



PJM/MISO Day Ahead M2M Exchange

BENEFIT ANALYSIS



Benefit Analysis Objectives

- Evaluate the benefit of exchanging MW utilization on M2M flowgates in DA markets between MISO and PJM, where benefits are realized in terms of:
 - Overall DA production cost savings for the 2 RTOs
 - DA shadow price vs RT shadow price for the constraint
 - Overall reduced RT JOA settlement for the 2 RTOs

Benefit Proposition

FG 230: Breed – Wheatland 345 kV line for loss of Jefferson – Rockport 765 kV line (MISO Flowgate) on 1/11/2013 at 9:00

MISO			PJM			MISO RT M2M Credit = MISO SP * (PJM MF-PJM FFE)
MISO RT SP	MISO RT MF	MISO RT FFE	PJM RT SP	PJM RT MF	PJM RT FFE	
\$ 839.27	94 MW	258 MW	\$ 89.62	1002 MW	719 MW	\$ 237,513.41

SP: Shadow Price

DA: Day-Ahead

MF: Market Flow

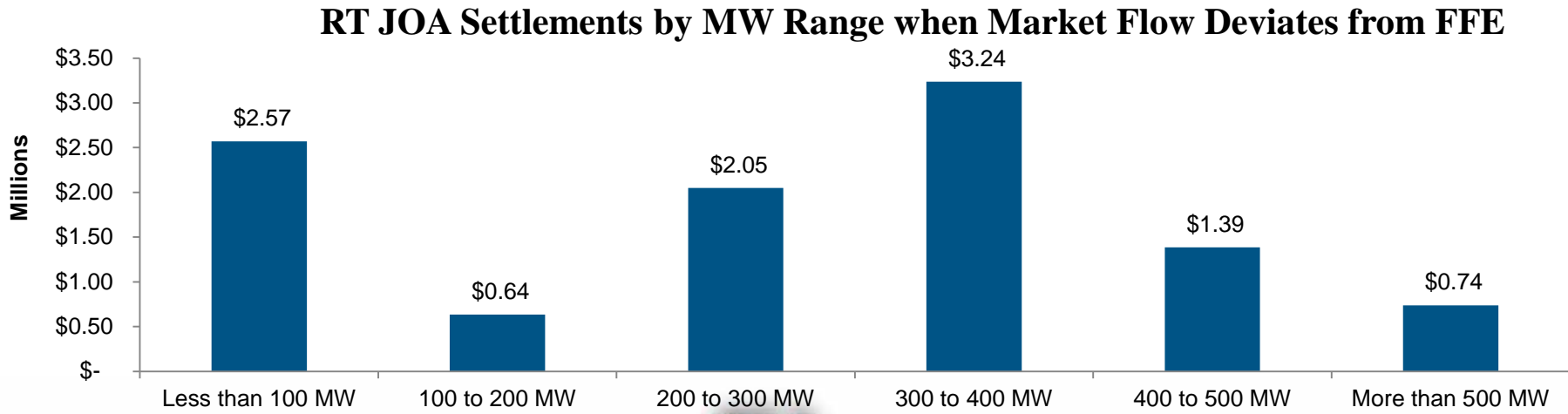
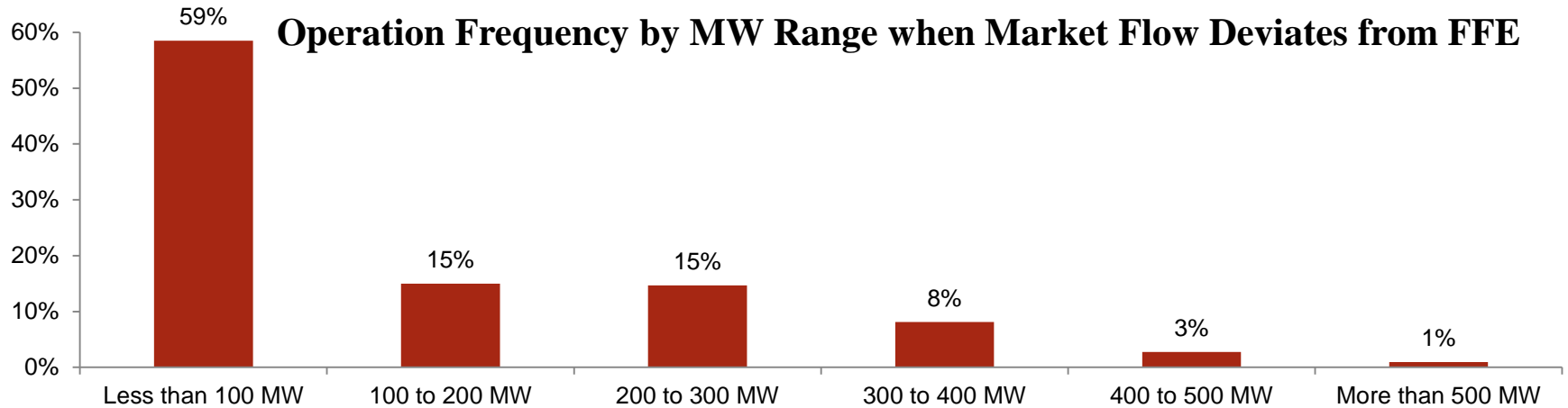
RT: Real Time

FFE: Firm Flow Entitlement

- **PJM acquired additional 283 MW of flowgate capacity from MISO in RT at the shadow price of \$839.27**
- **If we were able to exchange some MW in DA markets, we anticipate:**
 - ❑ **Reduced DA production cost with more efficient unit commitment and economic dispatch by RTOs in DA Market and Reliability Assessment Commitment process**
 - ❑ **Reduced overall JOA Settlement (DA and RT combined)**

Opportunities Shown in RT JOA Settlement Data

Based on hourly data from 2013 and 2014 MISO-PJM RT JOA Settlement



Top 10 Flowgate Candidates

Based on hourly data from 2013 and 2014 MISO-PJM RT JOA Settlement

FG Name	Owner	RT JOA Settlement	MW Exchange Opportunities (MW)	\$ / MW = RT JOA Settlement/ MW Exchange Opportunities
Breed_Wheatland_345_flo_Jefferson_Rockport_765	MISO	\$4,931,969.56	22,342	\$221
Cordova_Nelson345_flo_H471_Nelson345	PJM	\$1,615,378.85	21,421	\$75
Monticello_East_Winamac_138_flo_Schahfer_Burr_Oak_345	MISO	\$1,239,289.38	1,580	\$784
Crete_St_Johns_Tap_345_kV_1_o_Dum_Wi_Cent_765_kV	PJM	\$481,137.07	17,257	\$28
CaseyWest_Breed345_flo_WiltonCenter_Dumont765	MISO	\$456,579.69	8,721	\$52
Oak_Grove_Galesburg_flo_Nelson_ElectricJct	MISO	\$356,705.55	1,432	\$249
Wheatland_Petersburg_345_flo_Rockport_Jefferson765	MISO	\$155,077.29	2,687	\$58
Oakgrove_Galesburg_161_FLO_Cordova_Nelson_345	MISO	\$149,960.57	1,435	\$105
Michigan_City_Laporte_138_flo_wilton_cntr_dumont	PJM	\$138,602.93	1,530	\$91
MiamiFt_345by138kV_xf9_flo_Tanner_Drborn_345kV	PJM	\$136,986.97	794	\$173

Approximately \$10.6 Million was settled in 2013 and 2014; these 10 flowgates counted for 91% of the total amount



Benefit Analysis Setup

- Breed_Wheatland 345 flo Jefferson_Rockport 765 Flowgate for 1/11/2013
 - \$1.2 million RT JOA Settlement between MISO and PJM
 - On average, PJM's Real Time Market Flow is 198 MW more than PJM's FFE
 - On average, MISO's Real Time Market Flow is 152 MW less than MISO's FFE

[Detail is available under Appendix A](#)

- What happens if we exchange some FFE MW in DA between MISO and PJM?

Analysis Description

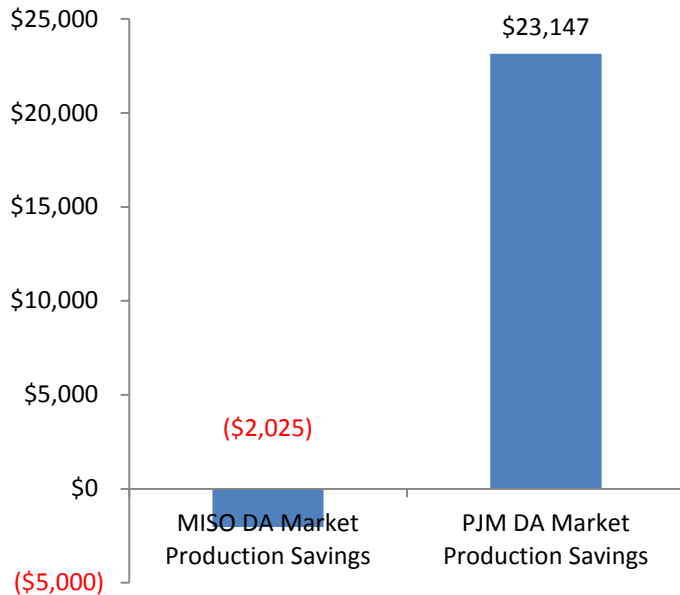
- Method 1
 - Exchange 20 MW between MISO and PJM in DA markets
- Method 2
 - Exchange 60% of the anticipated RT MW EXCG between MISO and PJM in DA markets
- Other methods are available and will be further explored during the business process design phase

Method 1 – Fixed MW Exchange

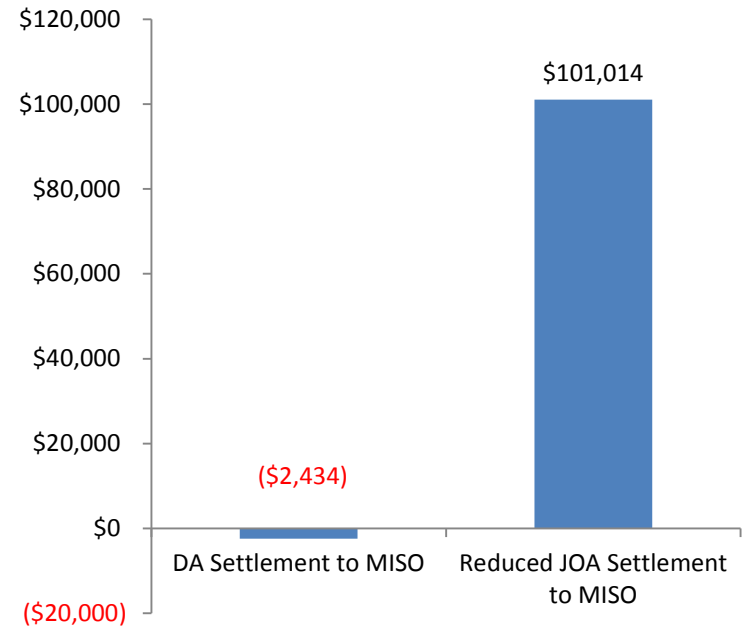
Flowgate: Breed - Wheatland 345 flo Jefferson_Rockport765

Action: MISO reduced DA limit by 20 MW and PJM increased DA limit by 20 MW

DA Production Cost Savings



RT JOA Settlement Savings



Analysis setup data is available in [Appendix B](#)

More result detail is available in [Appendix D](#) and [Appendix F](#)



Method 1 – Fixed MW Exchange

Overall DA production cost savings for the 2 RTOs

- MISO's DA Savings = **-\$2025**
- PJM's DA Savings = \$23,147

DA shadow price vs RT shadow price for the constraint

- Average DA Shadow Price = \$5.29
- Average RT Shadow Price = \$252.59

Overall reduced JOA settlement for the 2 RTOs

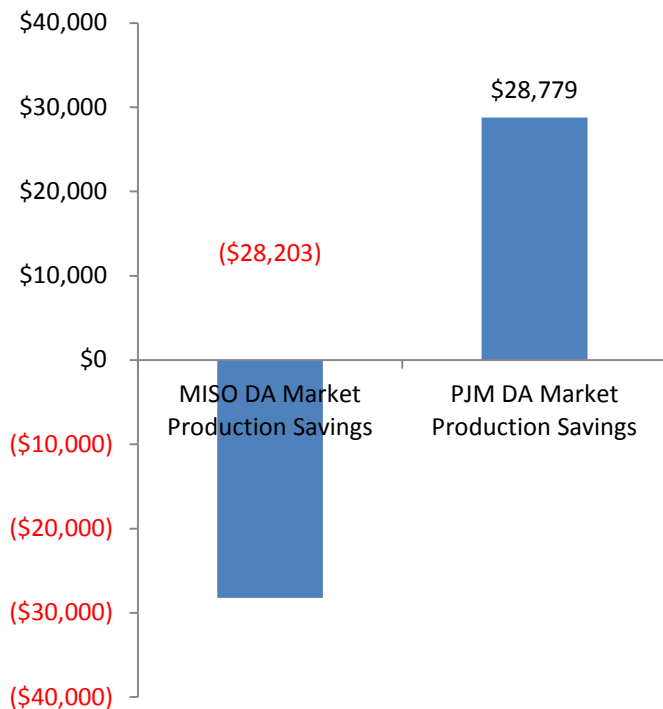
- Original RT JOA Settlement = \$ 1,221,313.05
- Adjusted RT JOA Settlement = \$ 1,120,299.05
- RT JOA Settlement Savings = \$101,014
- DA JOA Settlement = **-\$2,434**

Method 2 – 60% MW EXCG

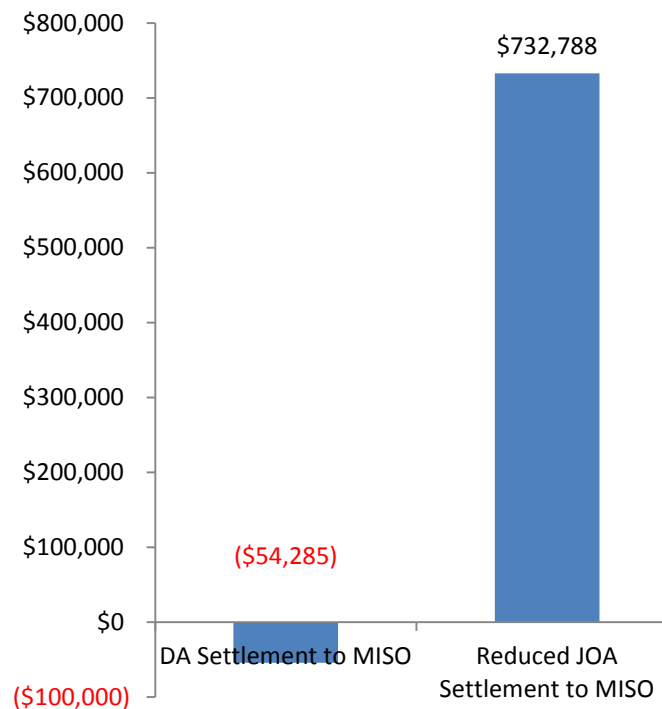
Flowgate: Breed - Wheatland 345 flo Jefferson_Rockport765

Action: MISO reduce DA limit by 60% of (PJM MF-PJM FFE) and PJM increase DA limit by 60% of (PJM RT MF-PJM RT FFE)

DA Production Cost Savings



RT JOA Settlement Savings



Analysis setup data is available in [Appendix C](#)

More result detail is available in [Appendix E](#) and [Appendix G](#)



Method 2 – Fixed MW Exchange

Overall DA production cost savings for the 2 RTOs

- MISO's DA Savings = **-\$28,203**
- PJM's DA Savings = \$28,779

DA shadow price vs RT shadow price for the constraint

- Average DA Shadow Price = \$16.91
- Average RT Shadow Price = \$252.59

Overall reduced JOA settlement for the 2 RTOs

- Original RT JOA Settlement = \$ 1,221,313.05
- Adjusted RT JOA Settlement = \$ 488,525.22
- RT JOA Settlement Savings = \$ 732,788
- DA JOA Settlement to MISO = **-\$ 54,285**

Summary

- Based on a sampling of one constraint over the period of 1 day and applying two different methods, benefits were observed in terms of:
 - Overall DA production cost savings for the 2 RTOs
 - Even there is a increase in DA production cost for MISO, it is offset by the production savings seen in PJM's DA market
 - DA shadow price vs RT shadow price for the constraint
 - DA shadow prices for the 2 methods are significantly lower than those observed in RT
 - Overall reduced RT JOA settlement for the 2 RTOs
 - Both methods shown significant RT JOA settlement savings



Appendix



A. RT JOA Settlement Data for 01/11/2013

Hour Ending	MISO RT SP	MISO RT MF	MISO RT FFE	Usage	PJM RT SP	PJM RT MF	PJM RT FFE	Usage	MISO Credit
1/11/2013 1:00	\$3.41	82	225	-143	\$29.56	939	729	210	\$716.10
1/11/2013 2:00		67	218	-151		893	758	135	
1/11/2013 3:00		40	205	-165		782	758	24	
1/11/2013 4:00		24	206	-182		807	758	49	
1/11/2013 5:00	\$261.45	66	211	-145	\$37.12	947	726	221	\$57,780.45
1/11/2013 6:00	\$407.79	78	199	-121	\$158.46	932	721	211	\$86,043.69
1/11/2013 7:00	\$270.17	87	223	-136	\$205.34	948	717	231	\$62,409.27
1/11/2013 8:00	\$756.15	101	239	-138	\$38.52	971	717	254	\$192,062.10
1/11/2013 9:00	\$155.58	87	237	-150	\$62.16	964	718	246	\$38,272.68
1/11/2013 10:00	\$839.27	94	258	-164	\$89.62	1002	719	283	\$237,513.41
1/11/2013 11:00	\$80.98	109	255	-146	\$40.34	980	720	260	\$21,054.80
1/11/2013 12:00	\$31.81	74	254	-180	\$30.66	943	721	222	\$7,061.82
1/11/2013 13:00	\$81.94	53	249	-196	\$7.15	907	722	185	\$15,158.90
1/11/2013 14:00	\$229.36	37	250	-213	\$51.63	889	723	166	\$38,073.76
1/11/2013 15:00	\$166.12	30	245	-215	\$69.62	876	724	152	\$25,250.24
1/11/2013 16:00	\$82.10	56	241	-185	\$126.47	895	725	170	\$13,957.00
1/11/2013 17:00	\$368.17	91	217	-126	\$46.25	973	718	255	\$93,883.35
1/11/2013 18:00	\$131.62	80	221	-141	\$24.09	943	718	225	\$29,614.50
1/11/2013 19:00	\$462.19	77	199	-122	\$185.04	942	718	224	\$103,530.56
1/11/2013 20:00	\$659.12	118	226	-108	\$185.11	999	720	279	\$183,894.48
1/11/2013 21:00	\$39.43	111	217	-106	\$19.98	989	721	268	\$10,567.24
1/11/2013 22:00	\$20.41	47	213	-166	\$6.09	912	724	188	\$3,837.08
1/11/2013 23:00	\$3.63	27	196	-169	\$3.56	901	727	174	\$631.62
1/12/2013 0:00		21	105	-84		868	758	110	
Average Usage				-152.167				197.58	

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B. Method 1 Setup

Hour Ending	MISO RT SP	MISO RT MF	MISO RT FFE	MISO DA Limit	Updated MISO DA Limit = MISO DA Limit -40 MW	PJM RT SP	PJM RT MF	PJM RT FFE	PJM DA Limit	Updated PJM DA Limit = PJM DA Limit +40 MW	MISO RT Credit
1/11/2013 1:00	\$ 3.41	82	225	120	80	\$ 29.56	939	729	1000	1040	\$ 716.10
1/11/2013 2:00	\$ -	67	218	120	80	\$ -	893	758	1000	1040	
1/11/2013 3:00	\$ -	40	205	120	80	\$ -	782	758	1000	1040	
1/11/2013 4:00	\$ -	24	206	120	80	\$ -	807	758	1000	1040	
1/11/2013 5:00	\$ 261.45	66	211	120	80	\$ 37.12	947	726	1000	1040	\$ 57,780.45
1/11/2013 6:00	\$ 407.79	78	199	120	80	\$ 158.46	932	721	1000	1040	\$ 86,043.69
1/11/2013 7:00	\$ 270.17	87	223	120	80	\$ 205.34	948	717	1000	1040	\$ 62,409.27
1/11/2013 8:00	\$ 756.15	101	239	120	80	\$ 38.52	971	717	1000	1040	\$ 192,062.10
1/11/2013 9:00	\$ 155.58	87	237	120	80	\$ 62.16	964	718	1150	1190	\$ 38,272.68
1/11/2013 10:00	\$ 839.27	94	258	120	80	\$ 89.62	1002	719	1150	1190	\$ 237,513.41
1/11/2013 11:00	\$ 80.98	109	255	120	80	\$ 40.34	980	720	1150	1190	\$ 21,054.80
1/11/2013 12:00	\$ 31.81	74	254	120	80	\$ 30.66	943	721	1150	1190	\$ 7,061.82
1/11/2013 13:00	\$ 81.94	53	249	120	80	\$ 7.15	907	722	1150	1190	\$ 15,158.90
1/11/2013 14:00	\$ 229.36	37	250	120	80	\$ 51.63	889	723	1150	1190	\$ 38,073.76
1/11/2013 15:00	\$ 166.12	30	245	120	80	\$ 69.62	876	724	1150	1190	\$ 25,250.24
1/11/2013 16:00	\$ 82.10	56	241	120	80	\$ 126.47	895	725	1150	1190	\$ 13,957.00
1/11/2013 17:00	\$ 368.17	91	217	120	80	\$ 46.25	973	718	1150	1190	\$ 93,883.35
1/11/2013 18:00	\$ 131.62	80	221	120	80	\$ 24.09	943	718	1150	1190	\$ 29,614.50
1/11/2013 19:00	\$ 462.19	77	199	120	80	\$ 185.04	942	718	1150	1190	\$ 103,530.56
1/11/2013 20:00	\$ 659.12	118	226	120	80	\$ 185.11	999	720	1150	1190	\$ 183,894.48
1/11/2013 21:00	\$ 39.43	111	217	120	80	\$ 19.98	989	721	1150	1190	\$ 10,567.24
1/11/2013 22:00	\$ 20.41	47	213	120	80	\$ 6.09	912	724	1150	1190	\$ 3,837.08
1/11/2013 23:00	\$ 3.63	27	196	120	80	\$ 3.56	901	727	1150	1190	\$ 631.62
1/12/2013 0:00	\$ -	21	105	120	80	\$ -	868	758	1000	1040	

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C. Method 2 Setup

Hour Ending	MISO RT SP	MISO RT MF	MISO RT FFE	MISO DA Limit	Update MISO DA Limit= MISO DA Limit-0.6*MW EXCG	PJM RT SP	PJM RT MF	PJM RT FFE	PJM DA Limit	Updated PJM DA Limit = PJM DA Limit + 0.6*MW EXCG	MW EXCG= PJM MF-PJM FFE	MISO Credit
1/11/2013 1:00	\$ 3.41	82	225	120	-6	\$ 29.56	939	729	1000	1126	210	\$ 716.10
1/11/2013 2:00	\$ -	67	218	120	39	\$ -	893	758	1000	1081	135	
1/11/2013 3:00	\$ -	40	205	120	105.6	\$ -	782	758	1000	1014.4	24	
1/11/2013 4:00	\$ -	24	206	120	90.6	\$ -	807	758	1000	1029.4	49	
1/11/2013 5:00	\$ 261.45	66	211	120	-12.6	\$ 37.12	947	726	1000	1132.6	221	\$ 57,780.45
1/11/2013 6:00	\$ 407.79	78	199	120	-6.6	\$ 158.46	932	721	1000	1126.6	211	\$ 86,043.69
1/11/2013 7:00	\$ 270.17	87	223	120	-18.6	\$ 205.34	948	717	1000	1138.6	231	\$ 62,409.27
1/11/2013 8:00	\$ 756.15	101	239	120	-32.4	\$ 38.52	971	717	1000	1152.4	254	\$ 192,062.10
1/11/2013 9:00	\$ 155.58	87	237	120	-27.6	\$ 62.16	964	718	1150	1297.6	246	\$ 38,272.68
1/11/2013 10:00	\$ 839.27	94	258	120	-49.8	\$ 89.62	1002	719	1150	1319.8	283	\$ 237,513.41
1/11/2013 11:00	\$ 80.98	109	255	120	-36	\$ 40.34	980	720	1150	1306	260	\$ 21,054.80
1/11/2013 12:00	\$ 31.81	74	254	120	-13.2	\$ 30.66	943	721	1150	1283.2	222	\$ 7,061.82
1/11/2013 13:00	\$ 81.94	53	249	120	9	\$ 7.15	907	722	1150	1261	185	\$ 15,158.90
1/11/2013 14:00	\$ 229.36	37	250	120	20.4	\$ 51.63	889	723	1150	1249.6	166	\$ 38,073.76
1/11/2013 15:00	\$ 166.12	30	245	120	28.8	\$ 69.62	876	724	1150	1241.2	152	\$ 25,250.24
1/11/2013 16:00	\$ 82.10	56	241	120	18	\$ 126.47	895	725	1150	1252	170	\$ 13,957.00
1/11/2013 17:00	\$ 368.17	91	217	120	-33	\$ 46.25	973	718	1150	1303	255	\$ 93,883.35
1/11/2013 18:00	\$ 131.62	80	221	120	-15	\$ 24.09	943	718	1150	1285	225	\$ 29,614.50
1/11/2013 19:00	\$ 462.19	77	199	120	-14.4	\$ 185.04	942	718	1150	1284.4	224	\$ 103,530.56
1/11/2013 20:00	\$ 659.12	118	226	120	-47.4	\$ 185.11	999	720	1150	1317.4	279	\$ 183,894.48
1/11/2013 21:00	\$ 39.43	111	217	120	-40.8	\$ 19.98	989	721	1150	1310.8	268	\$ 10,567.24
1/11/2013 22:00	\$ 20.41	47	213	120	7.2	\$ 6.09	912	724	1150	1262.8	188	\$ 3,837.08
1/11/2013 23:00	\$ 3.63	27	196	120	15.6	\$ 3.56	901	727	1150	1254.4	174	\$ 631.62
1/12/2013 0:00	\$ -	21	105	120	54	\$ -	868	758	1000	1066	110	

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D. DA Settlement Data for Method 1

	MISO DA SP	Adjusted DA Limit	Original DA Limit	DA Settlements to MISO = MISO SP*(Original DA Limit-Adjusted DA Limit)
01:00	(\$4.01)	100	120	(\$80.20)
02:00	(\$2.22)	100	120	(\$44.40)
03:00	(\$4.05)	100	120	(\$81.00)
04:00	(\$3.39)	100	120	(\$67.80)
05:00	(\$10.46)	100	120	(\$209.20)
06:00	(\$11.75)	100	120	(\$235.00)
07:00	(\$24.53)	100	120	(\$490.60)
18:00	(\$13.08)	100	120	(\$261.60)
19:00	(\$4.30)	100	120	(\$86.00)
20:00	(\$4.61)	100	120	(\$92.20)
21:00	(\$7.68)	100	120	(\$153.60)
22:00	(\$8.65)	100	120	(\$173.00)
23:00	(\$4.74)	100	120	(\$94.80)
24:00	(\$18.22)	100	120	(\$364.40)

Total = (\$2,433.80)

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E. DA Settlement Data for Method 2

	MISO DA SP	Adjusted DA Limit	Original DA Limit	DA Settlements to MISO = MISO SP*(Original DA Limit- Adjusted DA Limit)
01:00	(\$8.40)	-6	120	(\$1,058.40)
02:00	(\$6.59)	39	120	(\$533.79)
03:00	(\$4.14)	106	120	(\$57.96)
04:00	(\$3.59)	91	120	(\$104.11)
05:00	(\$16.57)	-13	120	(\$2,203.81)
06:00	(\$19.95)	-7	120	(\$2,533.65)
07:00	(\$40.28)	-19	120	(\$5,598.92)
08:00	(\$52.01)	-32	120	(\$7,905.52)
09:00	(\$8.19)	-28	120	(\$1,212.12)
10:00	(\$3.07)	-50	120	(\$521.90)
17:00	(\$10.04)	-33	120	(\$1,536.12)
18:00	(\$57.92)	-15	120	(\$7,819.20)
19:00	(\$46.06)	-14	120	(\$6,172.04)
20:00	(\$37.26)	-47	120	(\$6,222.42)
21:00	(\$34.36)	-41	120	(\$5,531.96)
22:00	(\$19.65)	7	120	(\$2,220.45)
23:00	(\$14.57)	16	120	(\$1,515.28)
24:00	(\$23.30)	54	120	(\$1,537.80)

Total = (\$54285.45)

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F. Updated JOA Settlement Data for Method 1

Hour Ending	MISO RT SP	MISO RT MF	MISO RT FFE	PJM RT SP	PJM RT MF	PJM RT FFE	Updated PJM RT FFE = PJM RT FFE+20MW	MISO RT Credit	Updated MISO RT Credit = MISO SP * (PJM RT MF-Updated PJM RT FFE)
1/11/2013 1:00	\$ 3.41	82	225	\$ 29.56	939	729	749	\$ 716.10	\$ 647.90
1/11/2013 2:00	\$ -	67	218	\$ -	893	758	778		
1/11/2013 3:00	\$ -	40	205	\$ -	782	758	778		
1/11/2013 4:00	\$ -	24	206	\$ -	807	758	778		
1/11/2013 5:00	\$ 261.45	66	211	\$ 37.12	947	726	746	\$ 57,780.45	\$ 52,551.45
1/11/2013 6:00	\$ 407.79	78	199	\$ 158.46	932	721	741	\$ 86,043.69	\$ 77,887.89
1/11/2013 7:00	\$ 270.17	87	223	\$ 205.34	948	717	737	\$ 62,409.27	\$ 57,005.87
1/11/2013 8:00	\$ 756.15	101	239	\$ 38.52	971	717	737	\$ 192,062.10	\$ 176,939.10
1/11/2013 9:00	\$ 155.58	87	237	\$ 62.16	964	718	738	\$ 38,272.68	\$ 35,161.08
1/11/2013 10:00	\$ 839.27	94	258	\$ 89.62	1002	719	739	\$ 237,513.41	\$ 220,728.01
1/11/2013 11:00	\$ 80.98	109	255	\$ 40.34	980	720	740	\$ 21,054.80	\$ 19,435.20
1/11/2013 12:00	\$ 31.81	74	254	\$ 30.66	943	721	741	\$ 7,061.82	\$ 6,425.62
1/11/2013 13:00	\$ 81.94	53	249	\$ 7.15	907	722	742	\$ 15,158.90	\$ 13,520.10
1/11/2013 14:00	\$ 229.36	37	250	\$ 51.63	889	723	743	\$ 38,073.76	\$ 33,486.56
1/11/2013 15:00	\$ 166.12	30	245	\$ 69.62	876	724	744	\$ 25,250.24	\$ 21,927.84
1/11/2013 16:00	\$ 82.10	56	241	\$ 126.47	895	725	745	\$ 13,957.00	\$ 12,315.00
1/11/2013 17:00	\$ 368.17	91	217	\$ 46.25	973	718	738	\$ 93,883.35	\$ 86,519.95
1/11/2013 18:00	\$ 131.62	80	221	\$ 24.09	943	718	738	\$ 29,614.50	\$ 26,982.10
1/11/2013 19:00	\$ 462.19	77	199	\$ 185.04	942	718	738	\$ 103,530.56	\$ 94,286.76
1/11/2013 20:00	\$ 659.12	118	226	\$ 185.11	999	720	740	\$ 183,894.48	\$ 170,712.08
1/11/2013 21:00	\$ 39.43	111	217	\$ 19.98	989	721	741	\$ 10,567.24	\$ 9,778.64
1/11/2013 22:00	\$ 20.41	47	213	\$ 6.09	912	724	744	\$ 3,837.08	\$ 3,428.88
1/11/2013 23:00	\$ 3.63	27	196	\$ 3.56	901	727	747	\$ 631.62	\$ 559.02
1/12/2013 0:00	\$ -	21	105	\$ -	868	758	778		
							Total MISO Credit	\$ 1,221,313.05	\$ 1,120,299.05

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G. Updated JOA Settlement Data for Method 2

Hour Ending	MISO RT SP	MISO RT MF	MISO RT FFE	PJM RT SP	PJM RT MF	PJM RT FFE	Updated PJM RT FFE = PJM RT FFE+0.6*MW EXCG	MISO RT Credit	Updated MISO RT Credit = MISO SP * (PJM RT MF-Updated PJM RT FFE)
1/11/2013 1:00	\$ 3.41	82	225	\$ 29.56	939	729	855	\$ 716.10	\$ 286.44
1/11/2013 2:00	\$ -	67	218	\$ -	893	758	839		
1/11/2013 3:00	\$ -	40	205	\$ -	782	758	772.4		
1/11/2013 4:00	\$ -	24	206	\$ -	807	758	787.4		
1/11/2013 5:00	\$ 261.45	66	211	\$ 37.12	947	726	858.6	\$ 57,780.45	\$ 23,112.18
1/11/2013 6:00	\$ 407.79	78	199	\$ 158.46	932	721	847.6	\$ 86,043.69	\$ 34,417.48
1/11/2013 7:00	\$ 270.17	87	223	\$ 205.34	948	717	855.6	\$ 62,409.27	\$ 24,963.71
1/11/2013 8:00	\$ 756.15	101	239	\$ 38.52	971	717	869.4	\$ 192,062.10	\$ 76,824.84
1/11/2013 9:00	\$ 155.58	87	237	\$ 62.16	964	718	865.6	\$ 38,272.68	\$ 15,309.07
1/11/2013 10:00	\$ 839.27	94	258	\$ 89.62	1002	719	888.8	\$ 237,513.41	\$ 95,005.36
1/11/2013 11:00	\$ 80.98	109	255	\$ 40.34	980	720	876	\$ 21,054.80	\$ 8,421.92
1/11/2013 12:00	\$ 31.81	74	254	\$ 30.66	943	721	854.2	\$ 7,061.82	\$ 2,824.73
1/11/2013 13:00	\$ 81.94	53	249	\$ 7.15	907	722	833	\$ 15,158.90	\$ 6,063.56
1/11/2013 14:00	\$ 229.36	37	250	\$ 51.63	889	723	822.6	\$ 38,073.76	\$ 15,229.50
1/11/2013 15:00	\$ 166.12	30	245	\$ 69.62	876	724	815.2	\$ 25,250.24	\$ 10,100.10
1/11/2013 16:00	\$ 82.10	56	241	\$ 126.47	895	725	827	\$ 13,957.00	\$ 5,582.80
1/11/2013 17:00	\$ 368.17	91	217	\$ 46.25	973	718	871	\$ 93,883.35	\$ 37,553.34
1/11/2013 18:00	\$ 131.62	80	221	\$ 24.09	943	718	853	\$ 29,614.50	\$ 11,845.80
1/11/2013 19:00	\$ 462.19	77	199	\$ 185.04	942	718	852.4	\$ 103,530.56	\$ 41,412.22
1/11/2013 20:00	\$ 659.12	118	226	\$ 185.11	999	720	887.4	\$ 183,894.48	\$ 73,557.79
1/11/2013 21:00	\$ 39.43	111	217	\$ 19.98	989	721	881.8	\$ 10,567.24	\$ 4,226.90
1/11/2013 22:00	\$ 20.41	47	213	\$ 6.09	912	724	836.8	\$ 3,837.08	\$ 1,534.83
1/11/2013 23:00	\$ 3.63	27	196	\$ 3.56	901	727	831.4	\$ 631.62	\$ 252.65
1/12/2013 0:00	\$ -	21	105	\$ -	868	758	824		
							Total MISO Credit	\$ 1,221,313.05	\$ 488,525.22

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