Sensitivity Results (as of 11/13/12)

Scenarios:

S1: Combined Federal Climate and Energy Policy

S2: National RPS – State/Regional Implementation

S3: Business as Usual

Sensitivities:

S3 High Gas: *All gas prices increased 25%*

S3 High Load: *All loads increased by 5%*

S1 High Load*: All loads increased by 5%* **(NOT YET COMPLETED)**

S1 High Spin Availability: *Reduce the spin requirement in MISO, SPP, PJM and IESO by 50% and modify CC operating parameters in all regions to increase operating flexibility.*

S1 Reduced Wind: *Multiply wind capacity for every wind unit in MISO_W by 75%, in Nebraska by 61%, in SPP_N by 85%, and in MISO_MO_IL by 74%*

S1 Flowgate Relief: *High Spin Availability changes above plus increase flowgate limits in both directions by 50% for 25 flowgates in MISO_W, MISO_MO_IL, and MAPP_US.*

1. EI Generation

BASE CASES

	Generation (TWh)			% of Total Supply		
	S1 Base	S2 Base	S3 Base	S1 Base	S2 Base	S3 Base
Coal	40	1,095	1,399	1%	30%	38%
Nuclear	1,087	875	886	36%	24%	24%
CC	755	532	831	25%	15%	23%
CT	39	32	43	1%	1%	1%
Steam Oil/Gas	6	13	15	0%	0%	0%
Hydro	211	228	193	7%	6%	5%
On-Shore Wind	722	476	217	24%	13%	6%
Off-Shore Wind	6	92	6	0%	3%	0%
Other Renewable	65	253	66	2%	7%	2%
Pump Storage Net	-8	-6	-4	0%	0%	0%
DR	4	0	1	0%	0%	0%
Total Generation	2,927	3,590	3,653	98%	99%	99%
External Supply	51	31	34	2%	1%	1%
Total	2,979	3,621	3,687	100%	100%	100%

S3 SENSITIVITIES

	Generation (TWh)			% of Total Supply		
	S3 Base	S3 HiGas	S3 HiLoad	S3 Base	S3 HiGas	S3 HiLoad
Coal	1,399	1,465	1,437	38%	40%	37%
Nuclear	886	886	886	24%	24%	23%
CC	831	768	945	23%	21%	24%
CT	43	39	65	1%	1%	2%
Steam Oil/Gas	15	15	23	0%	0%	1%
Hydro	193	193	193	5%	5%	5%
On-Shore Wind	217	217	217	6%	6%	6%
Off-Shore Wind	6	6	6	0%	0%	0%
Other Renewable	66	71	67	2%	2%	2%
Pump Storage Net	-4	-6	-4	0%	0%	0%
DR	1	1	2	0%	0%	0%
Total Generation	3,653	3,655	3,837	99%	99%	99%
External Supply	34	34	34	1%	1%	1%
Total	3,687	3,689	3,871	100%	100%	100%

S1 SENSITIVITIES

	S1 Generation (TWh)					% of Total Supply				
	Base	High Load	High Spin Avail	Re-duced Wind	Flow-gate Relief	Base	High Load	High Spin Avail	Re-duced Wind	Flow-gate Relief
Coal	40		41	43	42	1%		1%	1%	1%
Nuclear	1,087		1,091	1,089	1,091	36%		37%	37%	37%
CC	755		725	786	719	25%		24%	26%	24%
CT	39		43	44	42	1%		1%	1%	1%
Steam Oil/Gas	6		7	7	7	0%		0%	0%	0%
Hydro	211		212	211	212	7%		7%	7%	7%
On-Shore Wind	722		733	672	743	24%		25%	23%	25%
Off-Shore Wind	6		6	6	6	0%		0%	0%	0%
Other Renewable	65		71	67	71	2%		2%	2%	2%
Pump Storage Net	-8		-6	-10	-6	0%		0%	0%	0%
DR	4		4	3	3	0%		0%	0%	0%
Total Generation	2,927		2,929	2,917	2,933	98%		98%	98%	98%
External Supply	51		52	51	52	2%		2%	2%	2%
Total	2,979		2,980	2,969	2,984	100%		100%	100%	100%

2. EI Production Costs

BASE CASES

	S1 Base	S2 Base	S3 Base
Production Costs (M$)			
Fuel	40,802	73,789	85,057
Variable O&M	6,430	15,502	18,411
Total	47,231	89,291	103,469
CO2	45,340	126	154
Total w/CO2	92,571	89,416	103,622
Emissions (short tons)			
NOx (000)	93	873	1,122
SO2 (000)	21	1,300	1,771
CO2 (millions)	358	1,391	1,792
Wind Curtailment			
Wind Curtailment (TWh)	131	30	1
Percent Curtailed	15%	5%	0%

S3 SENSITIVITIES

S3 Sensitivities			
	S3 Base	**S3 HiGas**	**S3 HiLoad**
Production Costs (M$)			
Fuel	85,057	94,326	93,317
Variable O&M	18,411	19,072	19,407
Total	103,469	113,397	112,724
CO2	154	150	178
Total w/CO2	103,622	113,547	112,902
Emissions (short tons)			
NOx (000)	1,122	1,171	1,184
SO2 (000)	1,771	1,988	1,880
CO2 (millions)	1,792	1,833	1,899
Wind Curtailment			
Wind Curtailment (TWh)	1	1	1
Percent Curtailed	0%	0%	0%

S1 SENSITIVITIES

S1 Sensitivities					
	S1 Base	High Load	High Spin Avail	Reduced Wind	Flow-gate Relief
Production Costs (M$)					
Fuel	40,802		39,552	42,630	39,385
Variable O&M	6,430		6,457	6,536	6,443
Total	47,231		46,010	49,165	45,828
CO2	45,340		43,153	47,586	42,825
Total w/CO2	92,571		89,163	96,751	88,654
Emissions (short tons)					
NOx (000)	93		92	99	92
SO2 (000)	21		21	23	21
CO2 (millions)	358		340	375	338
Wind Curtailment					
Wind Curtailment (TWh)	131		120	64	110
Percent Curtailed	15%		14%	9%	13%

3. Wind Curtailment – S1 Sensitivities

	Base & Others	Re-duced Wind		Base	High Load	High Spin Avail	Re-duced Wind	Flow-gate Relief		Base	High Load	High Spin Avail	Re-duced Wind	Flow-gate Relief
ENT	1	1		0		0	0	0		30%		33%	23%	17%
FRCC	0	0		0		0	0	0						
MAPP_US	32	32		4		3	3	2		12%		11%	10%	6%
MISO_IN	28	28		1		0	1	1		2%		2%	2%	2%
MISO_MI	24	24		0		0	0	0		0%		0%	0%	0%
MISO_MO-IL	32	24		8		8	5	5		26%		25%	21%	15%
MISO_W	261	196		65		62	26	57		25%		24%	13%	22%
MISO_WUMS	9	9		0		0	0	0		1%		0%	0%	0%
NE	55	34		22		21	9	19		40%		37%	26%	33%
NEISO	18	18		0		0	0	0		2%		1%	2%	1%
NonRTO_Midwest	0	0		0		0	0	0						
NYISO_A-F	19	19		1		1	1	1		5%		4%	5%	4%
NYISO_G-I	1	1		0		0	0	0		0%		0%	0%	0%
NYISO_J-K	0	0		0		0	0	0						
PJM_E	6	6		0		0	0	0		1%		0%	1%	0%
PJM_ROM	6	6		0		0	0	0		0%		0%	0%	0%
PJM_ROR	44	44		1		0	0	0		1%		1%	1%	1%
SOCO	0	0		0		0	0	0						
SPP_N	146	124		21		17	12	14		15%		12%	10%	10%
SPP_S	148	148		5		5	4	10		3%		4%	2%	7%
TVA	0	0		0		0	0	0		0%		0%	0%	0%
VACAR	9	9		0		0	0	0		0%		0%	0%	0%
IESO	17	17		2		1	2	1		13%		6%	12%	6%
MAPP_CA	1	1		0		0	0	0		0%		0%	0%	0%
EI	859	742		131		120	64	110		15%		14%	9%	13%