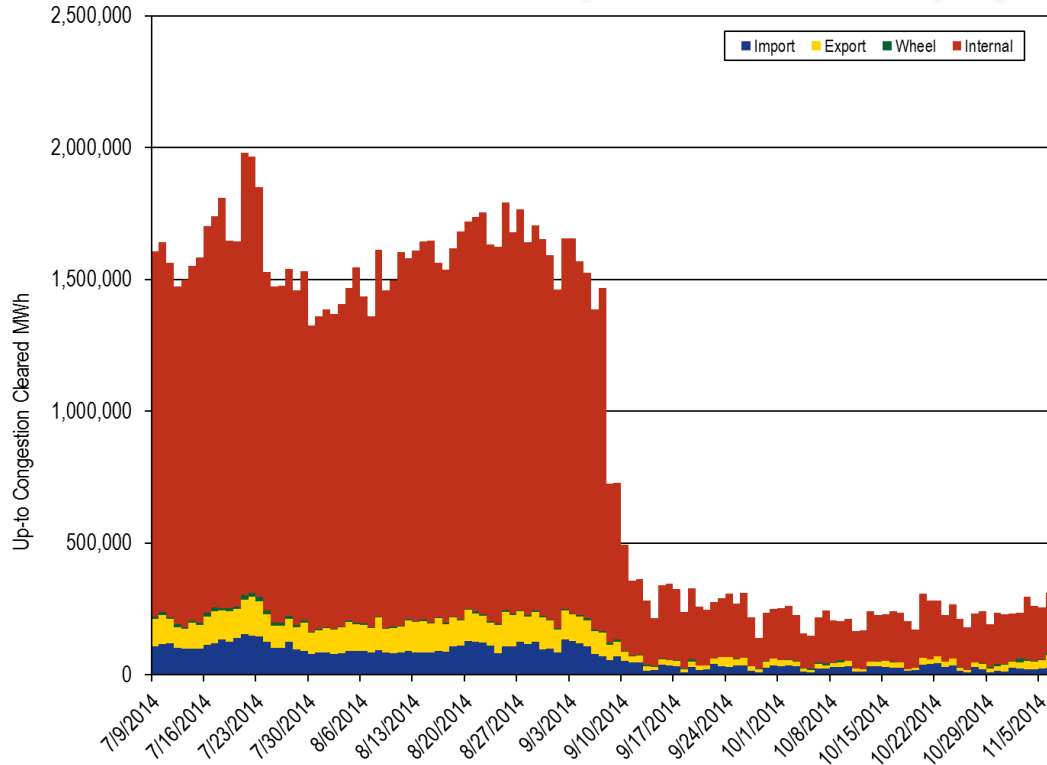
# Monthly cleared UTCs (MW) by type: January 2005 through October 2014



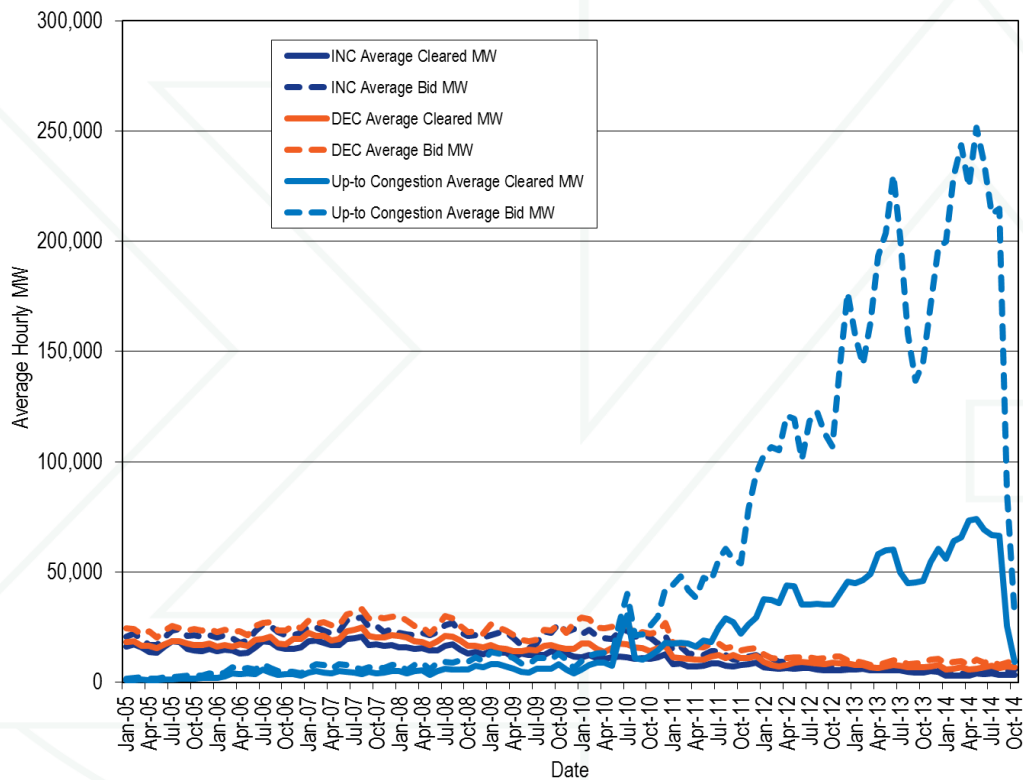
# Daily cleared UTCs (MW) by type: January 2013 through November 7, 2014



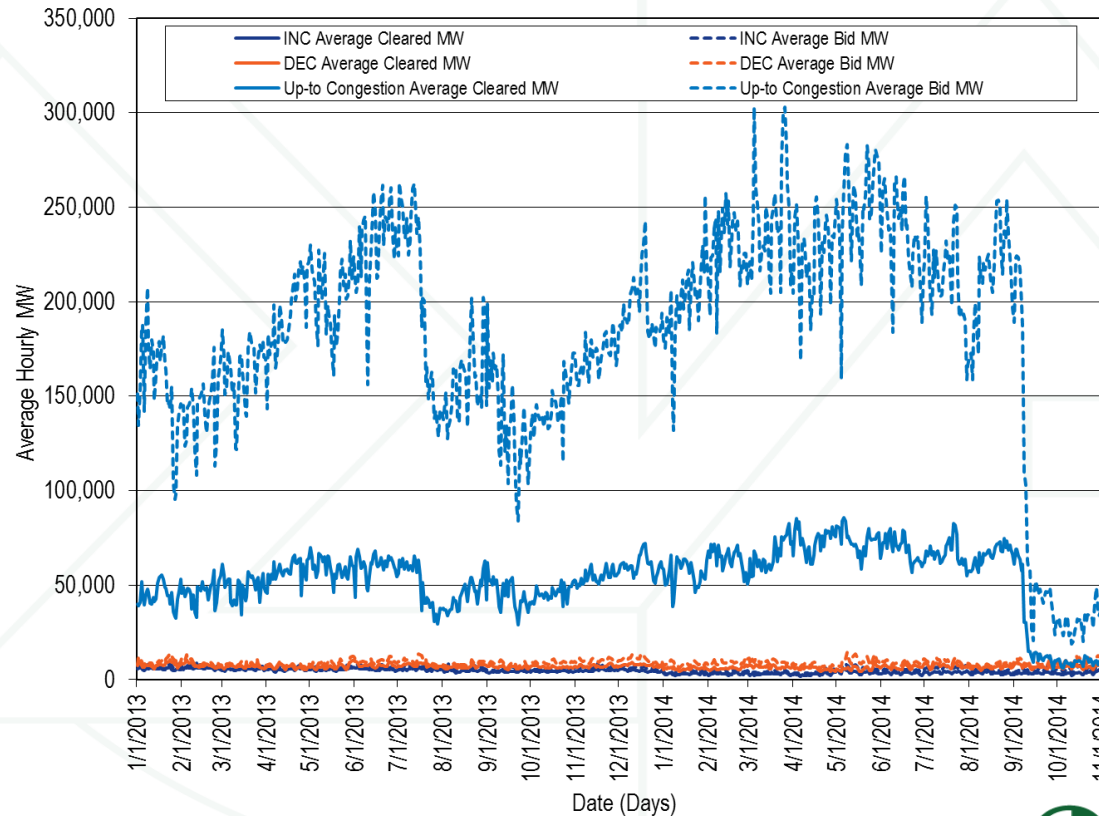
# Daily cleared UTCs (MW) by type: July 9, 2014, through November 7, 2014



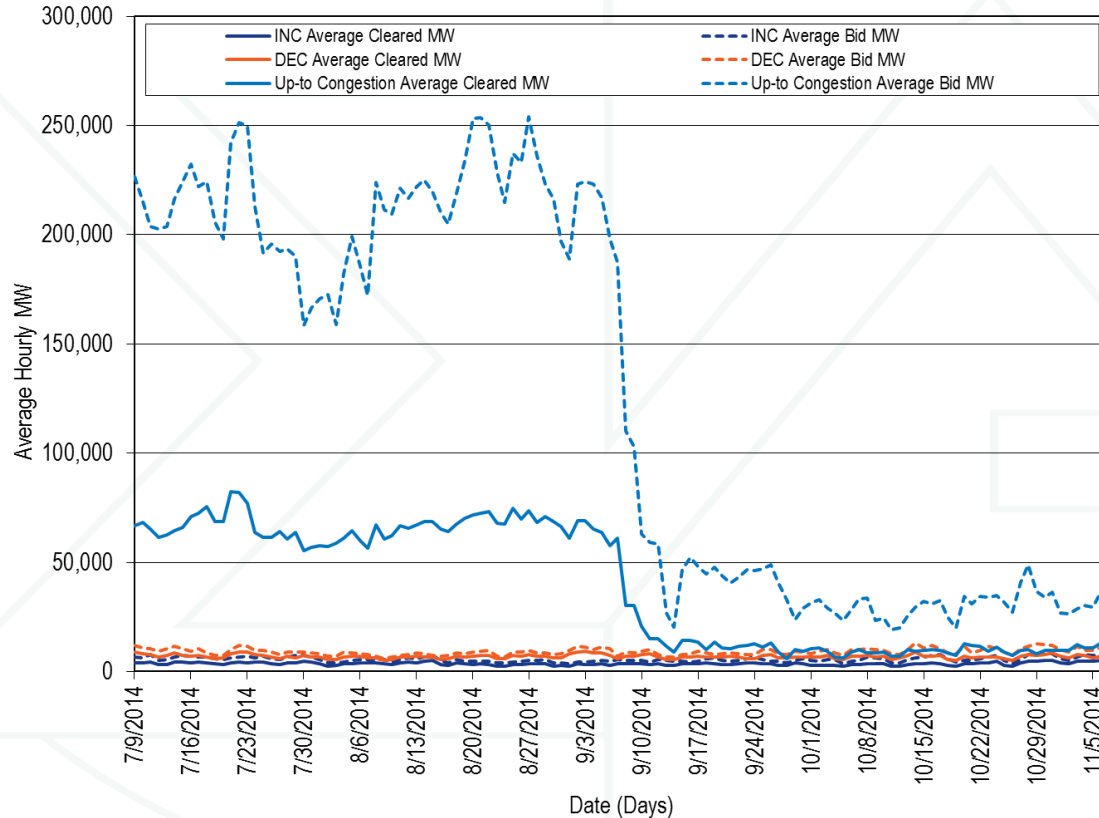
# Monthly bid and cleared INCs, DECs and UTCs (MW): January 2005 through October 2014



# Daily bid and cleared INCs, DEC and UTCs (MW): January 2013 through November 7, 2014



# Daily bid and cleared INCs, DEC and UTCs (MW): July 9, 2014 through November 7, 2014

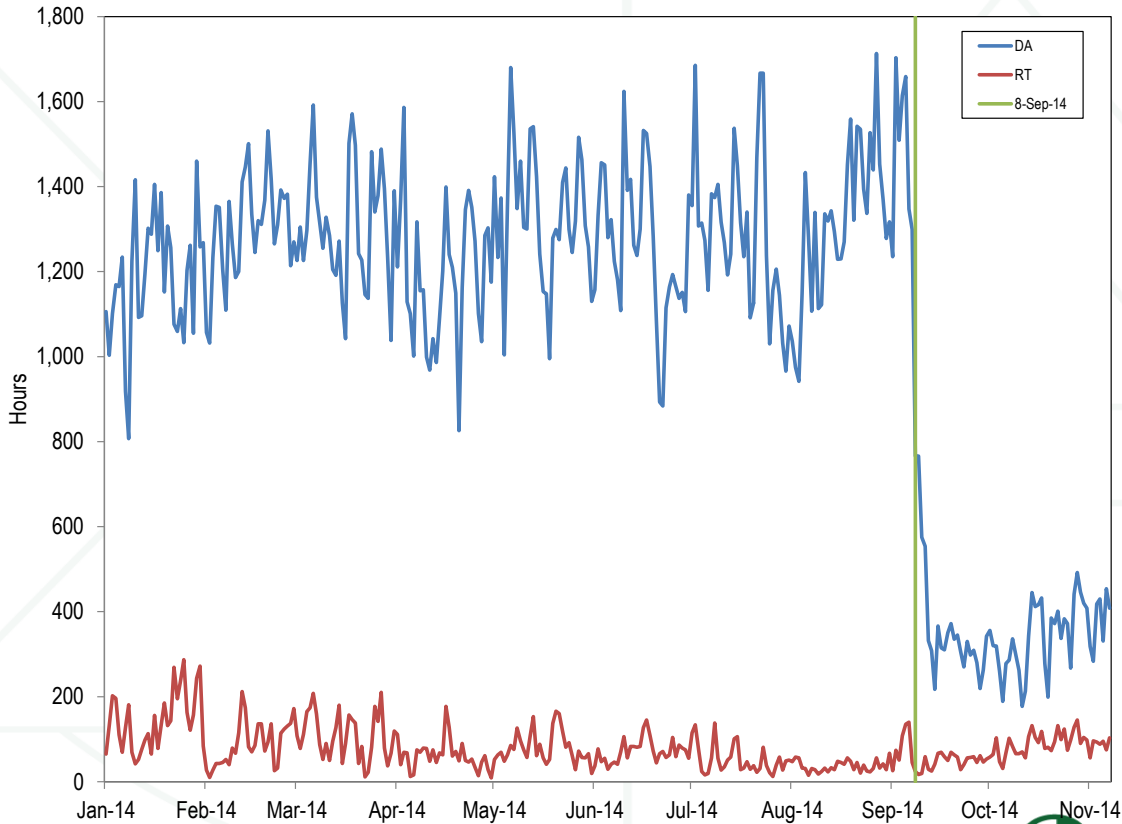


# Difference between real time and day ahead prices from July 9, 2014 through November 7, 2014

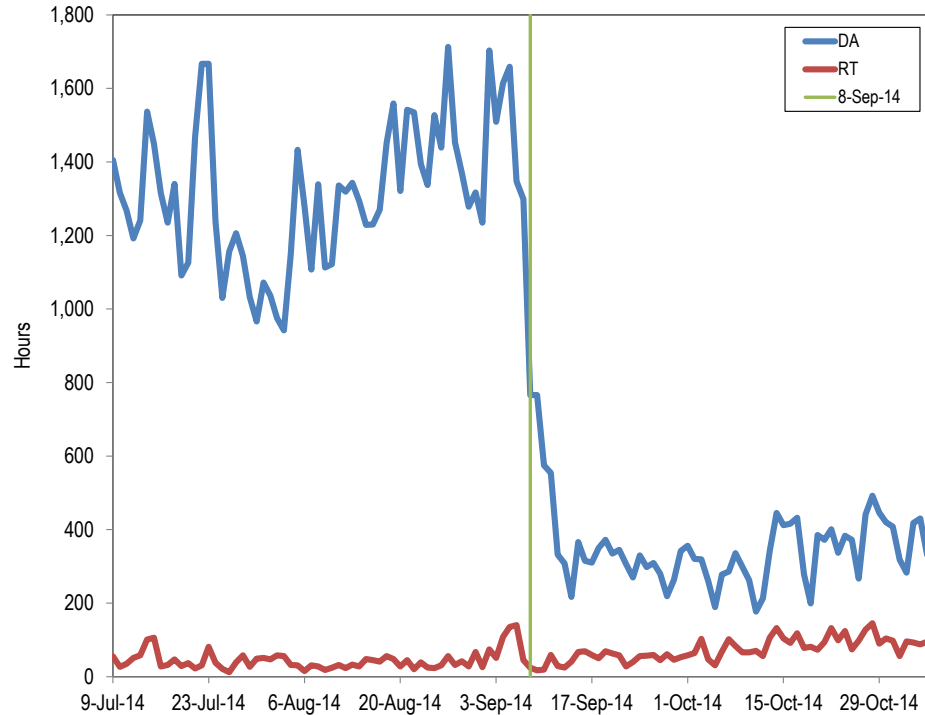
	2014 (Jul 09 - Sep 7)			2014 (Sep 8 - Nov 7)			Percent of Difference
	Day Ahead	Real Time	Difference	Day Ahead	Real Time	Difference	
Average	\$34.55	\$34.80	\$0.25	\$34.20	\$34.25	\$0.05	(81.1%)
Median	\$32.28	\$30.10	(\$2.19)	\$33.86	\$30.36	(\$3.50)	60.2%
Standard deviation	\$11.52	\$17.10	\$5.58	\$9.37	\$14.82	\$5.45	(2.3%)
Peak average	\$41.48	\$40.66	(\$0.82)	\$40.29	\$39.83	(\$0.46)	(44.7%)
Peak median	\$39.49	\$35.34	(\$4.15)	\$39.36	\$35.56	(\$3.80)	(8.6%)
Peak standard deviation	\$10.97	\$16.99	\$6.01	\$7.65	\$16.05	\$8.39	39.6%
Off peak average	\$28.66	\$29.82	\$1.16	\$28.31	\$28.85	\$0.53	(54.0%)
Off peak median	\$26.36	\$26.06	(\$0.29)	\$26.45	\$26.07	(\$0.38)	27.7%
Off peak standard deviation	\$8.25	\$15.56	\$7.31	\$6.76	\$11.14	\$4.37	(40.2%)



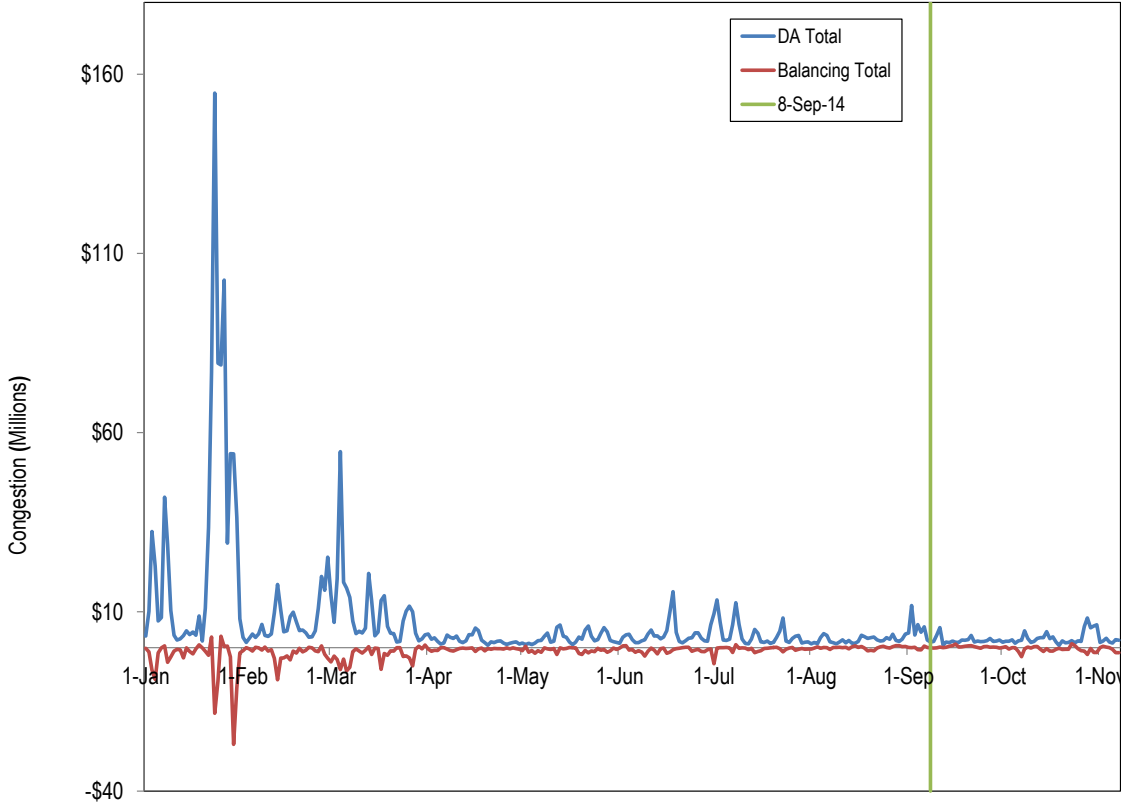
# DA and RT Binding Constraint Hours: January 2014 through November 7, 2014



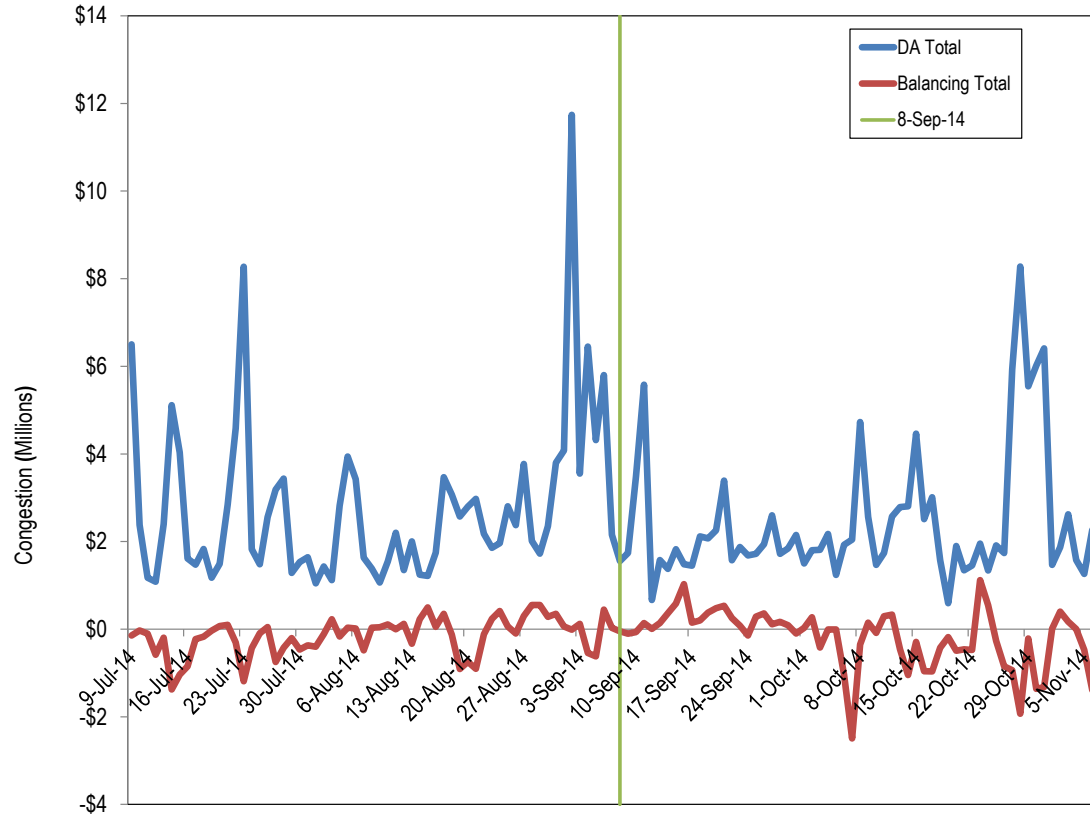
# DA and RT Binding Constraint Hours: July 9, 2104 through November 7, 2014



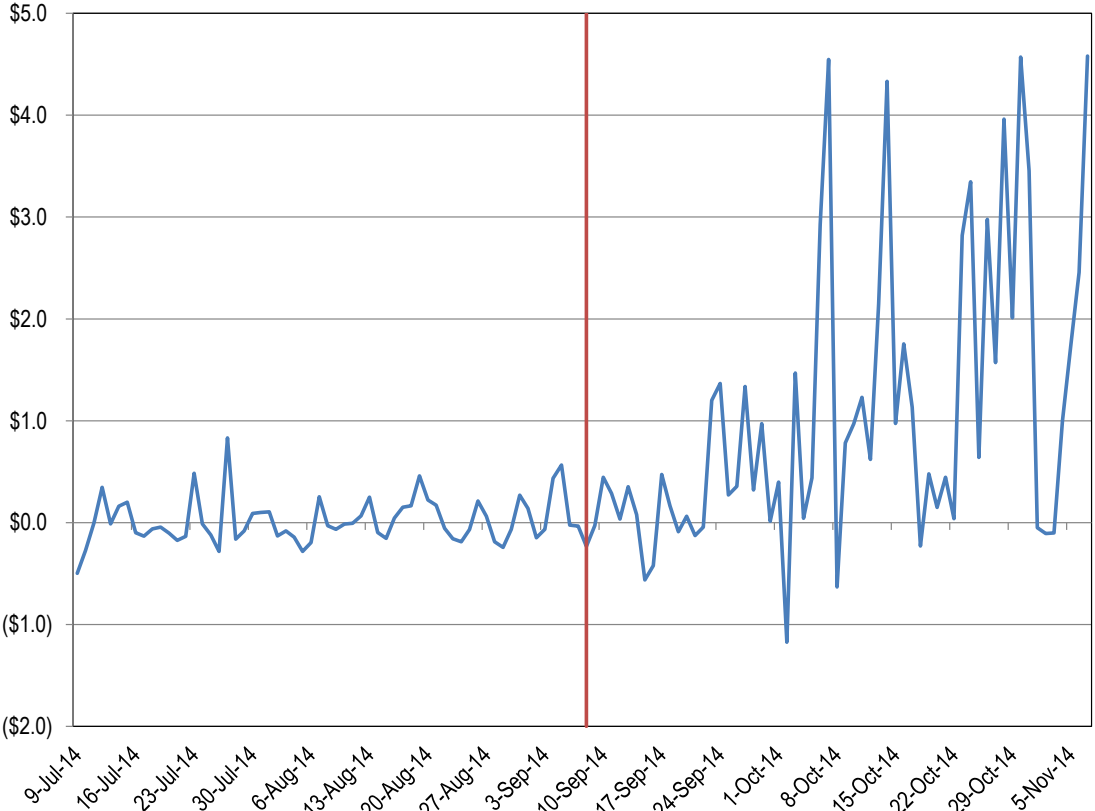
# DA and Balancing Congestion: January 2014 through November 7, 2014



# DA and Balancing Congestion: July 9, 2014 through November 7, 2014



# Up-to Congestion Transaction Average Profit: July 9, 2014 through November 7, 2014



# Up-to Congestion Transaction Average Profit per MW pre and post FERC Filing: July 9, 2014 through November 7, 2014

	Average Profit per MW
Pre FERC Ruling (7/9 - 9/7)	\$0.02
Post FERC Ruling (9/8 - 11/7)	\$0.94
Change	5,081.75%

# Energy uplift charges eight weeks before and after September 8, 2014

Period	Day-Ahead	Balancing	Reactive	Synchronous Condensing	Black Start	Total Energy Uplift
Jul14-Sep07	\$214,557	\$378,789	\$61,254	\$68	\$134,441	\$789,107
Sep08-Nov02	\$289,516	\$306,491	\$27,718	\$0	\$103,877	\$727,602
Difference	\$74,959	(\$72,297)	(\$33,536)	(\$68)	(\$30,563)	(\$61,505)
Difference (%)	34.9%	(19.1%)	(54.7%)	(100.0%)	(22.7%)	(7.8%)

# Energy uplift rates eight weeks before and after September 8, 2014 (\$/MWh)

Period	Day-Ahead Rate	RTO Balancing Reliability Rate	RTO Balancing Deviation Rate	East Balancing Reliability Rate	East Balancing Deviation Rate	West Balancing Reliability Rate	West Balancing Deviation Rate	Rate paid by any East Deviation	Rate paid by any West Deviation
Jul14-Sep07	0.092	0.020	0.844	0.008	0.065	0.000	0.027	0.909	0.871
Sep08-Nov02	0.144	0.014	0.702	0.002	0.054	0.001	0.199	0.756	0.901
Difference	0.052	(0.005)	(0.142)	(0.006)	(0.011)	0.001	0.172	(0.153)	0.030
Difference (%)	56.0%	(27.7%)	(16.8%)	(75.2%)	(17.4%)	4,647.8%	636.2%	(16.9%)	3.5%



# Tier 1 compensation as currently implemented by PJM

## Tier 1 Compensation by Type of Hour as Currently Implemented by PJM

Hourly Parameters	No Spin Event	Spin Event
NSRMCP=\$0	T1 credits = \$0	T1 credits = Synchronized Energy Premium Price * actual response MW
NSRMCP>\$0	T1 credits = T2 SRMCP * calculated tier 1 MW	T1 credits = T2 SRMCP * min(calculated tier 1 MW, actual response MW)

# Tier 1 compensation as recommended by MMU

Hourly Parameters	Tier 1 Compensation by Type of Hour as Recommended by MMU	
	No Spin Event	Spin Event
<b>NSRMCP=\$0</b>	T1 credits = \$0	T1 credits = Synchronized Energy Premium Price * actual response MW
<b>NSRMCP&gt;\$0</b>	T1 credits = \$0	T1 credits = Synchronized Energy Premium Price * actual response MW



# Dollar Impact of Paying Tier 1 Synchronized Reserve the SRMCP When the NSRMCP Goes Above \$0

Year	Month	MAD Tier 1 Credits When NSRMCP > \$0	RTO Tier 1 Credits When NSRMCP > \$0	Tier 1 Credits Paid When NSRMCP > \$0
2012	Oct	\$655,254.26	\$1,603.24	\$656,857.50
2012	Nov	\$3,865,259.34	\$140,127.75	\$4,005,387.09
2012	Dec	\$439,237.82	\$0.00	\$439,237.82
2013	Jan	\$1,099,270.92	\$0.00	\$1,099,270.92
2013	Feb	\$180,210.84	\$0.00	\$180,210.84
2013	Mar	\$2,408,969.22	\$0.00	\$2,408,969.22
2013	Apr	\$1,185,455.48	\$47,812.11	\$1,233,267.59
2013	May	\$681,357.31	\$16,688.22	\$698,045.53
2013	Jun	\$247,187.86	\$1,519.63	\$248,707.49
2013	Jul	\$2,178,730.80	\$17,716.40	\$2,196,447.20
2013	Aug	\$1,213,298.83	\$581,718.27	\$1,795,017.10
2013	Sep	\$2,056,147.14	\$279,570.14	\$2,335,717.28
2013	Oct	\$84,208.06	\$14,694.77	\$98,902.83
2013	Nov	\$6,459.27	\$3,304.03	\$9,763.30
2013	Dec	\$100,461.11	\$70,196.95	\$170,658.06
2014	Jan	\$43,637,117.68	\$18,679,374.56	\$62,316,492.24
2014	Feb	\$1,766,396.74	\$858,905.98	\$2,625,302.72
2014	Mar	\$7,800,330.76	\$2,639,757.36	\$10,440,088.12
2014	Apr	\$2,648,455.99	\$2,304,402.56	\$4,952,858.55
2014	May	\$1,659,371.64	\$2,352,913.38	\$4,012,285.02
2014	Jun	\$227,197.77	\$339,093.85	\$566,291.62
2014	Jul	\$65,759.59	\$89,984.57	\$155,744.16
2014	Aug	\$0.00	\$0.00	\$0.00
2014	Sep	\$0.00	\$0.00	\$0.00
2014	Total	\$74,206,138.42	\$28,439,383.78	\$102,645,522.20



# MAD subzone ASO tier 1 estimate biasing, January through June, 2014

Year	Month	Number of Hours Biased Negatively	Average Negative Bias (MW)	Number of Hours Biased Positively	Average Positive Bias (MW)
2014	Jan	13	(1,419.23)	2	250
2014	Feb	36	(1,036.11)	1	100
2014	Mar	37	(1,281.11)	4	500
2014	Apr	32	(1,387.50)	0	NA
2014	May	23	(909.78)	0	NA
2014	Jun	17	(1,179.41)	3	667
2014	Jul	36	(1,011.11)	0	NA
2014	Aug	31	(891.94)	1	750
2014	Sep	15	(1,206.67)	0	NA
2014	Total	240	(1,146.98)	11	453

# Weighted price of tier 1 synchronized reserve attributable to a non-synchronized reserve price above zero; January through September, 2014

Year	Month	Total Number of Hours When NSRMCP Greater Than \$0	Tier 1 MW Weighted Average SRMCP for Hours When NSRMCP Greater than \$0	Total Tier 1 Credits for Hours When NSRMCP Greater Than \$0	Total Tier 1 MW Credited for Hours When NSRMCP Greater Than \$0	Average Tier 1 MW Credited Per Hour
2014	Jan	155	\$109.81	\$62,316,492	692,263	4,466.2
2014	Feb	15	\$42.57	\$2,625,303	65,332	4,355.5
2014	Mar	67	\$46.49	\$10,440,088	241,508	3,604.6
2014	Apr	99	\$16.36	\$4,952,859	320,743	3,239.8
2014	May	61	\$15.85	\$4,012,285	253,352	4,153.3
2014	Jun	4	\$35.46	\$566,292	15,970	3,992.5
2014	Jul	5	\$14.20	\$155,744	9,149	1,829.8
2014	Aug	0	\$0.00	\$0	0	NA
2014	Sep	0	\$0.00	\$0	0	NA
2014	Total	407	\$64.59	\$85,069,063	1,598,317	3,663.1

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