



State of the Market Report 2007 Overview

MRC
March 19, 2008

Joseph Bowring
Market Monitor

- **Independent Market Monitoring**
 - Independent from Market Participants
 - Independent from RTO management
 - Independent from RTO board of directors
- **MMU Accountability**
 - To FERC (per FERC MMU Orders and MM Plan).
 - To PJM markets.

- Market monitoring is required by FPA/FERC Orders
- Role of competition under the FPA
 - Mechanism to regulate prices
 - Competitive outcome = just and reasonable
- Relevant model of competition is not laissez faire
- Competitive outcomes are not automatic
- Detailed rules required – like other markets/exchanges
- Detailed monitoring required to ensure competitive outcomes:
 - Of participants
 - Of RTO
 - Of rules

- Energy Market results were competitive
- Capacity Market results were competitive
- Regulation Market results cannot be determined to have been competitive or to have been noncompetitive
- Spinning Market results were competitive
- FTR Market results were competitive



- Retention and application of the improved local market power mitigation rules
- Retention of the \$1,000 per MWh offer cap in the PJM Energy Market and other rules that limit incentives to exercise market power
- Retention of the rules included in PJM's Reliability Pricing Model (RPM) Tariff
- Implementation of enhancements to PJM's rules governing operating reserve credits



- Continued enhancements to the cost-benefit analysis of congestion and transmission investments.
- Modification of rules governing demand-side programs to ensure accurate measurement, verification and payment.
- Provision of data for external control areas to PJM to enable improved analysis of loop flows in order to enhance the efficiency of PJM markets.
- Continued enhancement of mechanisms used to manage flows at interfaces with external areas.



State of the Market Recommendations – New Action

- Enhancements to PJM’s scarcity pricing rules
- Implementation of targeted, flexible real-time market power mitigation in the Regulation Market.
- Consistent application of local market power rules to all constraints.
- Consistent application of local market power rules to all units, including those currently exempt from offer capping.



*Table 3-30 PJM installed capacity (By fuel source):
January 1, May 31, June 1, and December 31, 2007*

	1-Jan-07		31-May-07		1-Jun-07		31-Dec-07	
	MW	Percent	MW	Percent	MW	Percent	MW	Percent
Coal	66,613.5	40.9%	66,418.9	41.0%	66,546.0	40.7%	66,286.0	40.5%
Oil	10,771.1	6.6%	10,657.5	6.6%	10,645.0	6.5%	10,640.0	6.5%
Gas	47,528.0	29.2%	46,955.9	29.0%	47,557.0	29.1%	47,599.4	29.1%
Nuclear	30,056.8	18.5%	30,056.8	18.5%	30,880.8	18.9%	30,883.8	18.9%
Solid waste	719.6	0.4%	719.6	0.4%	714.6	0.4%	712.6	0.4%
Hydroelectric	7,122.9	4.4%	7,193.9	4.4%	7,287.2	4.5%	7,311.2	4.5%
Wind	28.8	0.0%	34.0	0.0%	28.8	0.0%	65.4	0.0%
Total	162,840.7	100.0%	162,036.6	100.0%	163,659.4	100.0%	163,498.4	100.0%



*Table 3-31 PJM generation (By fuel source (GWh)):
Calendar year 2007*

	GWh	Percent
Coal	416,180.7	55.3%
Oil	3,728.1	0.5%
Gas	57,825.8	7.7%
Nuclear	255,040.1	33.9%
Solid waste	4,896.0	0.7%
Hydroelectric	13,080.6	1.7%
Wind	1,345.8	0.2%
Total	752,097.2	100.0%

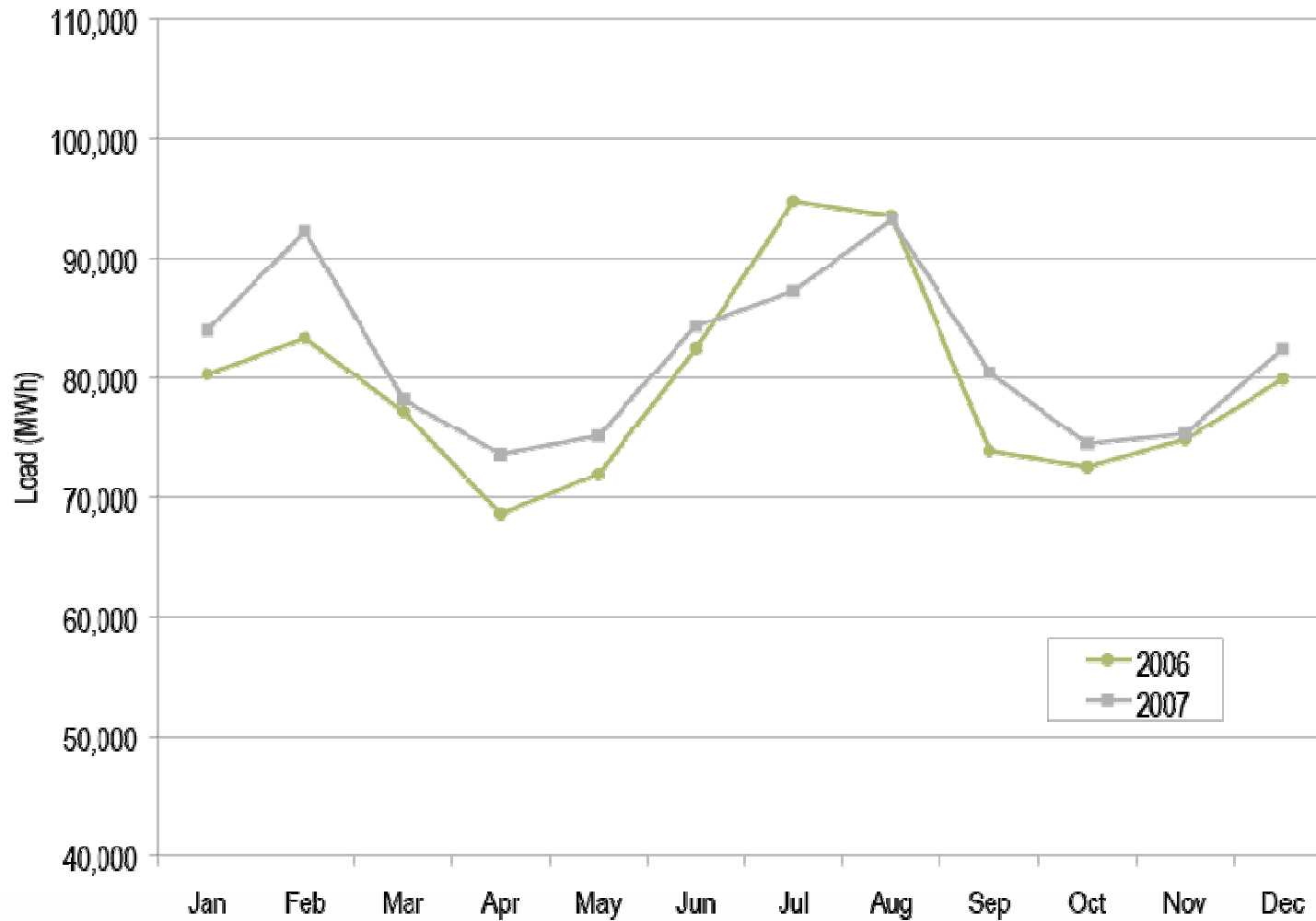


*Table 2-2 Actual PJM footprint summer peak loads:
1999 to 2007*

Year	Date	Hour Ending (EPT)	PJM Load (MW)	Difference (MW)
1999	06-Jul-99	1400	59,365	NA
2000	26-Jun-00	1600	56,727	(2,638)
2001	09-Aug-01	1500	54,015	(2,712)
2002	14-Aug-02	1600	63,762	9,747
2003	22-Aug-03	1600	61,500	(2,262)
2004	03-Aug-04	1700	77,887	16,387
2005	26-Jul-05	1600	133,763	55,876
2006	02-Aug-06	1700	144,644	10,881
2007	08-Aug-07	1600	139,428	(5,216)



Figure 2-7 PJM real-time average load:
Calendar years 2006 to 2007





*Table 2-48 PJM real-time, simple average LMP
(Dollars per MWh): Calendar years 1998 to 2007*

	Real-Time LMP			Year-to-Year Change		
	Average	Median	Standard Deviation	Average	Median	Standard Deviation
1998	\$21.72	\$16.60	\$31.45	NA	NA	NA
1999	\$28.32	\$17.88	\$72.42	30.4%	7.7%	130.3%
2000	\$28.14	\$19.11	\$25.69	(0.6%)	6.9%	(64.5%)
2001	\$32.38	\$22.98	\$45.03	15.1%	20.3%	75.3%
2002	\$28.30	\$21.08	\$22.40	(12.6%)	(8.3%)	(50.3%)
2003	\$38.27	\$30.79	\$24.71	35.2%	46.1%	10.3%
2004	\$42.40	\$38.30	\$21.12	10.8%	24.4%	(14.5%)
2005	\$58.08	\$47.18	\$35.91	37.0%	23.2%	70.0%
2006	\$49.27	\$41.45	\$32.71	(15.2%)	(12.1%)	(8.9%)
2007	\$57.58	\$49.92	\$34.60	16.9%	20.4%	5.8%



*Table 2-52 PJM real-time, annual, load-weighted, average LMP (Dollars per MWh):
Calendar years 1998 to 2007*

	Real-Time, Load-Weighted, Average LMP			Year-to-Year Change		
	Average	Median	Standard Deviation	Average	Median	Standard Deviation
1998	\$24.16	\$17.60	\$39.29	NA	NA	NA
1999	\$34.07	\$19.02	\$91.49	41.0%	8.1%	132.9%
2000	\$30.72	\$20.51	\$28.38	(9.8%)	7.8%	(69.0%)
2001	\$36.65	\$25.08	\$57.26	19.3%	22.3%	101.8%
2002	\$31.58	\$23.40	\$26.73	(13.8%)	(6.7%)	(53.3%)
2003	\$41.23	\$34.95	\$25.40	30.6%	49.4%	(5.0%)
2004	\$44.34	\$40.16	\$21.25	7.5%	14.9%	(16.3%)
2005	\$63.46	\$52.93	\$38.10	43.1%	31.8%	79.3%
2006	\$53.35	\$44.40	\$37.81	(15.9%)	(16.1%)	(0.8%)
2007	\$61.66	\$54.66	\$36.94	15.6%	23.1%	(2.3%)



Table 2-67 Zonal real-time, simple average LMP components (Dollars per MWh): Calendar years 2006 and 2007.

	2006				2007			
	Real-Time LMP	Energy Component	Congestion Component	Loss Component	Real-Time LMP	Energy Component	Congestion Component	Loss Component
AECO	\$55.53	\$47.19	\$8.34	\$0.0	\$65.02	\$56.56	\$6.42	\$2.04
AEP	\$42.24	\$47.19	(\$4.95)	\$0.0	\$46.55	\$56.56	(\$8.80)	(\$1.21)
AP	\$48.71	\$47.19	\$1.52	\$0.0	\$57.45	\$56.56	\$1.33	(\$0.44)
BGE	\$57.40	\$47.19	\$10.21	\$0.0	\$69.79	\$56.56	\$12.08	\$1.15
ComEd	\$41.52	\$47.19	(\$5.67)	\$0.0	\$45.71	\$56.56	(\$9.42)	(\$1.43)
DAY	\$41.21	\$47.19	(\$5.98)	\$0.0	\$46.47	\$56.56	(\$9.54)	(\$0.55)
Dominion	\$56.44	\$47.19	\$9.25	\$0.0	\$66.75	\$56.56	\$9.89	\$0.30
DPL	\$53.09	\$47.19	\$5.90	\$0.0	\$64.15	\$56.56	\$6.09	\$1.50
DLCO	\$39.34	\$47.19	(\$7.85)	\$0.0	\$43.93	\$56.56	(\$11.13)	(\$1.50)
JCPL	\$51.80	\$47.19	\$4.61	\$0.0	\$65.74	\$56.56	\$7.36	\$1.82
Met-Ed	\$52.66	\$47.19	\$5.47	\$0.0	\$64.57	\$56.56	\$7.32	\$0.69
PECO	\$52.40	\$47.19	\$5.21	\$0.0	\$62.60	\$56.56	\$4.82	\$1.22
PENELEC	\$46.64	\$47.19	(\$0.55)	\$0.0	\$54.80	\$56.56	(\$1.46)	(\$0.30)
Pepco	\$58.85	\$47.19	\$11.66	\$0.0	\$70.33	\$56.56	\$13.00	\$0.77
PPL	\$51.52	\$47.19	\$4.33	\$0.0	\$62.02	\$56.56	\$4.89	\$0.57
PSEG	\$54.57	\$47.19	\$7.38	\$0.0	\$65.92	\$56.56	\$7.43	\$1.93
RECO	\$53.88	\$47.19	\$6.69	\$0.0	\$64.85	\$56.56	\$6.50	\$1.79



*Table 7-1 Total annual PJM congestion [Dollars (Millions)]:
Calendar years 2003 to 2007*

	Congestion Charges	Percent Change	Total PJM Billing	Percent of PJM Billing
2003	\$464	NA	\$6,900	7%
2004	\$750	62%	\$8,700	9%
2005	\$2,092	179%	\$22,630	9%
2006	\$1,603	(23%)	\$20,945	8%
2007	\$1,845	15%	\$30,556	6%
Total	\$6,754		\$89,731	8%



Table 7-13 Regional constraints summary (By facility):
Calendar year 2007

Congestion Costs (Millions)													
Constraint	Type	Location	Day Ahead				Balancing				Grand Total	Event Hours	
			Load Payments	Generation Credits	Explicit	Total	Load Payments	Generation Credits	Explicit	Total		Day Ahead	Real Time
Bedington - Black Oak	Interface	500	\$466.3	(\$227.9)	\$43.4	\$737.6	\$523.6	\$531.0	(\$16.2)	(\$23.5)	\$714.0	5,493	1,836
5004/5005 Interface	Interface	500	\$3.4	(\$111.9)	\$5.7	\$121.0	(\$33.9)	(\$29.6)	(\$0.3)	(\$4.6)	\$116.5	1,512	386
AP South	Interface	500	\$36.9	(\$57.1)	\$4.3	\$98.4	\$12.5	\$10.4	\$1.0	\$3.1	\$101.5	706	133
Kammer	Transformer	500	\$31.3	(\$16.3)	\$11.6	\$59.2	(\$39.8)	(\$48.6)	(\$3.7)	\$5.1	\$64.3	2,005	947
Central	Interface	500	(\$43.7)	(\$73.5)	\$2.5	\$32.4	(\$2.0)	(\$2.1)	\$0.0	\$0.0	\$32.4	1,334	25
East	Interface	500	(\$25.2)	(\$41.9)	\$0.8	\$17.5	(\$0.4)	(\$0.4)	(\$0.0)	(\$0.0)	\$17.4	304	5
West	Interface	500	\$4.1	(\$13.3)	\$2.0	\$19.4	(\$27.0)	(\$22.3)	(\$3.6)	(\$8.4)	\$11.0	359	338
Conemaugh - Hunterstown	Line	500	\$0.0	\$0.0	\$0.0	\$0.0	(\$1.5)	(\$0.9)	(\$0.0)	(\$0.7)	(\$0.7)	0	9
MAAC - Scarcity	Interface	500	\$0.0	\$0.0	\$0.0	\$0.0	(\$5.5)	(\$4.3)	\$1.0	(\$0.1)	(\$0.1)	0	3
Alburtis - Branchburg	Line	500	\$0.0	\$0.0	\$0.0	\$0.0	(\$0.1)	(\$0.1)	\$0.0	\$0.1	\$0.1	0	4
Doubs - Mount Storm	Line	500	\$0.0	\$0.0	\$0.0	\$0.0	(\$0.1)	(\$0.1)	(\$0.0)	(\$0.1)	(\$0.1)	0	4
Harrison - Pruntytown	Line	500	\$0.0	\$0.0	\$0.0	\$0.0	(\$0.1)	(\$0.1)	(\$0.0)	\$0.0	\$0.0	0	3
Harrison Tap - Kammer	Line	500	\$0.0	\$0.0	\$0.0	\$0.0	(\$0.0)	(\$0.0)	(\$0.0)	(\$0.0)	(\$0.0)	0	2

Figure 2-14 Spot average fuel price comparison:
Calendar years 2006 to 2007

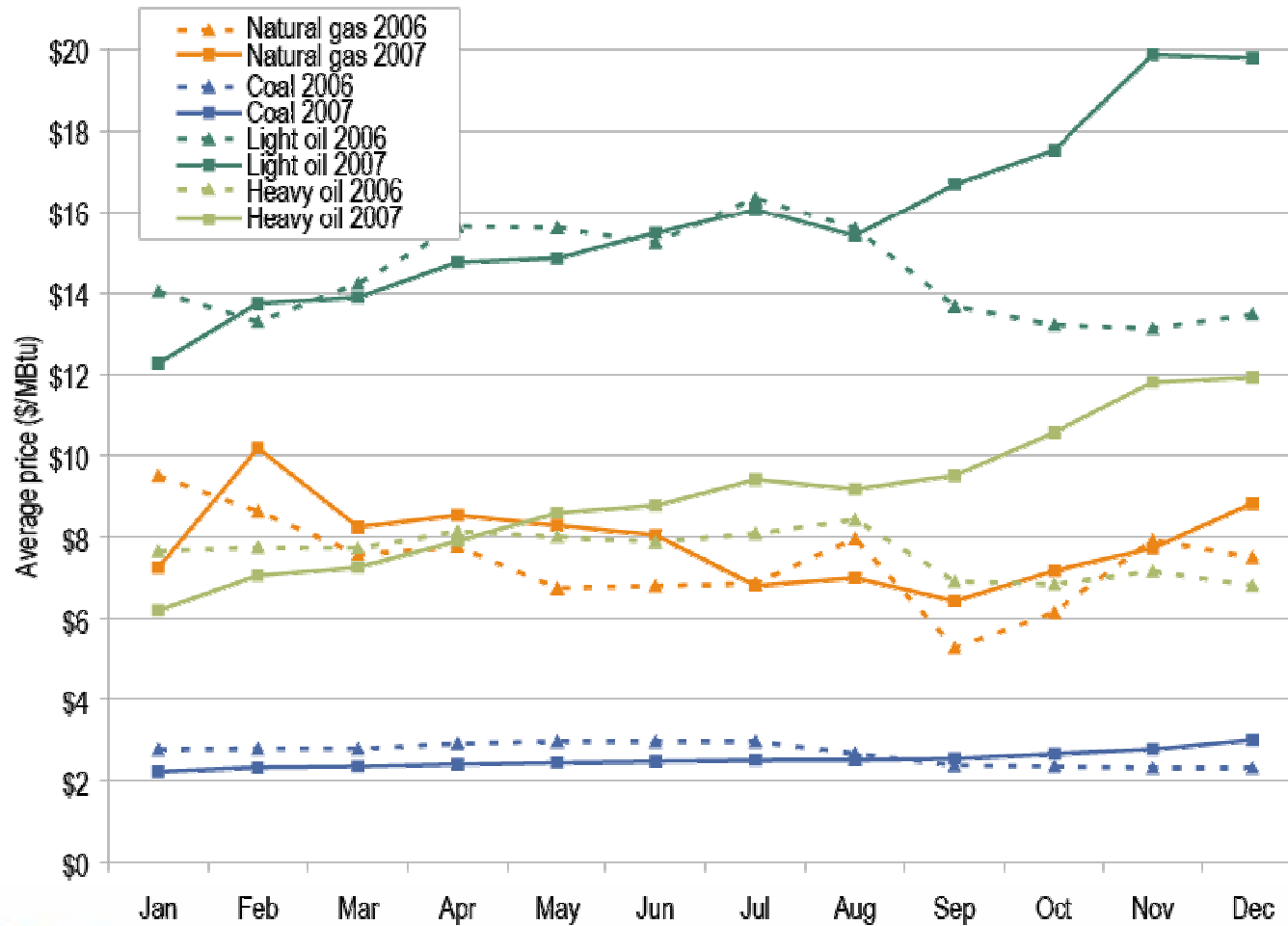


Figure 2-15 Spot average emission price comparison:
Calendar years 2006 to 2007

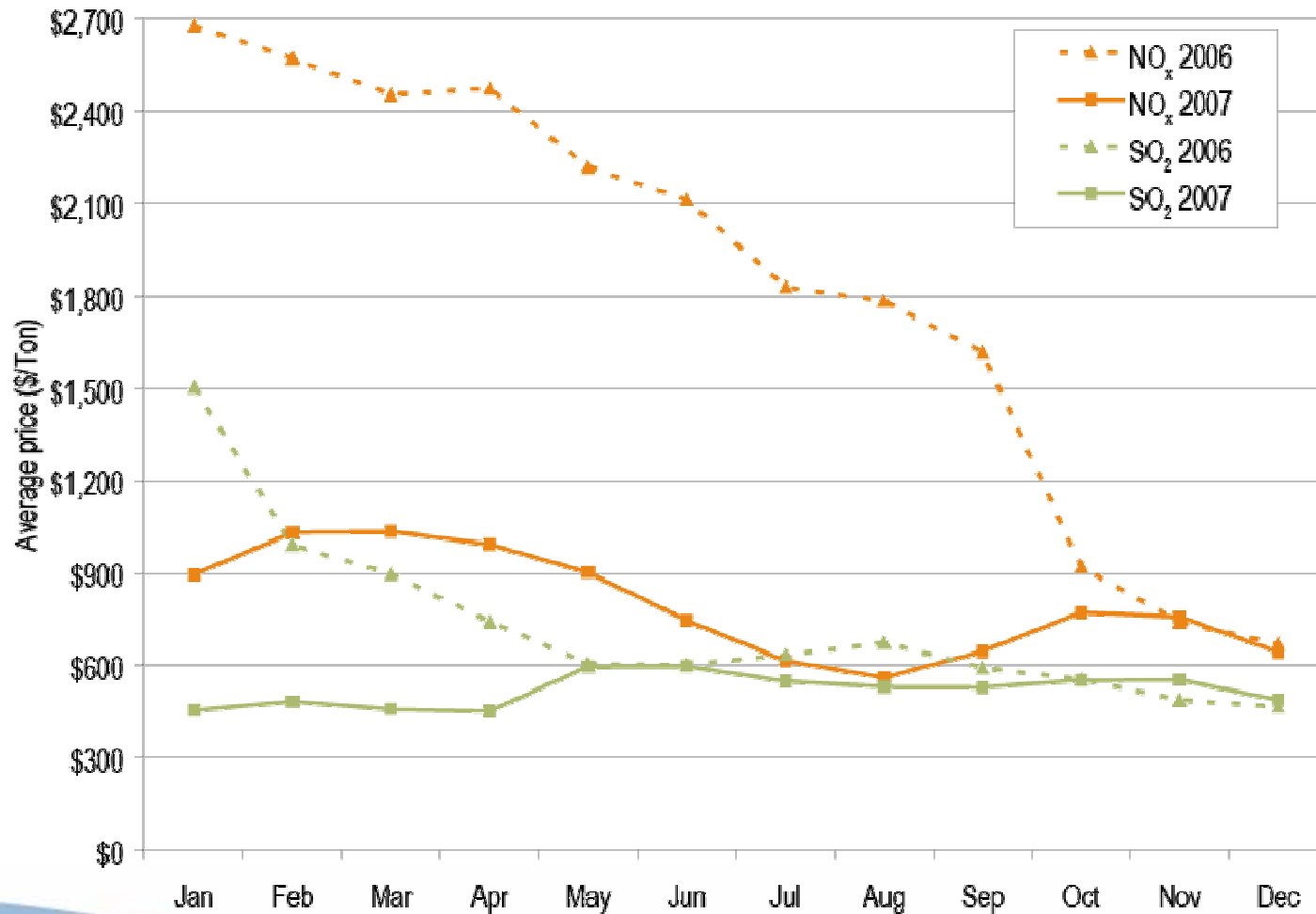




Table 2-55 PJM annual, fuel-cost-adjusted, load-weighted LMP (Dollars per MWh): Year-over-year method

	2006 Load-Weighted LMP	2007 Fuel-Cost-Adjusted, Load-Weighted LMP	Change
Average	\$53.35	\$63.00	18.1%
Median	\$44.40	\$54.55	22.9%
Standard deviation	\$37.81	\$35.36	(6.5%)



*Table 2-32 Type of fuel used (By marginal units):
Calendar years 2005 to 2007*

Fuel Type	2005	2006	2007
Coal	69%	70%	70%
Misc	1%	1%	2%
Natural gas	23%	25%	24%
Nuclear	0%	0%	0%
Petroleum	8%	5%	5%



Table 2-59 Components of PJM annual, load-weighted, average LMP: Calendar year 2007

Element	Contribution to LMP	Percent
Coal	\$21.57	35.0%
Gas	\$17.50	28.4%
Oil	\$3.97	6.4%
Wind	\$0.01	0.0%
SO ₂	\$4.33	7.0%
VOM	\$4.16	6.7%
Markup	\$5.86	9.5%
Constrained off	\$3.13	5.1%
NO _x	\$0.74	1.2%
NA	\$0.39	0.6%



Table 2-42 Markup contribution of exempt and non-exempt units: Calendar year 2007

	Exempt Markup Component	Non-Exempt Markup Component	Total
High-load days	\$0.25	\$0.32	\$0.57
Balance of year	\$1.09	\$4.20	\$5.29
Total	\$1.34	\$4.52	\$5.86



Table 2-82 Monthly average percentage of real-time self-supply load, bilateral-supply load and spot-supply load based on billing organizations: Calendar years 2006 to 2007

	2006			2007			Difference in Percentage Points		
	Bilateral Contract	Spot	Self-Supply	Bilateral Contract	Spot	Self-Supply	Bilateral Contract	Spot	Self-Supply
Jan	92.4%	6.5%	1.0%	94.9%	4.5%	0.6%	2.5%	(2.0%)	(0.4%)
Feb	92.5%	6.5%	1.0%	95.3%	4.5%	0.1%	2.8%	(2.0%)	(0.9%)
Mar	92.6%	6.4%	1.0%	95.3%	4.5%	0.2%	2.7%	(1.9%)	(0.8%)
Apr	92.7%	6.2%	1.0%	95.3%	4.5%	0.2%	2.6%	(1.7%)	(0.8%)
May	92.7%	6.2%	1.1%	95.6%	4.2%	0.2%	2.9%	(2.0%)	(0.9%)
Jun	93.2%	5.8%	1.0%	96.1%	3.7%	0.2%	2.9%	(2.1%)	(0.8%)
Jul	93.3%	5.8%	0.9%	96.7%	3.1%	0.2%	3.4%	(2.7%)	(0.7%)
Aug	93.2%	6.0%	0.8%	96.6%	3.3%	0.2%	3.4%	(2.7%)	(0.6%)
Sep	92.8%	6.1%	1.0%	96.5%	3.4%	0.1%	3.7%	(2.7%)	(0.9%)
Oct	92.2%	6.7%	1.1%	96.2%	3.6%	0.2%	4.0%	(3.1%)	(0.9%)
Nov	92.6%	6.3%	1.1%	96.0%	3.8%	0.2%	3.4%	(2.5%)	(0.9%)
Dec	92.6%	6.4%	1.0%	95.9%	3.9%	0.2%	3.3%	(2.5%)	(0.8%)
Annual	92.8%	6.2%	1.0%	95.9%	3.9%	0.2%	3.1%	(2.3%)	(0.8%)



Table 2-83 Monthly average percentage of real-time self-supply load, bilateral supply load and spot supply load based on parent companies: Calendar years 2006 to 2007

	2006			2007			Difference in Percentage Points		
	Bilateral Contract	Spot	Self-Supply	Bilateral Contract	Spot	Self-Supply	Bilateral Contract	Spot	Self-Supply
Jan	19.4%	5.4%	75.2%	22.0%	3.7%	74.4%	2.6%	(1.7%)	(0.8%)
Feb	19.4%	5.1%	75.5%	22.3%	3.8%	73.9%	2.9%	(1.3%)	(1.6%)
Mar	19.9%	5.0%	75.2%	21.6%	4.0%	74.4%	1.7%	(1.0%)	(0.8%)
Apr	20.1%	4.4%	75.5%	22.4%	4.7%	72.9%	2.3%	0.3%	(2.6%)
May	19.9%	4.6%	75.5%	22.4%	3.9%	73.7%	2.5%	(0.7%)	(1.8%)
Jun	20.6%	4.7%	74.8%	22.8%	3.1%	74.0%	2.2%	(1.6%)	(0.8%)
Jul	20.5%	6.3%	73.2%	23.9%	4.3%	71.8%	3.4%	(2.0%)	(1.4%)
Aug	20.6%	5.5%	73.9%	23.8%	3.6%	72.6%	3.2%	(1.9%)	(1.3%)
Sep	20.5%	5.1%	74.4%	23.1%	3.8%	73.2%	2.6%	(1.3%)	(1.2%)
Oct	20.9%	5.5%	73.6%	23.7%	5.5%	70.8%	2.8%	0.0%	(2.8%)
Nov	20.2%	5.4%	74.4%	22.8%	4.3%	73.0%	2.6%	(1.1%)	(1.4%)
Dec	19.6%	5.2%	75.2%	22.3%	2.8%	74.9%	2.7%	(2.4%)	(0.3%)
Annual	20.1%	5.2%	74.6%	22.8%	3.9%	73.3%	2.7%	(1.3%)	(1.3%)



Table 3-24 CT 20-year levelized fixed cost vs. real-time economic dispatch, zonal net revenue (Dollars per installed MW-year): Calendar years 1999 to 2007

	2007			9-Year Average (1999-2007)		
	Net Revenue	20-Year Levelized Cost	Percent Recovered	Net Revenue	20-Year Levelized Cost	Percent Recovered
AECO	\$81,801	\$90,656	90%	\$41,774	\$75,158	56%
AEP	\$16,230	\$90,656	18%	\$9,919	\$75,158	13%
AP	\$27,996	\$90,656	31%	\$14,283	\$75,158	19%
BGE	\$94,710	\$90,656	104%	\$41,434	\$75,158	55%
ComEd	\$19,542	\$90,656	22%	\$12,742	\$75,158	17%
DAY	\$16,047	\$90,656	18%	\$9,810	\$75,158	13%
Dominion	\$53,923	\$90,656	59%	\$42,353	\$75,158	56%
DPL	\$73,967	\$90,656	82%	\$40,953	\$75,158	54%
DLCO	\$20,076	\$90,656	22%	\$11,465	\$75,158	15%
JCPL	\$77,652	\$90,656	86%	\$39,683	\$75,158	53%
Met-Ed	\$46,663	\$90,656	51%	\$34,263	\$75,158	46%
PECO	\$68,376	\$90,656	75%	\$37,729	\$75,158	50%
PENELEC	\$21,228	\$90,656	23%	\$26,506	\$75,158	35%
Pepco	\$96,913	\$90,656	107%	\$42,534	\$75,158	57%
PPL	\$35,743	\$90,656	39%	\$31,062	\$75,158	41%
PSEG	\$72,221	\$90,656	80%	\$39,064	\$75,158	52%
RECO	\$72,112	\$90,656	80%	\$26,065	\$75,158	35%
PJM	\$48,530	\$90,656	54%	\$32,248	\$75,158	43%