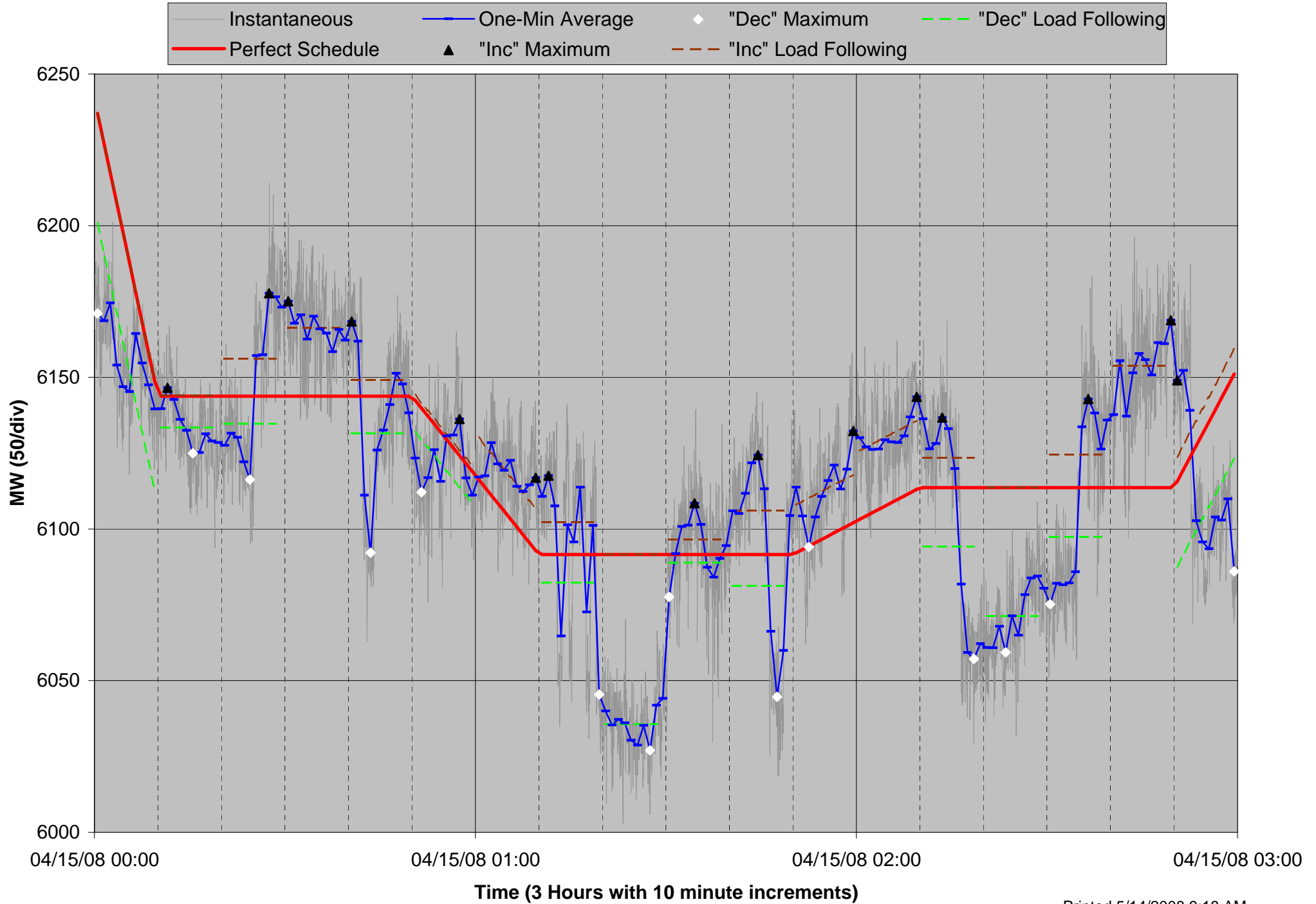


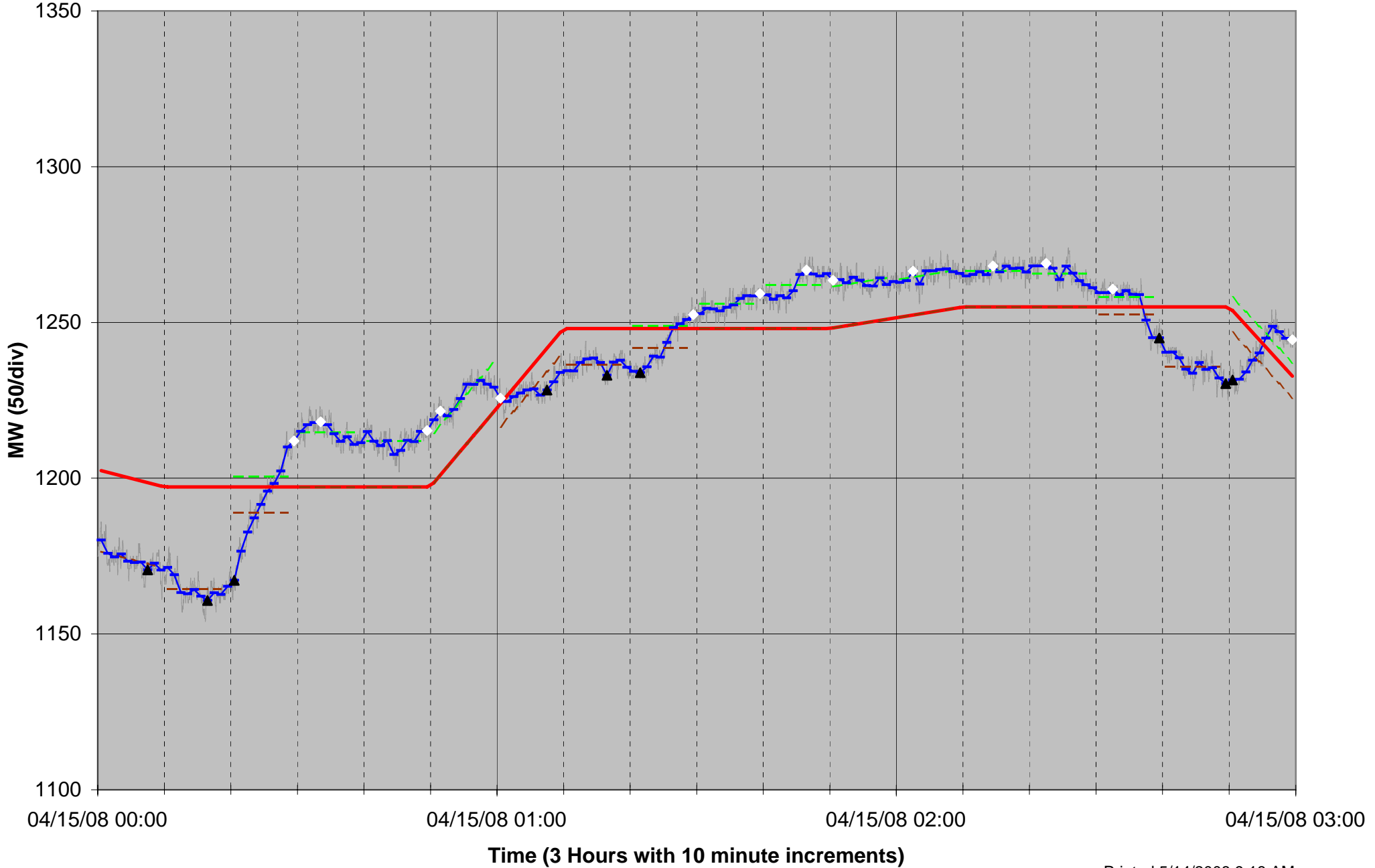
### Wind Regulation Requirements Methodology LOAD ONLY



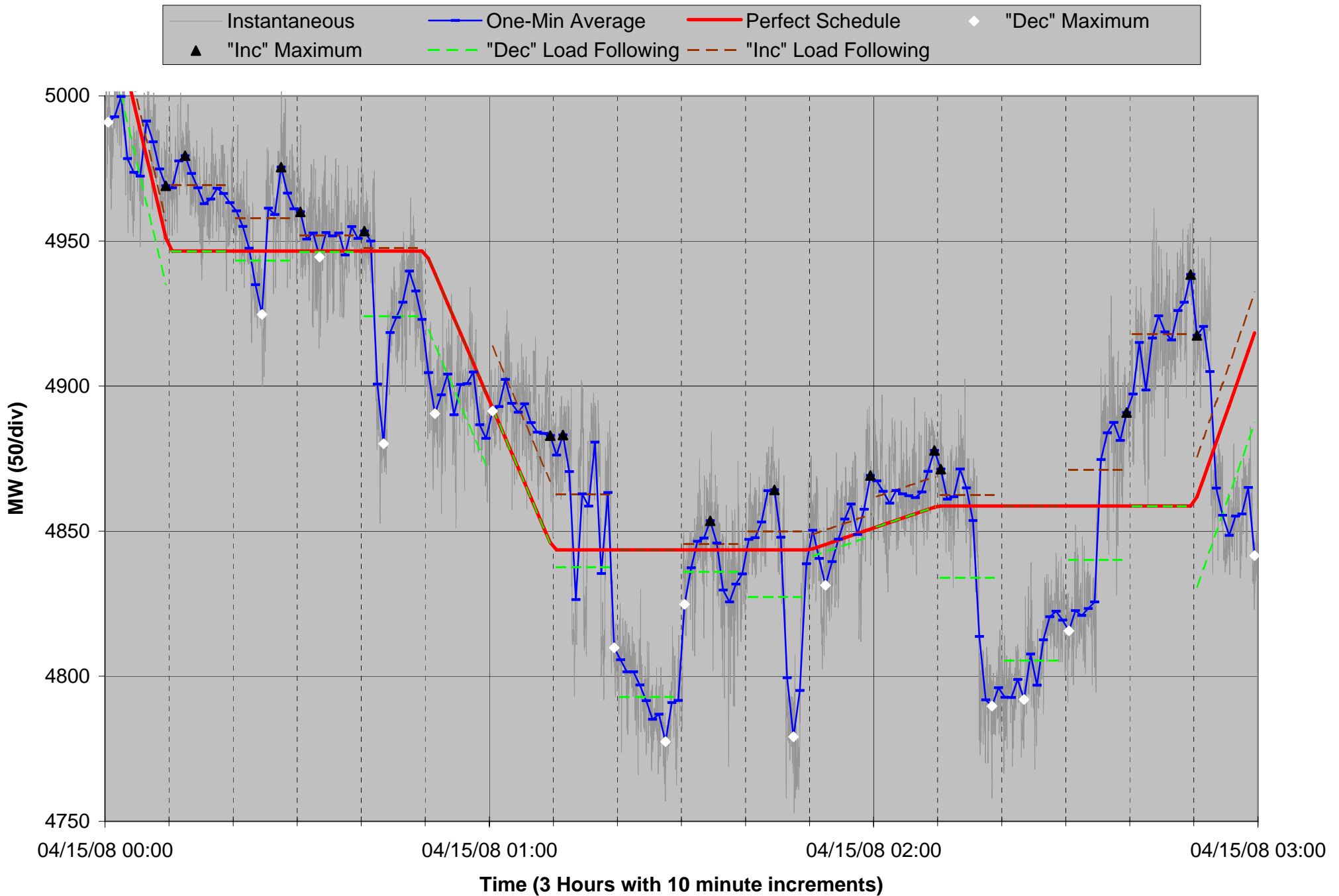
# Wind Regulation Requirements Methodology

## WIND ONLY

SCADA Pt 79687



# Wind Regulation Requirements Methodology LOAD plus NEGATIVE WIND



## Wind Regulation Requirements Methodology Data Analysis

10 Minute Increment	Load Only					
	Max Inc (Load High)	Max Dec (Load Low)	LF Inc (Load High)	LF Dec (Load Low)	Reg Inc (Load High)	Reg Dec (Load Low)
4/15/2008 0:00		-66.0	0.0	-36.2	0.0	-29.8
4/15/2008 0:10	2.8	-18.8	0.3	-10.4	2.5	-8.4
4/15/2008 0:20	34.0	-27.5	12.3	-9.1	21.7	-18.4
4/15/2008 0:30	31.3		22.5	0.0	8.8	0.0
4/15/2008 0:40	24.6	-51.6	5.4	-12.1	19.2	-39.4
4/15/2008 0:50	12.0	-27.7	1.7	-10.5	10.3	-17.3
4/15/2008 1:00	24.0		13.8	0.0	10.2	0.0
4/15/2008 1:10	26.0	-46.1	10.7	-9.2	15.3	-36.9
4/15/2008 1:20		-64.5	0.0	-56.0	0.0	-8.6
4/15/2008 1:30	16.9	-14.0	4.9	-2.7	12.0	-11.3
4/15/2008 1:40	32.8	-46.9	14.6	-10.4	18.2	-36.5
4/15/2008 1:50	30.2	-0.3	15.8	0.0	14.4	-0.3
4/15/2008 2:00	30.5		22.6	0.0	7.9	0.0
4/15/2008 2:10	23.1	-56.4	9.9	-19.4	13.2	-37.0
4/15/2008 2:20		-54.3	0.0	-42.4	0.0	-11.9
4/15/2008 2:30	29.2	-38.4	10.9	-16.1	18.3	-22.3
4/15/2008 2:40	55.2		40.1	0.0	15.1	0.0
4/15/2008 2:50	33.4	-65.0	8.2	-28.0	25.2	-37.0

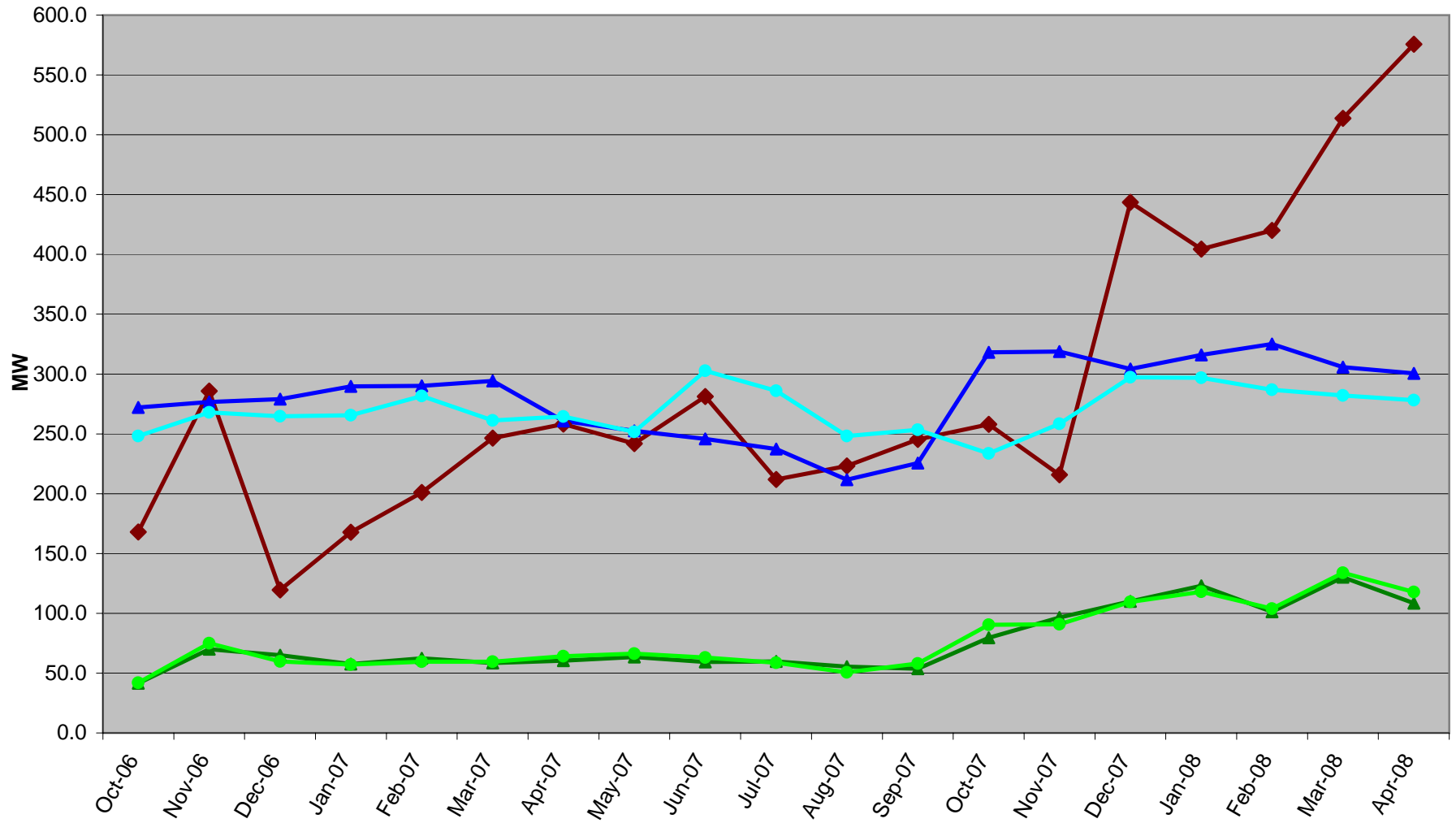
10 Minute Increment	Wind Only					
	Max Inc (Load High)	Max Dec (Load Low)	LF Inc (Load High)	LF Dec (Load Low)	Reg Inc (Load High)	Reg Dec (Load Low)
4/15/2008 0:00	28.0		26.0	0.0	2.0	0.0
4/15/2008 0:10	36.5		32.8	0.0	3.7	0.0
4/15/2008 0:20	30.0	-14.8	8.2	-3.4	21.8	-11.4
4/15/2008 0:30		-20.9	0.0	-17.5	0.0	-3.4
4/15/2008 0:40		-18.1	0.0	-14.8	0.0	-3.3
4/15/2008 0:50		-20.5	0.0	-16.0	0.0	-4.6
4/15/2008 1:00	13.4	-1.8	7.5	-0.2	6.0	-1.6
4/15/2008 1:10	15.0		11.7	0.0	3.3	0.0
4/15/2008 1:20	14.2	-4.5	6.3	-0.9	7.9	-3.5
4/15/2008 1:30		-11.2	0.0	-7.9	0.0	-3.3
4/15/2008 1:40		-18.8	0.0	-14.1	0.0	-4.7
4/15/2008 1:50		-15.3	0.0	-13.3	0.0	-2.0
4/15/2008 2:00		-14.1	0.0	-12.2	0.0	-2.0
4/15/2008 2:10		-13.2	0.0	-11.6	0.0	-1.6
4/15/2008 2:20		-14.0	0.0	-10.7	0.0	-3.3
4/15/2008 2:30	9.9	-5.8	2.4	-3.2	7.5	-2.5
4/15/2008 2:40	24.6		19.2	0.0	5.4	0.0
4/15/2008 2:50	22.3	-11.7	7.0	-4.3	15.3	-7.4

10 Minute Increment	Load with Wind					
	Max Inc (Load High)	Max Dec (Load Low)	LF Inc (Load High)	LF Dec (Load Low)	Reg Inc (Load High)	Reg Dec (Load Low)
4/15/2008 0:00	17.8	-43.7	5.9	-16.1	11.9	-27.6
4/15/2008 0:10	32.9		22.6	0.0	10.2	0.0
4/15/2008 0:20	28.9	-21.8	11.4	-3.3	17.5	-18.5
4/15/2008 0:30	13.5	-2.0	5.4	-0.3	8.1	-1.7
4/15/2008 0:40	6.9	-66.4	1.0	-22.5	5.8	-43.9
4/15/2008 0:50		-48.3	0.0	-24.7	0.0	-23.6
4/15/2008 1:00	36.8	-1.1	21.2	-0.1	15.7	-0.9
4/15/2008 1:10	39.6	-33.7	19.1	-5.9	20.6	-27.8
4/15/2008 1:20		-66.1	0.0	-50.6	0.0	-15.5
4/15/2008 1:30	10.0	-18.7	1.9	-7.7	8.1	-11.1
4/15/2008 1:40	20.7	-64.4	6.3	-16.2	14.4	-48.2
4/15/2008 1:50	18.5	-14.0	5.0	-2.5	13.5	-11.5
4/15/2008 2:00	19.6		10.4	0.0	9.1	0.0
4/15/2008 2:10	12.8	-68.9	3.7	-24.8	9.0	-44.1
4/15/2008 2:20		-66.7	0.0	-53.1	0.0	-13.6
4/15/2008 2:30	32.2	-43.0	12.5	-18.5	19.7	-24.5
4/15/2008 2:40	79.8		59.3	0.0	20.5	0.0
4/15/2008 2:50	55.7	-76.8	13.9	-31.0	41.8	-45.8

10 Minute Increment	Proportional Load				Proportional Wind			
	LF Inc (Load High)	LF Dec (Load Low)	Reg Inc (Load High)	Reg Dec (Load Low)	LF Inc (Load High)	LF Dec (Load Low)	Reg Inc (Load High)	Reg Dec (Load Low)
4/15/2008 0:00	0.0	-16.1	0.0	-27.6	5.9	0.0	11.9	0.0
4/15/2008 0:10	0.2	0.0	4.1	0.0	22.4	0.0	6.1	0.0
4/15/2008 0:20	6.8	-2.4	8.7	-11.4	4.6	-0.9	8.8	-7.1
4/15/2008 0:30	5.4	0.0	8.1	0.0	0.0	-0.3	0.0	-1.7
4/15/2008 0:40	1.0	-10.2	5.8	-40.4	0.0	-12.4	0.0	-3.4
4/15/2008 0:50	0.0	-9.8	0.0	-18.6	0.0	-14.9	0.0	-5.0
4/15/2008 1:00	13.7	0.0	9.9	0.0	7.4	-0.1	5.8	-0.9
4/15/2008 1:10	9.1	-5.9	16.9	-27.8	10.0	0.0	3.6	0.0
4/15/2008 1:20	0.0	-49.8	0.0	-10.9	0.0	-0.8	0.0	-4.5
4/15/2008 1:30	1.9	-1.9	8.1	-8.6	0.0	-5.7	0.0	-2.5
4/15/2008 1:40	6.3	-6.9	14.4	-42.7	0.0	-9.3	0.0	-5.5
4/15/2008 1:50	5.0	0.0	13.5	-1.3	0.0	-2.5	0.0	-10.2
4/15/2008 2:00	10.4	0.0	9.1	0.0	0.0	0.0	0.0	0.0
4/15/2008 2:10	3.7	-15.6	9.0	-42.3	0.0	-9.3	0.0	-1.8
4/15/2008 2:20	0.0	-42.4	0.0	-10.6	0.0	-10.7	0.0	-3.0
4/15/2008 2:30	10.2	-15.4	14.0	-22.0	2.3	-3.1	5.8	-2.5
4/15/2008 2:40	40.1	0.0	15.1	0.0	19.2	0.0	5.4	0.0
4/15/2008 2:50	7.5	-26.9	26.1	-38.1	6.4	-4.1	15.8	-7.7

### Increasing Capacity Reserves Requirement with Increasing Wind

◆ Avg Wind ▲ Load Inc ● Load Dec ▲ Wind Inc ● Wind Dec



**99.5 Percentile for each month**

(ignores top 20 to 22 values depending on days in the month)

Month	Proportional Load				Proportional Wind			
	Load Following Inc	Regulation Inc	Load Following Dec	Regulation Dec	Load Following Inc	Regulation Inc	Load Following Dec	Regulation Dec
October-06	170.1	102.0	-153.3	-94.8	26.1	15.4	-26.4	-15.5
November-06	172.0	104.7	-162.4	-105.5	46.2	23.7	-51.4	-23.6
December-06	173.6	105.5	-160.9	-103.7	44.9	20.0	-41.4	-18.4
January-07	182.3	107.4	-162.3	-103.2	38.6	19.0	-35.6	-21.5
February-07	179.0	111.0	-172.7	-109.0	42.6	19.7	-39.5	-20.0
March-07	180.5	113.7	-160.9	-100.5	38.0	20.5	-38.6	-20.9
April-07	164.4	96.3	-157.4	-107.0	40.1	20.4	-42.6	-21.6
May-07	157.2	95.4	-144.2	-107.4	40.7	22.8	-44.8	-21.4
June-07	149.3	96.5	-197.8	-104.9	37.9	21.5	-42.5	-20.6
July-07	146.8	90.5	-180.1	-105.9	37.9	22.0	-38.5	-20.2
August-07	133.4	78.2	-161.3	-86.8	34.4	21.0	-33.2	-17.5
September-07	135.3	90.3	-164.3	-89.2	35.2	18.5	-38.0	-20.0
October-07	205.8	112.2	-138.5	-95.0	52.3	27.1	-63.0	-27.4
November-07	211.4	107.3	-158.3	-100.0	64.6	32.0	-61.9	-28.9
December-07	183.8	120.4	-188.8	-108.4	74.5	35.6	-75.0	-34.6
January-08	194.4	121.6	-180.6	-116.1	85.8	37.2	-79.3	-38.8
February-08	196.4	128.7	-178.6	-108.3	70.1	31.1	-71.1	-32.7
March-08	189.7	116.2	-176.4	-105.6	85.8	44.4	-90.9	-42.9
April-08	183.6	117.0	-172.3	-105.7	73.1	35.4	-79.6	-38.1
Max	<b>211.4</b>	<b>128.7</b>	<b>-188.8</b>	<b>-116.1</b>	<b>85.8</b>	<b>44.4</b>	<b>-90.9</b>	<b>-42.9</b>

Load Inc	Load Dec	Wind Inc	Wind Dec	Avg Wind
272.1	248.1	41.6	41.9	168.0
276.7	267.9	69.9	75.0	285.7
279.1	264.6	64.9	59.8	119.5
289.7	265.6	57.6	57.1	167.9
290.0	281.7	62.3	59.5	201.0
294.2	261.3	58.5	59.4	246.4
260.8	264.4	60.5	64.2	258.2
252.6	251.7	63.5	66.2	241.9
245.9	302.7	59.4	63.1	281.1
237.3	286.1	59.8	58.7	211.8
211.6	248.1	55.3	50.6	223.2
225.6	253.5	53.7	58.0	245.3
318.0	233.5	79.5	90.4	257.9
318.7	258.4	96.6	90.8	215.9
304.2	297.2	110.0	109.6	443.6
316.0	296.8	123.0	118.1	404.5
325.1	286.9	101.3	103.8	420.0
305.8	282.0	130.2	133.8	513.7
300.6	278.1	108.4	117.7	575.8