PRELIMINARY REPORT

PJM PRICES AND MARKETS: THE WEEK OF AUGUST 6, 2001

Market Monitoring Unit
PJM Interconnection, L.L.C.

August 21, 2001

This is a preliminary report covering the basic events of the week of August 6. The PJM Market Monitoring Unit will continue to evaluate various facets of market behavior during this week and will continue to report on salient features of the markets.

PJM experienced record peak loads on three successive days during the week of August 6, 2001. The first new record load occurred on Tuesday, August 7. The load was met without any PJM Emergency Procedures being implemented. The second record load occurred on Wednesday, August 8 and was met in part by load management resources including both Active Load Management (ALM) and PJM's Load Curtailment Pilot Program, called upon as part of PJM Emergency Procedures. The third record load occurred on Thursday, August 9. This load was also met in part by load management resources including both ALM and the Pilot Program, by a 5% voltage reduction and by voluntary customer load reductions, all called upon as a part of PJM Emergency Procedures.

During the week, real time spot prices exceeded $900/MWh for 10 hours and were greater than $150/MWh for 40 hours or about 33% of the total hours. There was congestion at times during the week, with prices at the Eastern Hub exceeding prices at the Western Hub.

PJM did not experience a jump in capacity delisting during the week. Energy recalls from capacity resources played a key role in meeting peak loads during the high demand periods of the week. PJM continued to maintain capacity resources greater than obligation during the week. There was no evidence of physical withholding. Outages were at lower levels than average.

A series of graphs illustrates various facets of basic system performance. It is important to remember that the load data is preliminary and may be modified somewhat as final data continues to be provided by generators and load servers.

The first set of graphs compares system load to hourly LMPs. The graphs also indicate the average on peak price for the 16 hours ended (HE) 0800 to 2300, the peak hourly price, the peak hourly load and the Emergency Actions taken by PJM.

The second set of graphs shows the frequency distribution for the week of PJM system LMP, of Eastern Hub LMP and of Western Hub LMP. For example, prices were less than $150/MWh for 72.50% of the hours for the Western Hub, 62.50% of the hours for the Eastern Hub and 66.67% of the hours for the PJM average. Prices never exceeded $900/MWh for the Western Hub, exceeded $900/MWh for 13 hours for the Eastern Hub and exceeded $900/MWh for 10 hours for the PJM average.

The third set of graphs shows hourly LMP for each day for both the day ahead spot market and the real time spot market. These illustrate the same basic set of facts on a daily basis. In addition, these graphs show the price for the PSEG Zone and the DPL South Zone in addition to the average PJM price and the prices for the Western Hub and the Eastern Hub.

The fourth set of graphs shows LMP separately for both the day-ahead spot market and the real-time spot market for all days of the week on one graph so that the price paths can be easily compared.

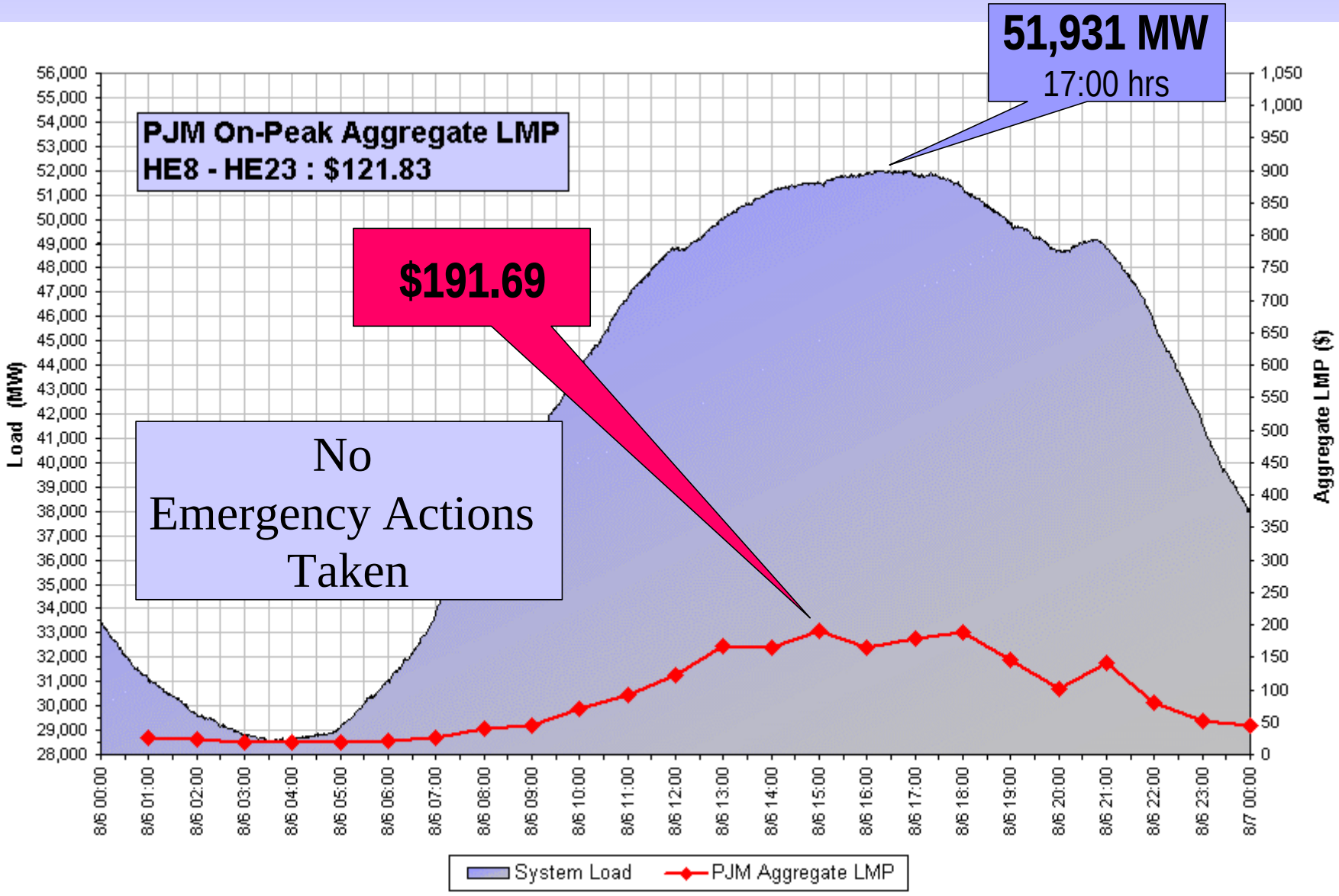
The fourth graph shows PJM average LMP and net imports for the entire week. The graph shows the response of imports to PJM prices and the corresponding, lagged response of PJM prices to net imports.

The fifth graph shows the relationship between total load and net imports. Beginning at the hour ended 0500 on Monday, August 6, net imports ranged from 178 MW to 6,158 MW and average 2,909 MW. Net imports ranged from .6% of load to 13.5% of load and averaged 6.4% of load for the week.

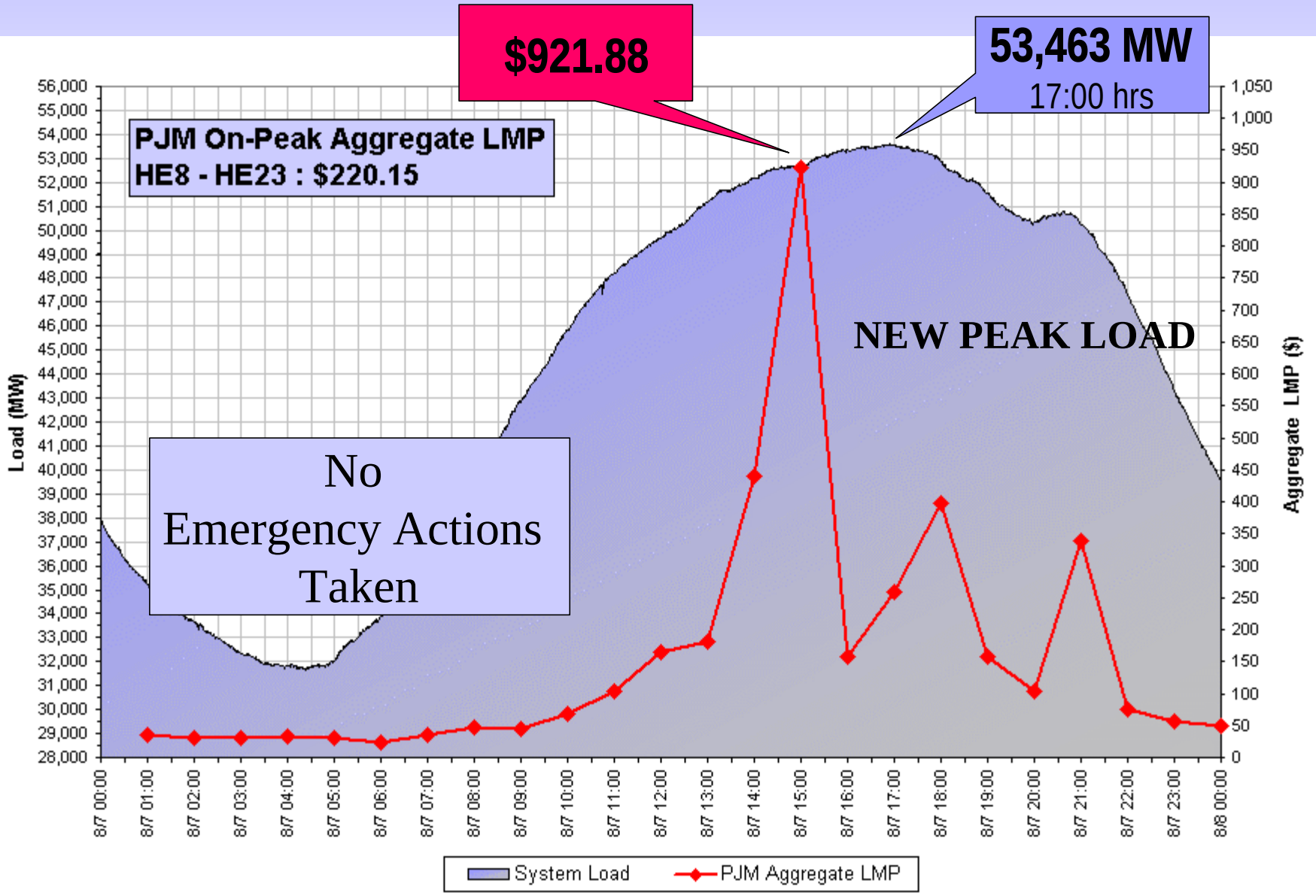
The final set of graphs compares PJM prices with prices from neighboring control areas. The first graph compares daily forward prices for the PJM Western Hub with those at Cinergy, NEPOOL, New York Zone A and New York Zone J. The second graph compares real-time prices for PJM, NYISO, NY-West and NY-NYC.

The next seven pages present all the Emergency Actions taken and warnings issued, as posted on the PJM web site. Portions of the PJM Emergency Operations Manual have been appended in order to provide a reference to the specific PJM Emergency Procedures identified. (The entire PJM Emergency Operations Manual can be found on the PJM web site.)

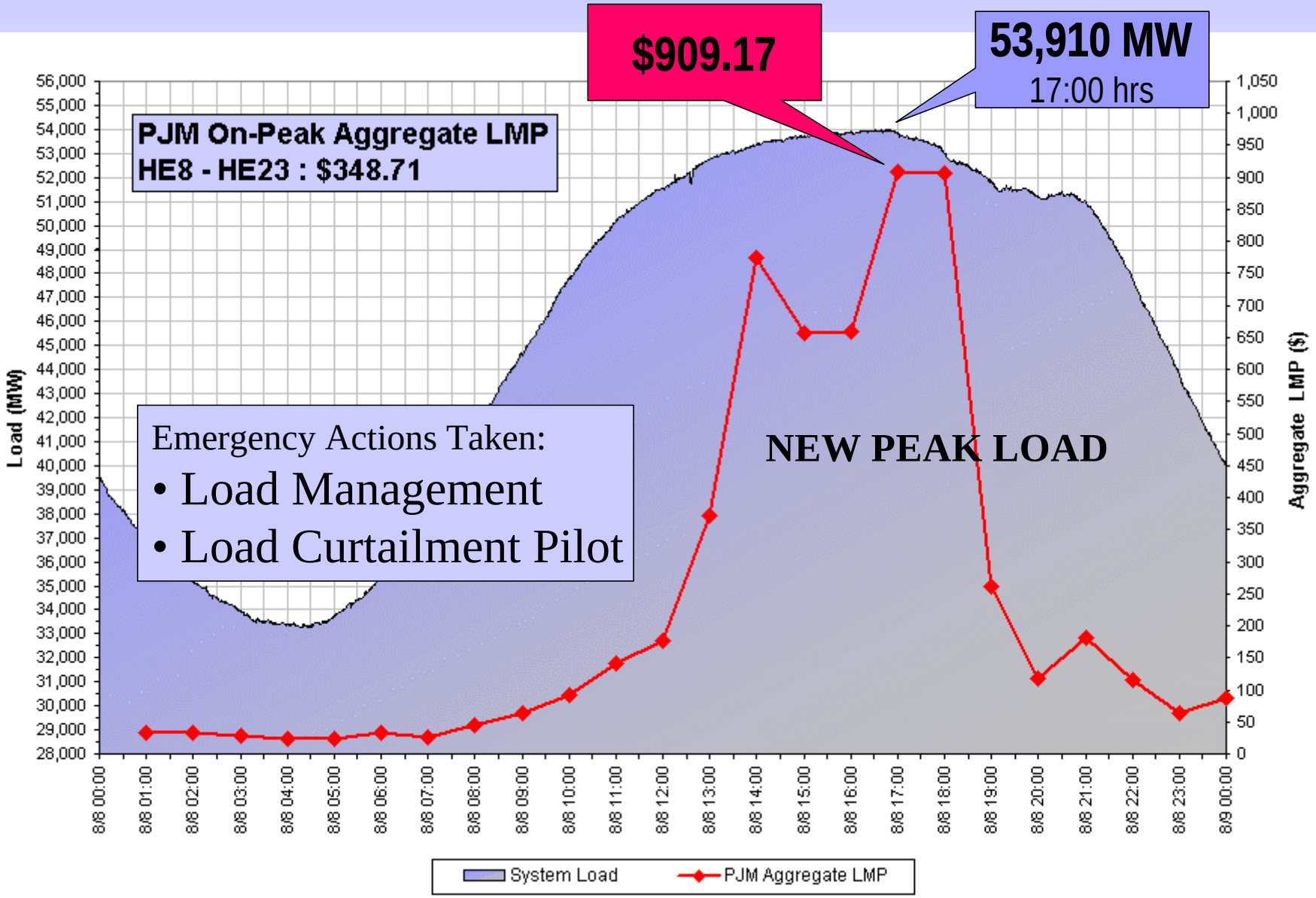
Load & Average System LMPs - Monday, August 6, 2001



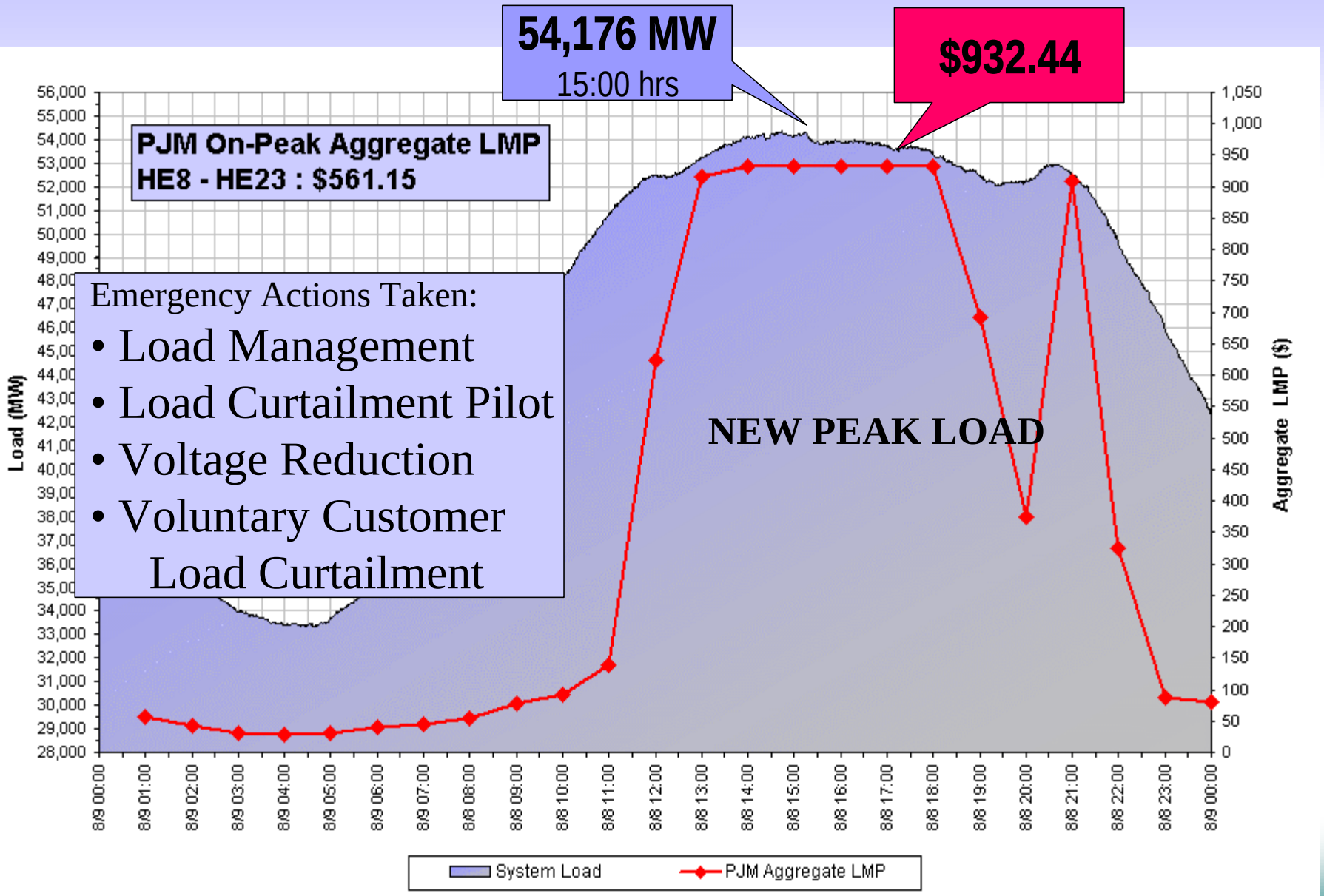
Load & Average System LMPs - Tuesday, August 7, 2001



Load & Average System LMPs - Wednesday, August 8, 2001



Load & Average System LMPs - Thursday, August 9, 2001



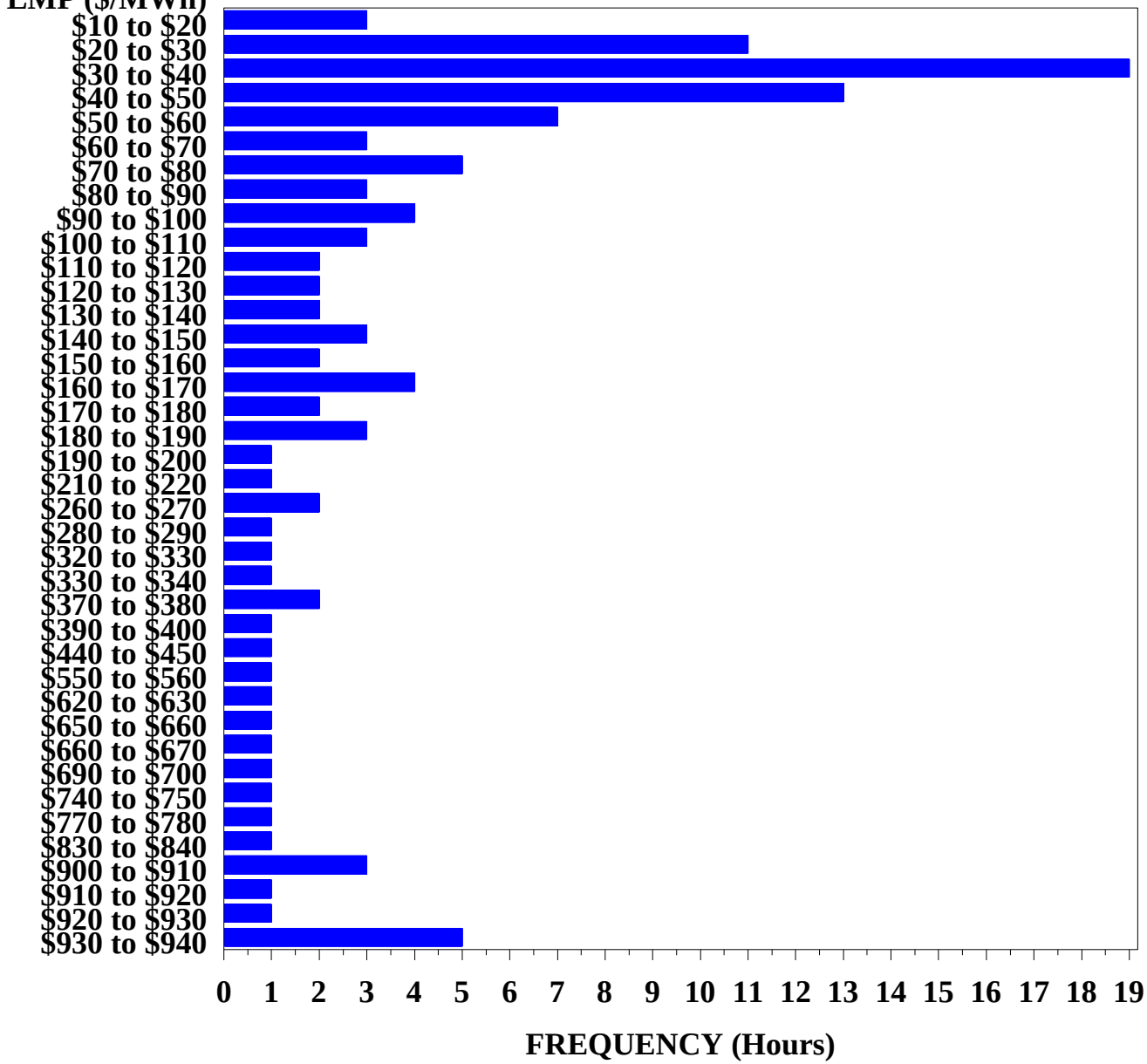
SUMMARY

- Successive All Time Peaks
  - Tuesday, August 7, 2001 - **53,463 MW***
  - Wednesday, August 8, 2001 - **53,910 MW***
  - Thursday, August 9, 2001 - **54,176 MW***
  - July 25, 2001 Peak - **52,198 MW***
- Markets permitted PJM to set a new peak without emergency procedures on August 7th
- Market prices properly incented interchange into PJM and enhanced generator performance and maintenance turn-around

* All figures are preliminary.

Frequency Distribution by Hours of PJM LMPs

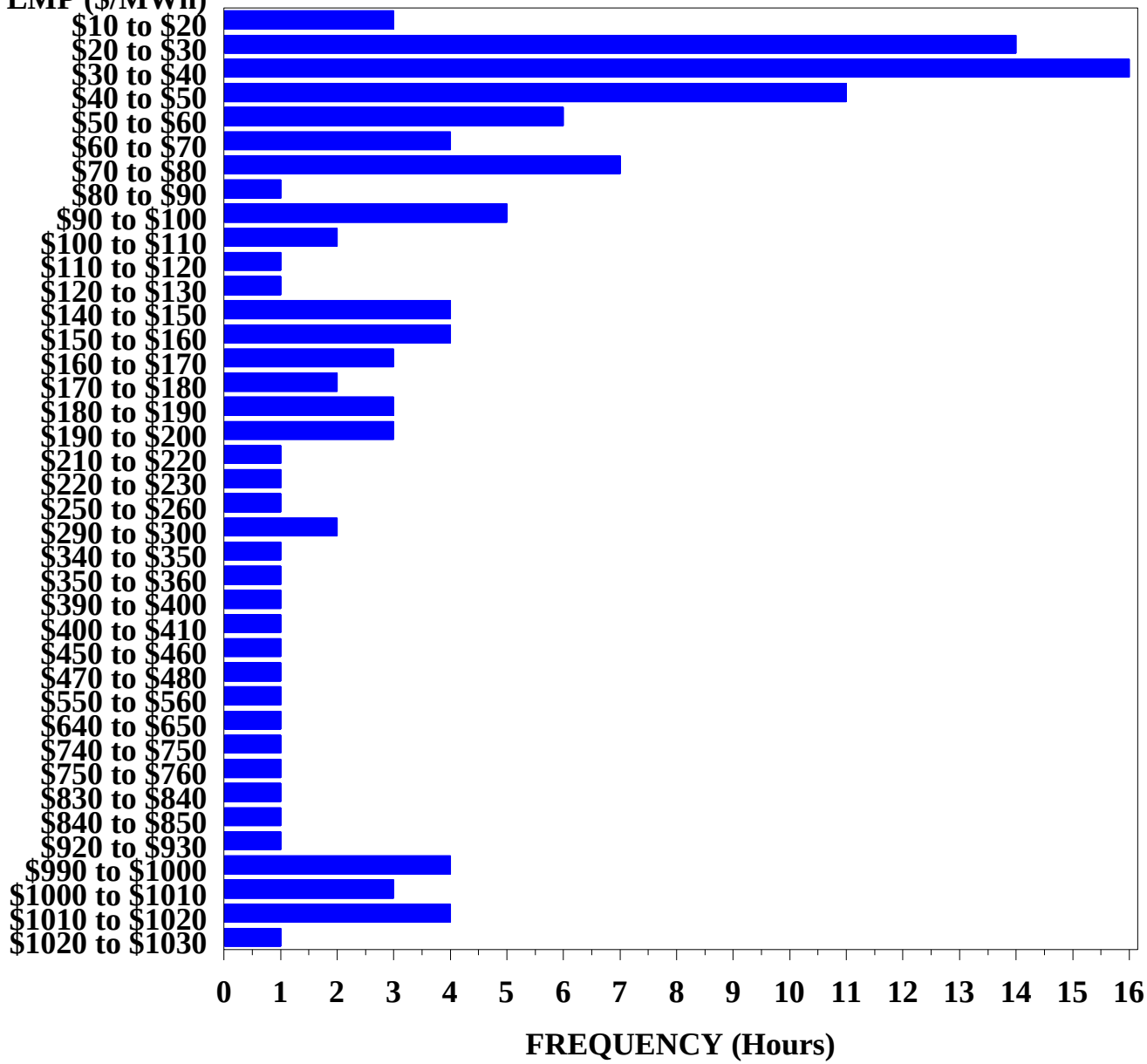
August 6 - 10, 2001 - Real Time Market



LMP ($/MWh)	FREQ.	CUM. FREQ.	PCT.	CUM. PCT.
$10 to $20	3	3	2.50	2.50
$20 to $30	11	14	9.17	11.67
$30 to $40	19	33	15.83	27.50
$40 to $50	13	46	10.83	38.33
$50 to $60	7	53	5.83	44.17
$60 to $70	3	56	2.50	46.67
$70 to $80	5	61	4.17	50.83
$80 to $90	3	64	2.50	53.33
$90 to $100	4	68	3.33	56.67
$100 to $110	3	71	2.50	59.17
$110 to $120	2	73	1.67	60.83
$120 to $130	2	75	1.67	62.50
$130 to $140	2	77	1.67	64.17
$140 to $150	3	80	2.50	66.67
$150 to $160	2	82	1.67	68.33
$160 to $170	4	86	3.33	71.67
$170 to $180	2	88	1.67	73.33
$180 to $190	3	91	2.50	75.83
$190 to $200	1	92	0.83	76.67
$210 to $220	1	93	0.83	77.50
$260 to $270	2	95	1.67	79.17
$280 to $290	1	96	0.83	80.00
$320 to $330	1	97	0.83	80.83
$330 to $340	1	98	0.83	81.67
$370 to $380	2	100	1.67	83.33
$390 to $400	1	101	0.83	84.17
$440 to $450	1	102	0.83	85.00
$550 to $560	1	103	0.83	85.83
$620 to $630	1	104	0.83	86.67
$650 to $660	1	105	0.83	87.50
$660 to $670	1	106	0.83	88.33
$690 to $700	1	107	0.83	89.17
$740 to $750	1	108	0.83	90.00
$770 to $780	1	109	0.83	90.83
$830 to $840	1	110	0.83	91.67
$900 to $910	3	113	2.50	94.17
$910 to $920	1	114	0.83	95.00
$920 to $930	1	115	0.83	95.83
$930 to $940	5	120	4.17	100.00

Frequency Distribution by Hours of Eastern Hub LMPs

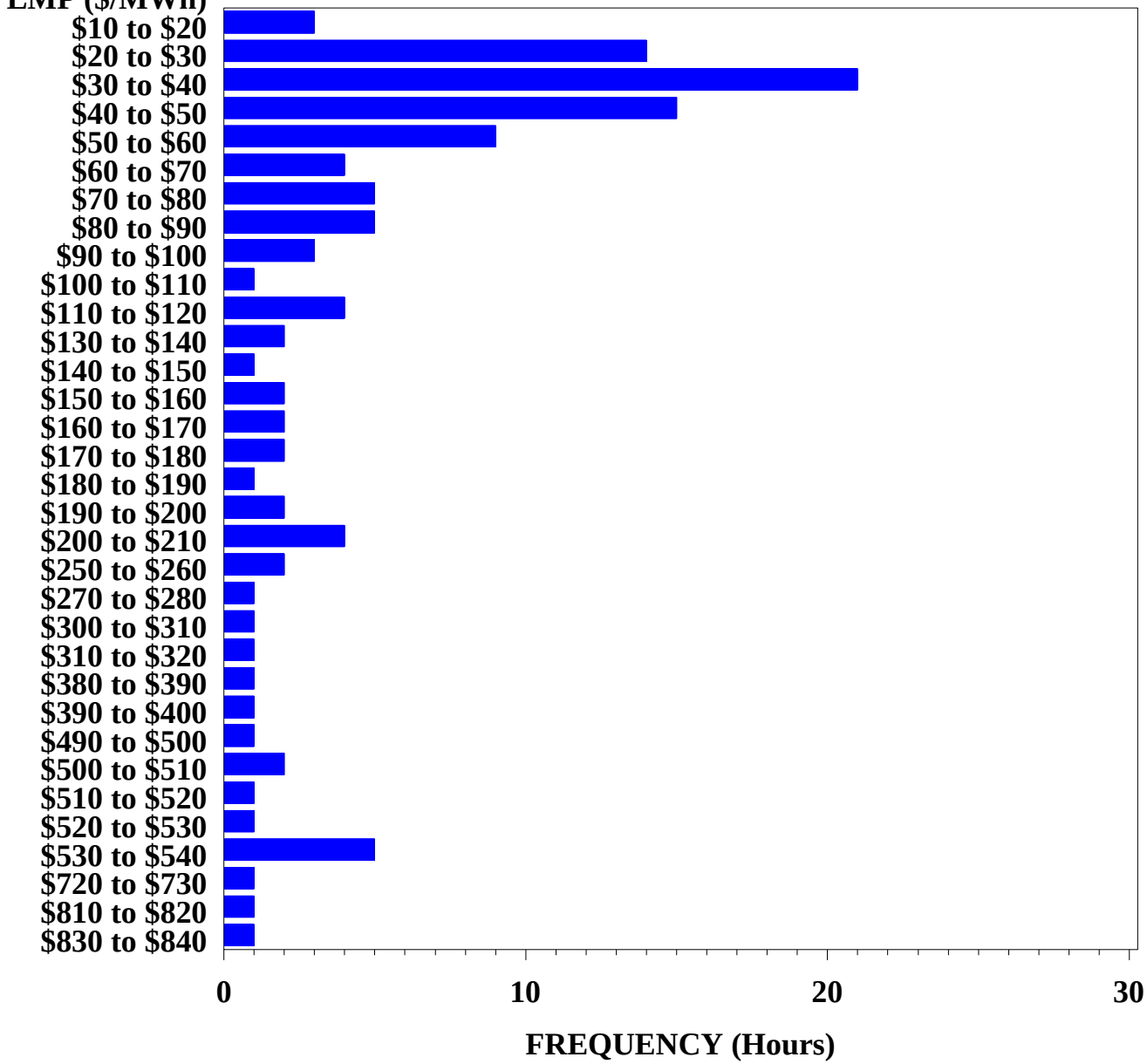
August 6 - 10, 2001 - Real Time Market



LMP ($/MWh)	FREQ.	CUM. FREQ.	PCT.	CUM. PCT.
$10 to $20	3	3	2.50	2.50
$20 to $30	14	17	11.67	14.17
$30 to $40	16	33	13.33	27.50
$40 to $50	11	44	9.17	36.67
$50 to $60	6	50	5.00	41.67
$60 to $70	4	54	3.33	45.00
$70 to $80	7	61	5.83	50.83
$80 to $90	1	62	0.83	51.67
$90 to $100	5	67	4.17	55.83
$100 to $110	2	69	1.67	57.50
$110 to $120	1	70	0.83	58.33
$120 to $130	1	71	0.83	59.17
$140 to $150	4	75	3.33	62.50
$150 to $160	4	79	3.33	65.83
$160 to $170	3	82	2.50	68.33
$170 to $180	2	84	1.67	70.00
$180 to $190	3	87	2.50	72.50
$190 to $200	3	90	2.50	75.00
$210 to $220	1	91	0.83	75.83
$220 to $230	1	92	0.83	76.67
$250 to $260	1	93	0.83	77.50
$290 to $300	2	95	1.67	79.17
$340 to $350	1	96	0.83	80.00
$350 to $360	1	97	0.83	80.83
$390 to $400	1	98	0.83	81.67
$400 to $410	1	99	0.83	82.50
$450 to $460	1	100	0.83	83.33
$470 to $480	1	101	0.83	84.17
$550 to $560	1	102	0.83	85.00
$640 to $650	1	103	0.83	85.83
$740 to $750	1	104	0.83	86.67
$750 to $760	1	105	0.83	87.50
$830 to $840	1	106	0.83	88.33
$840 to $850	1	107	0.83	89.17
$920 to $930	1	108	0.83	90.00
$990 to $1000	4	112	3.33	93.33
$1000 to $1010	3	115	2.50	95.83
$1010 to $1020	4	119	3.33	99.17
$1020 to $1030	1	120	0.83	100.00

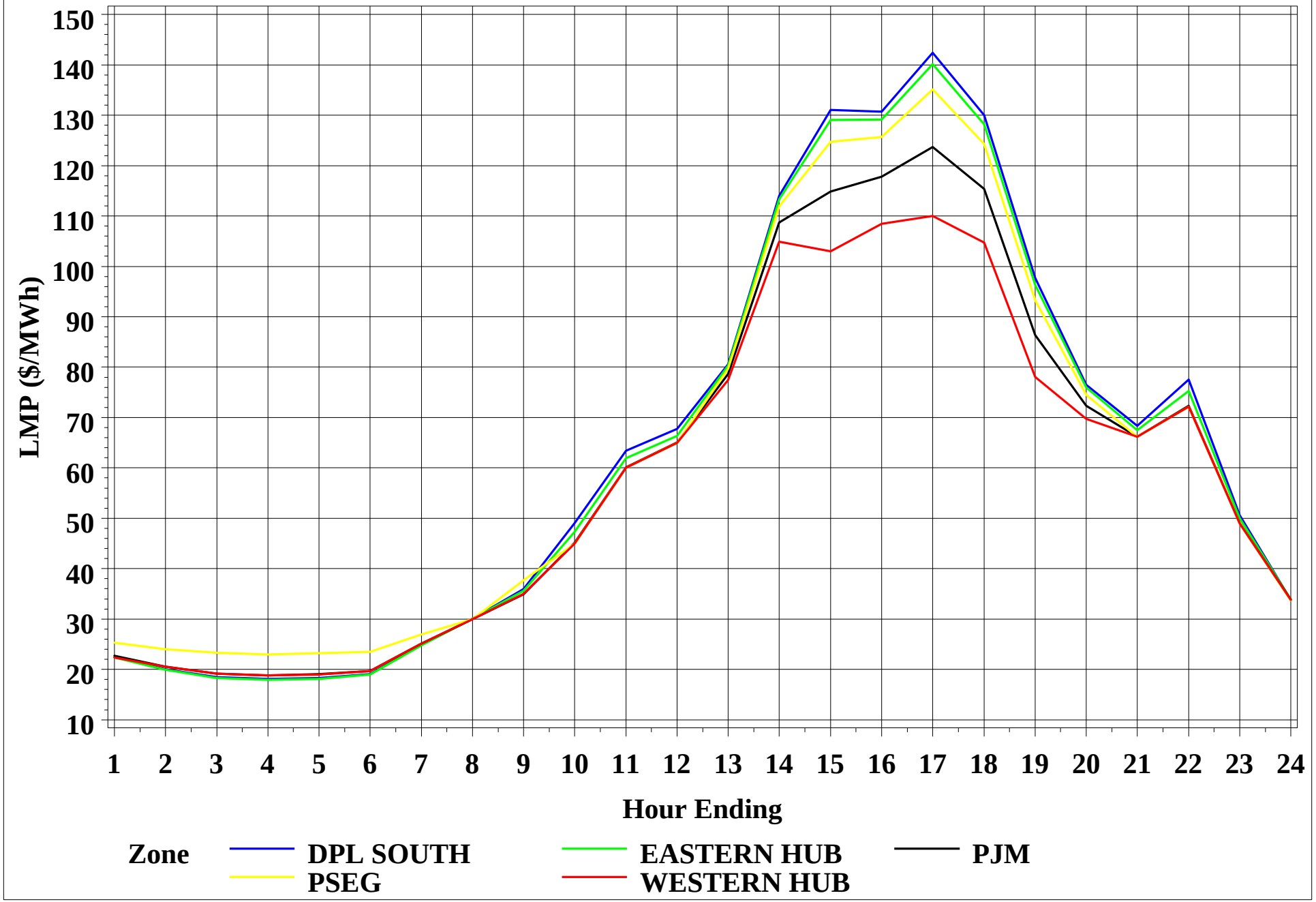
Frequency Distribution by Hours of Western Hub LMPs

August 6 - 10, 2001 - Real Time Market

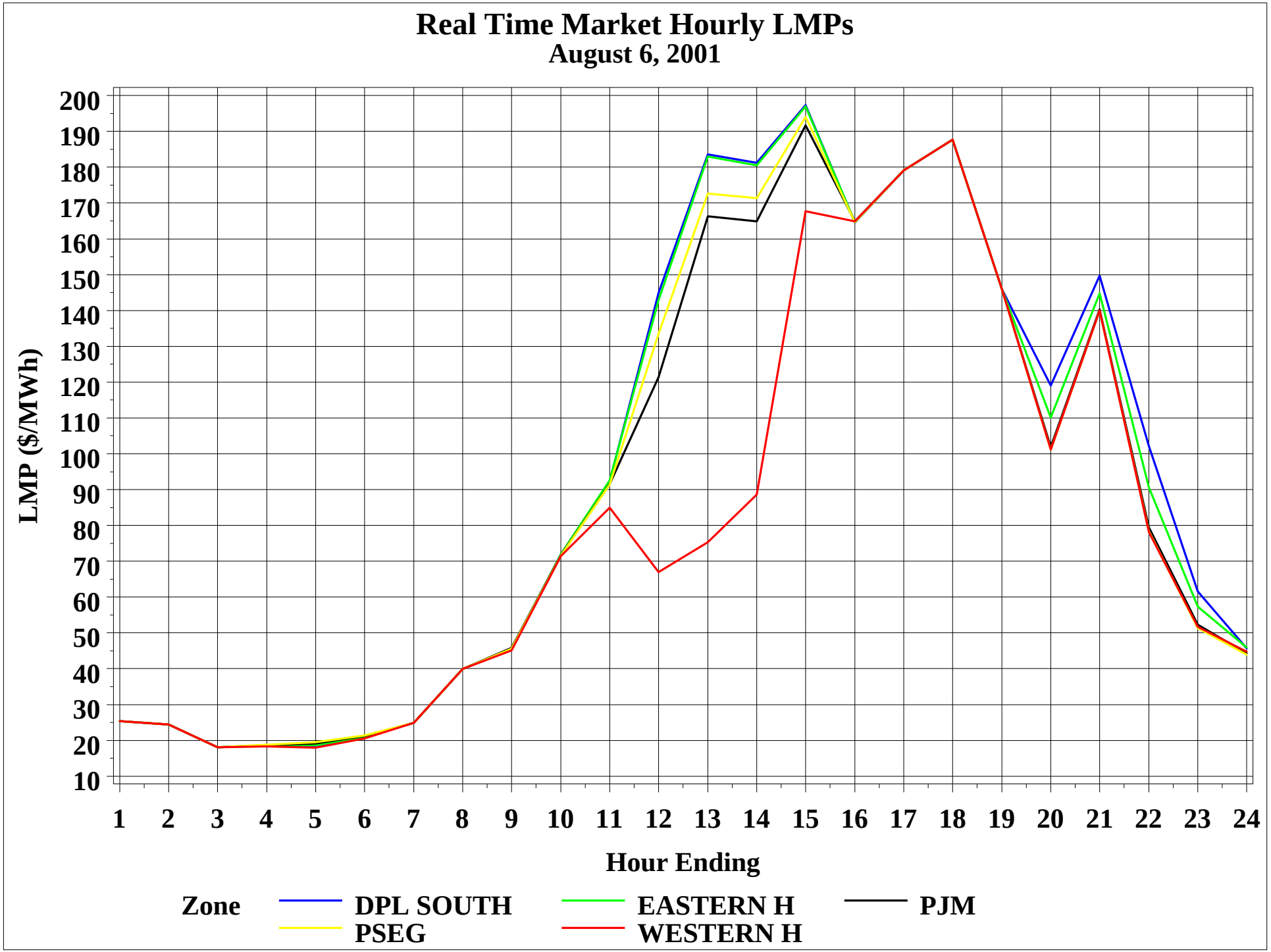


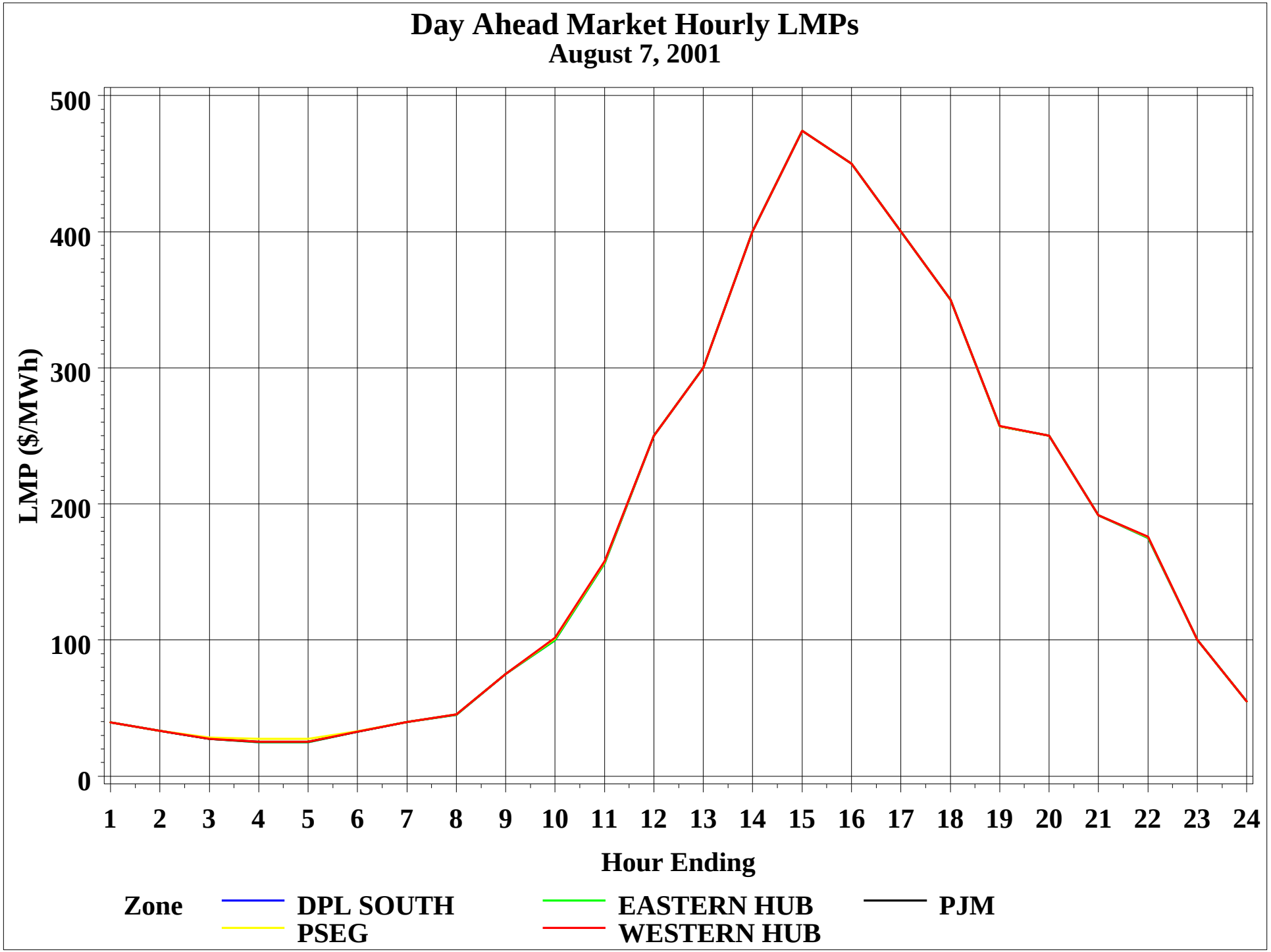
LMP ($/MWh)	FREQ.	CUM. FREQ.	PCT.	CUM. PCT.
$10 to $20	3	3	2.50	2.50
$20 to $30	14	17	11.67	14.17
$30 to $40	21	38	17.50	31.67
$40 to $50	15	53	12.50	44.17
$50 to $60	9	62	7.50	51.67
$60 to $70	4	66	3.33	55.00
$70 to $80	5	71	4.17	59.17
$80 to $90	5	76	4.17	63.33
$90 to $100	3	79	2.50	65.83
$100 to $110	1	80	0.83	66.67
$110 to $120	4	84	3.33	70.00
$130 to $140	2	86	1.67	71.67
$140 to $150	1	87	0.83	72.50
$150 to $160	2	89	1.67	74.17
$160 to $170	2	91	1.67	75.83
$170 to $180	2	93	1.67	77.50
$180 to $190	1	94	0.83	78.33
$190 to $200	2	96	1.67	80.00
$200 to $210	4	100	3.33	83.33
$250 to $260	2	102	1.67	85.00
$270 to $280	1	103	0.83	85.83
$300 to $310	1	104	0.83	86.67
$310 to $320	1	105	0.83	87.50
$380 to $390	1	106	0.83	88.33
$390 to $400	1	107	0.83	89.17
$490 to $500	1	108	0.83	90.00
$500 to $510	2	110	1.67	91.67
$510 to $520	1	111	0.83	92.50
$520 to $530	1	112	0.83	93.33
$530 to $540	5	117	4.17	97.50
$720 to $730	1	118	0.83	98.33
$810 to $820	1	119	0.83	99.17
$830 to $840	1	120	0.83	100.00

Day Ahead Market Hourly LMPs
August 6, 2001

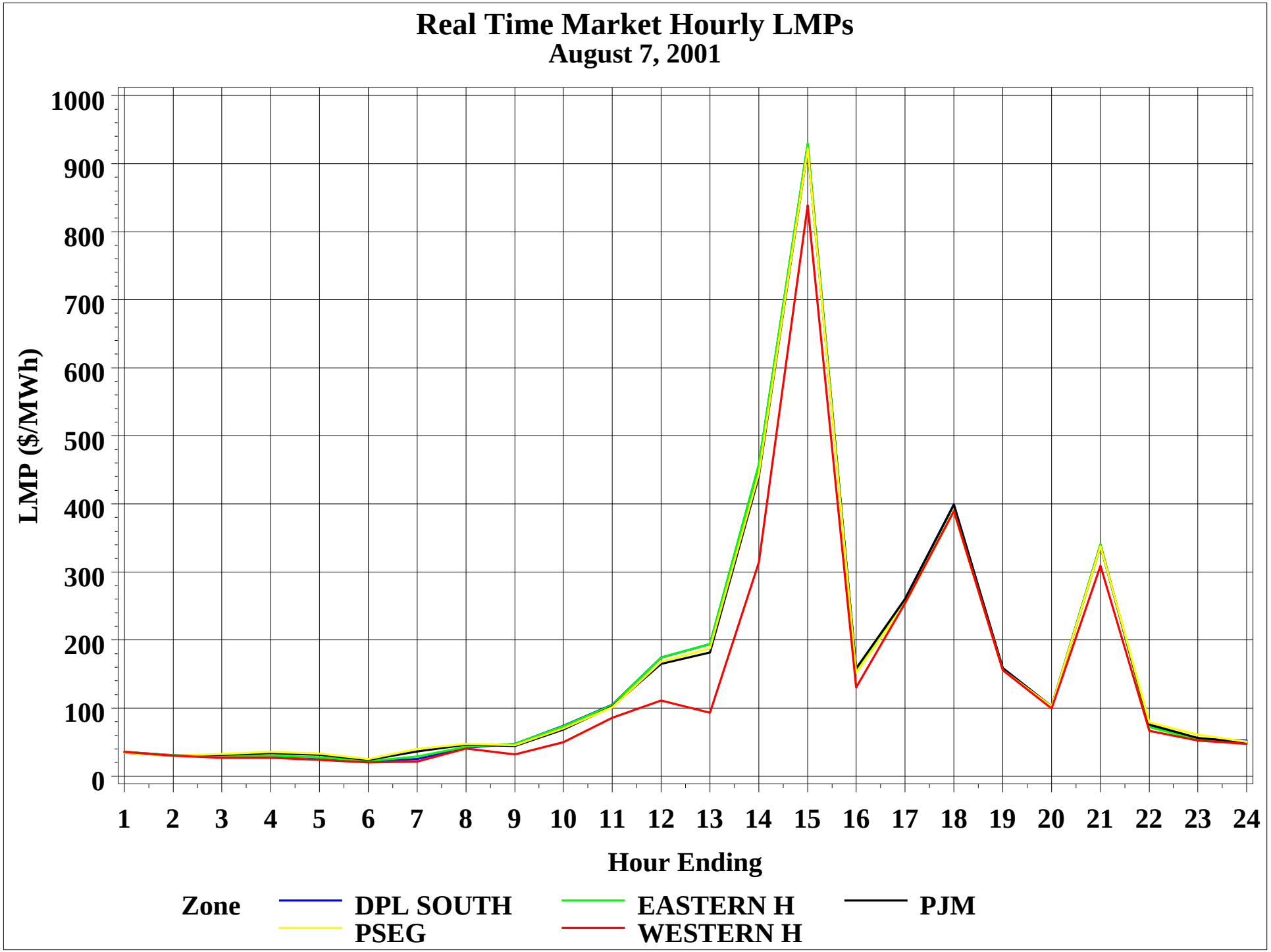


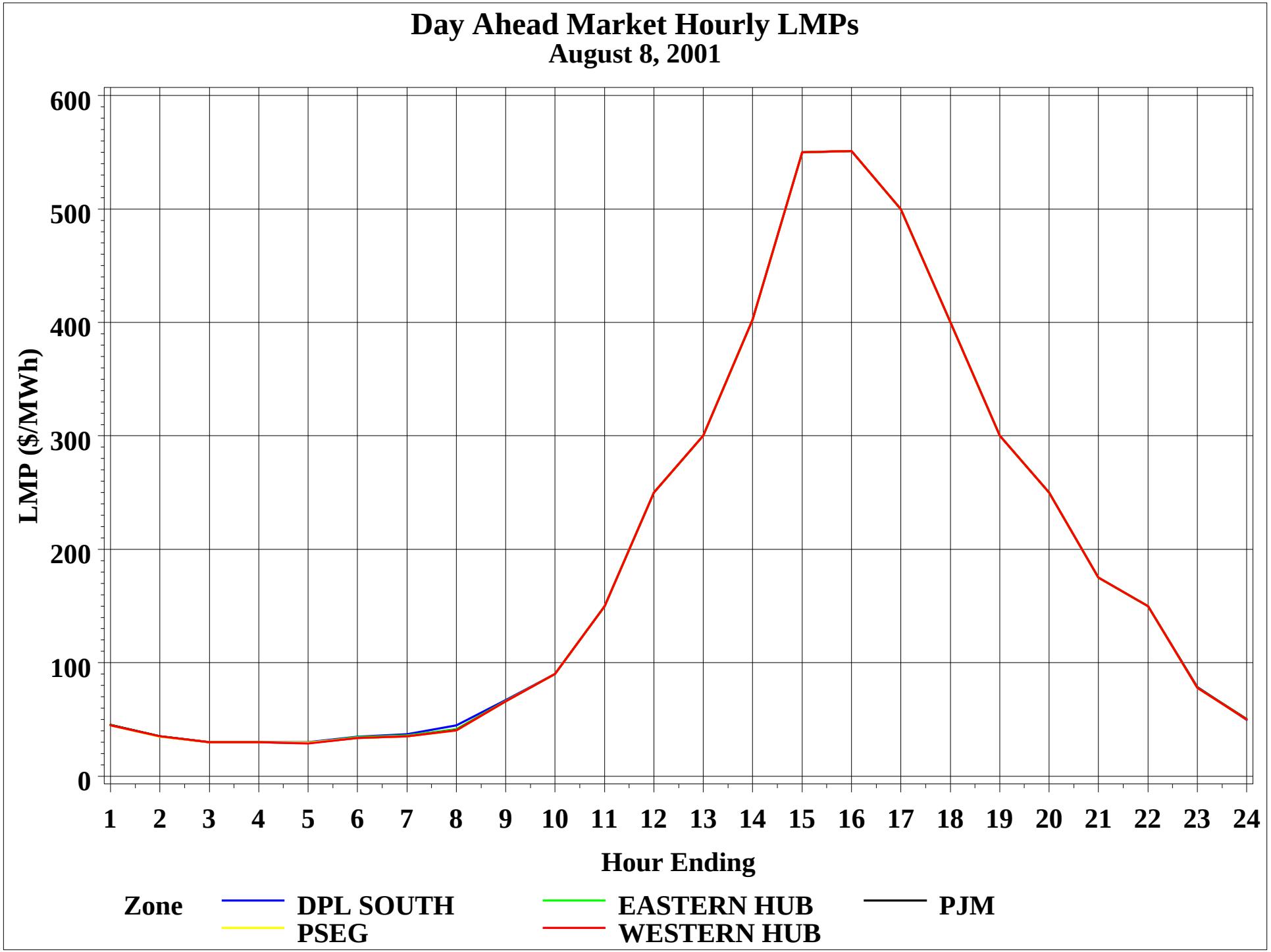
Real Time Market Hourly LMPs
August 6, 2001



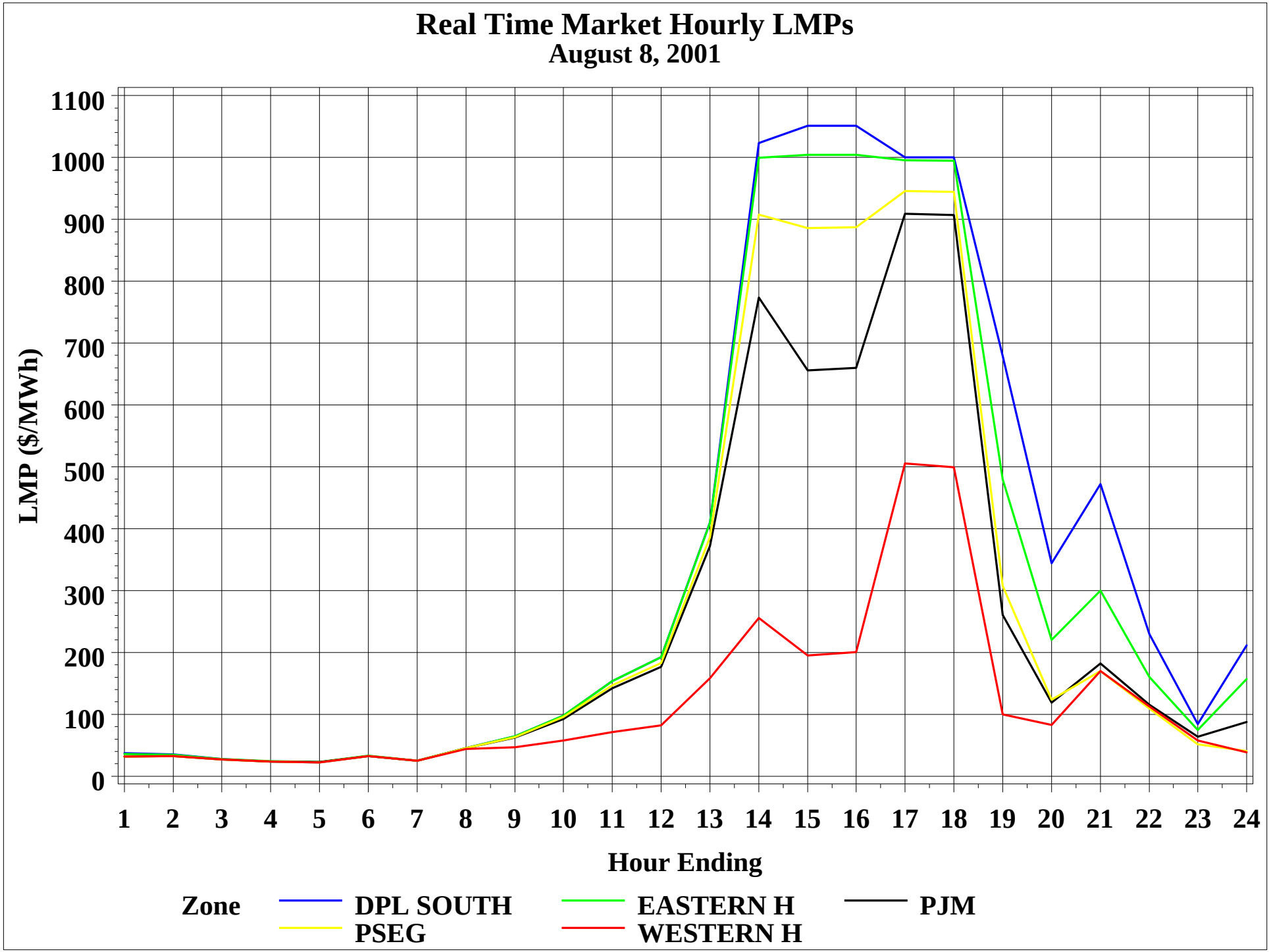

Day Ahead Market Hourly LMPs
August 7, 2001
LMP ($/MWh)
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Hour Ending
Zone
DPL SOUTH
PSEG
EASTERN HUB
WESTERN HUB
PJM

Real Time Market Hourly LMPs
August 7, 2001

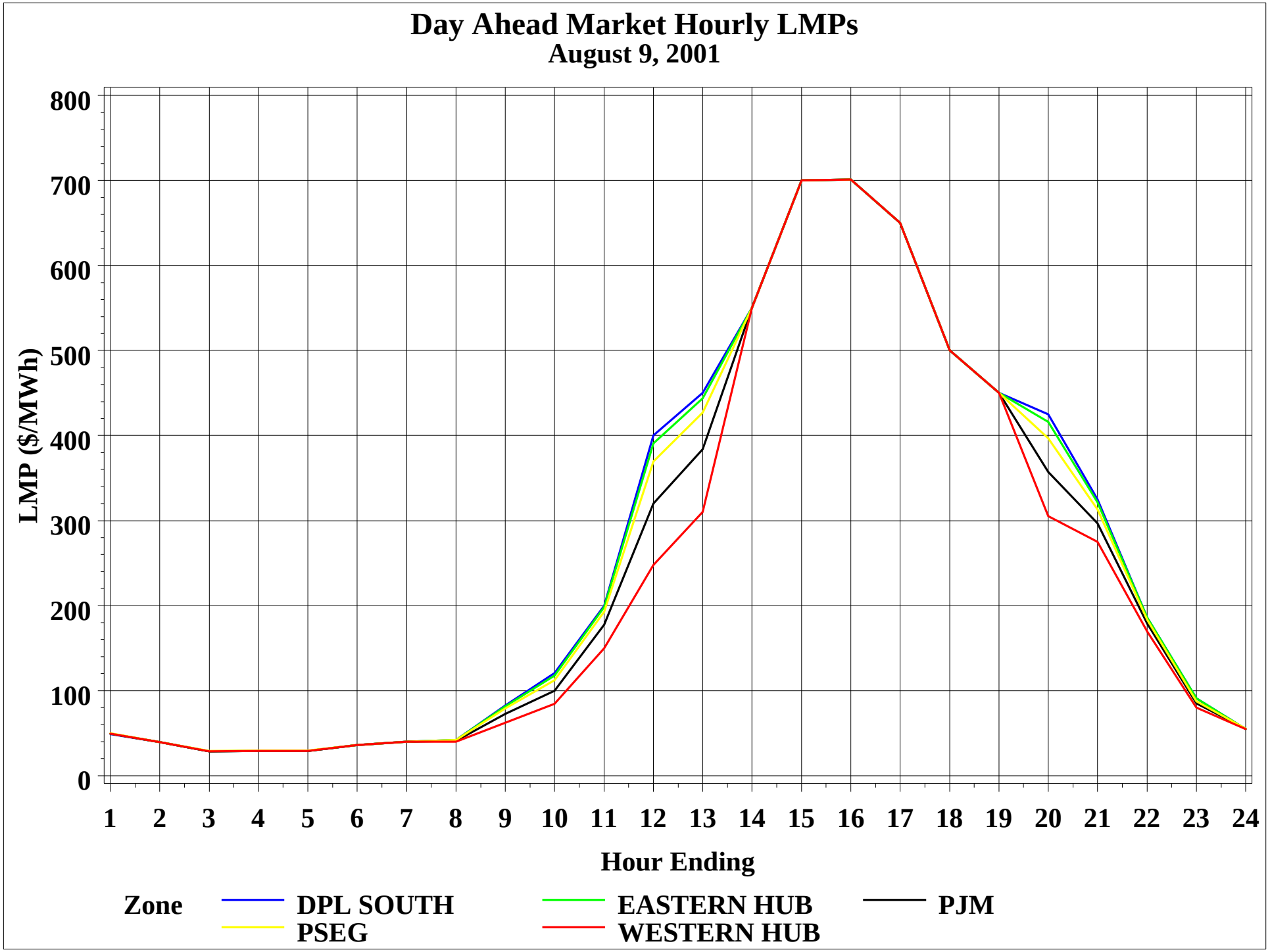



Day Ahead Market Hourly LMPs
August 8, 2001
LMP ($/MWh)
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Hour Ending
Zone
DPL SOUTH
PSEG
EASTERN HUB
WESTERN HUB
PJM

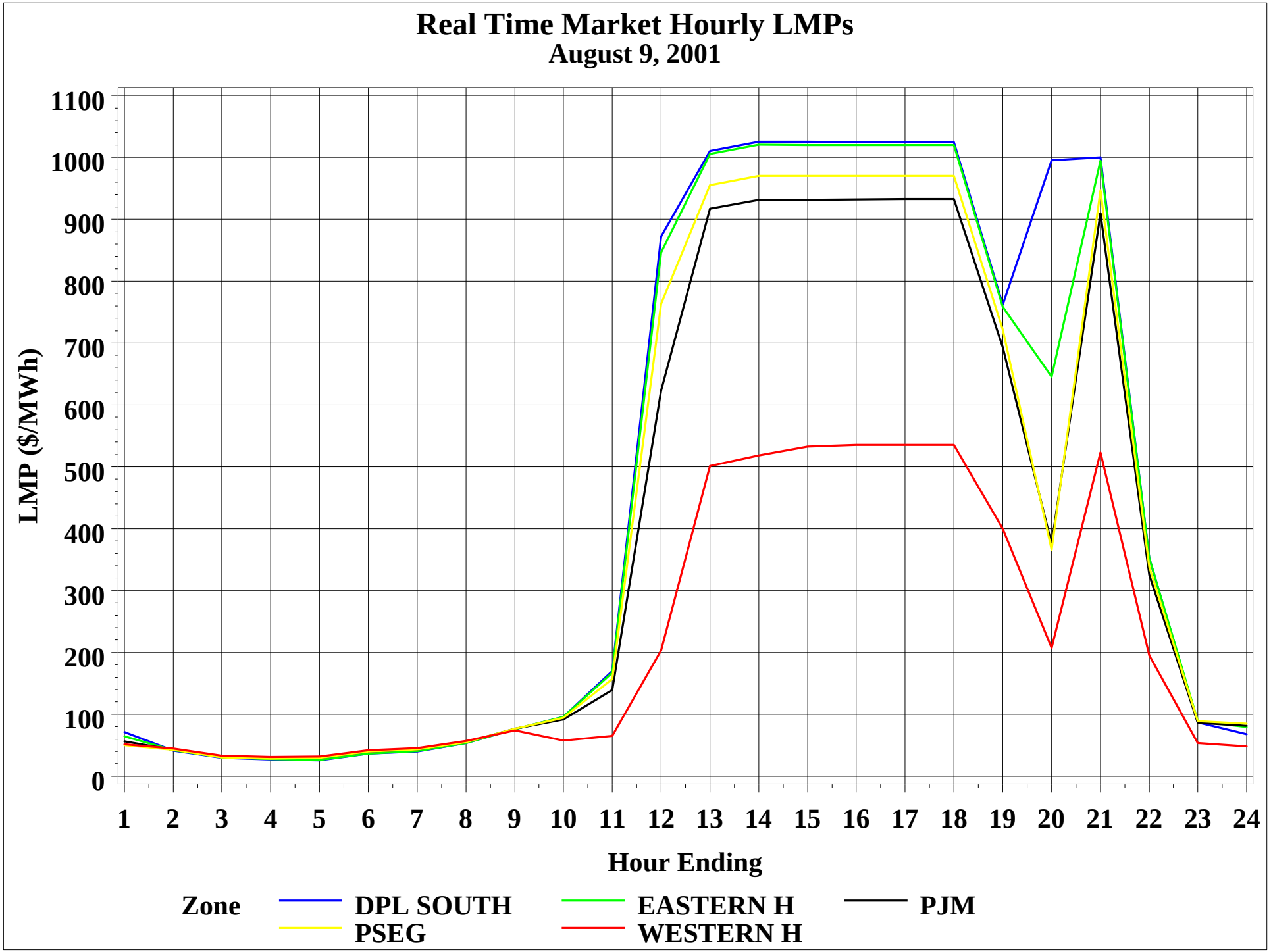
Real Time Market Hourly LMPs
August 8, 2001

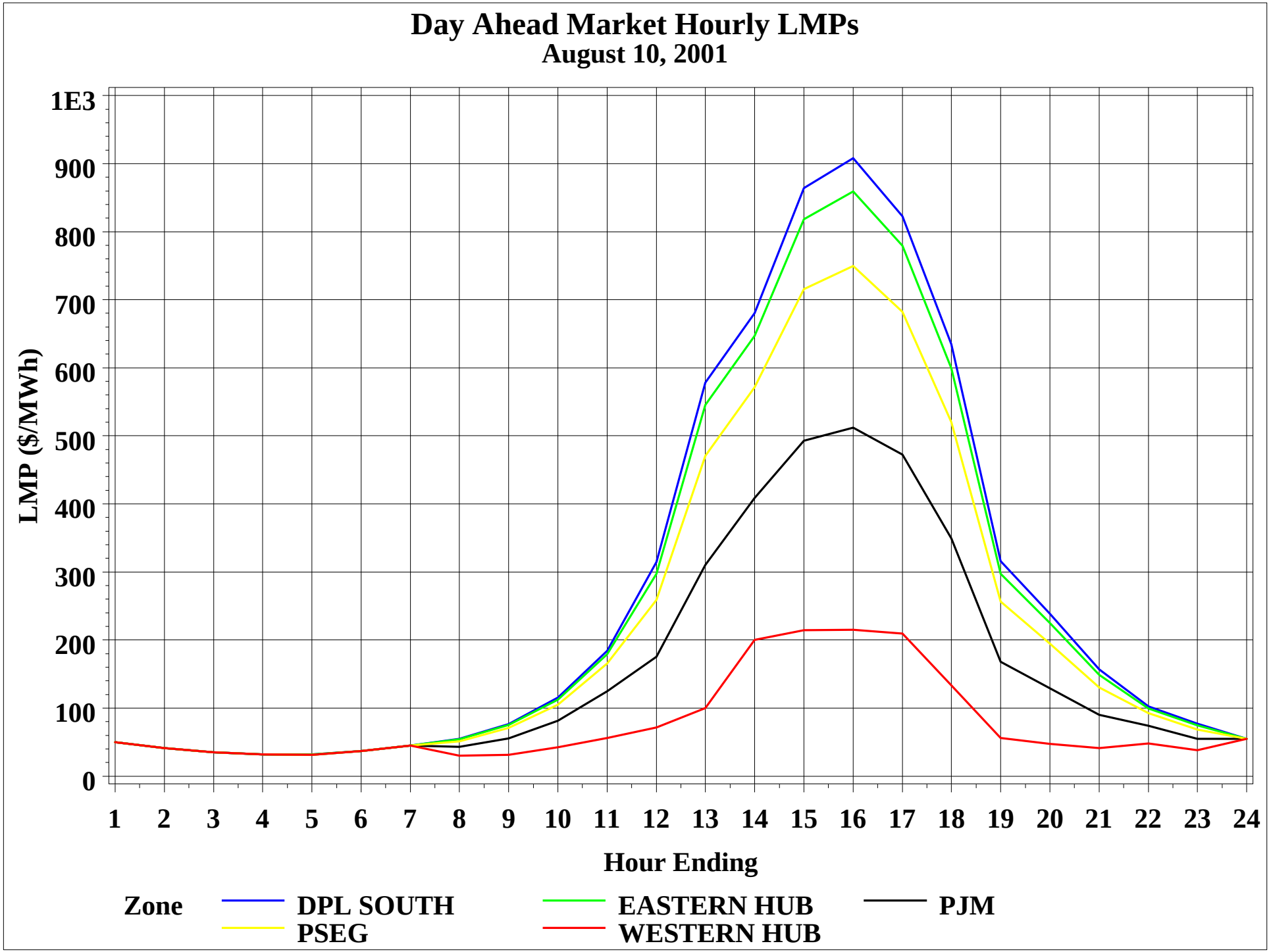


Day Ahead Market Hourly LMPs
August 9, 2001

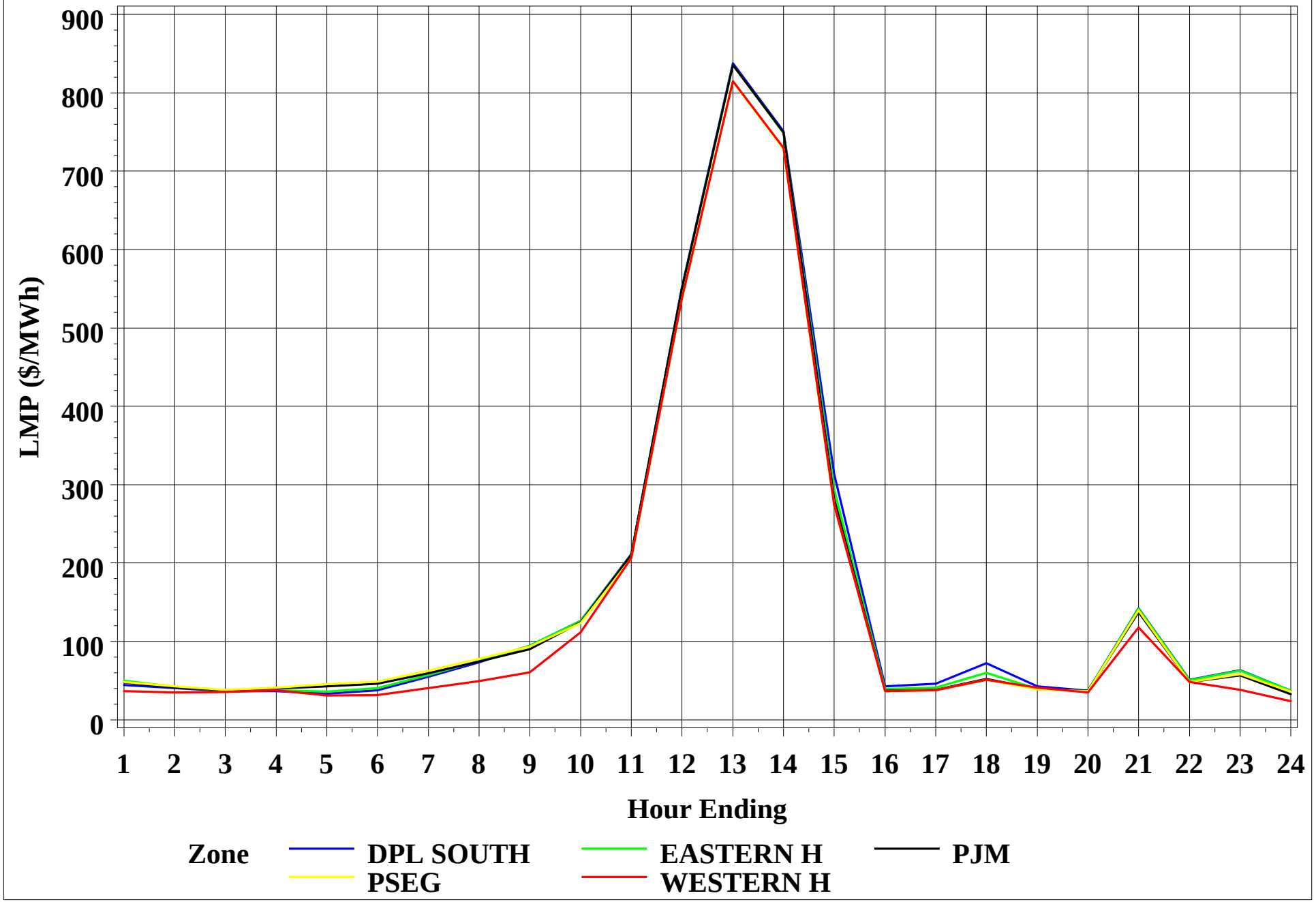


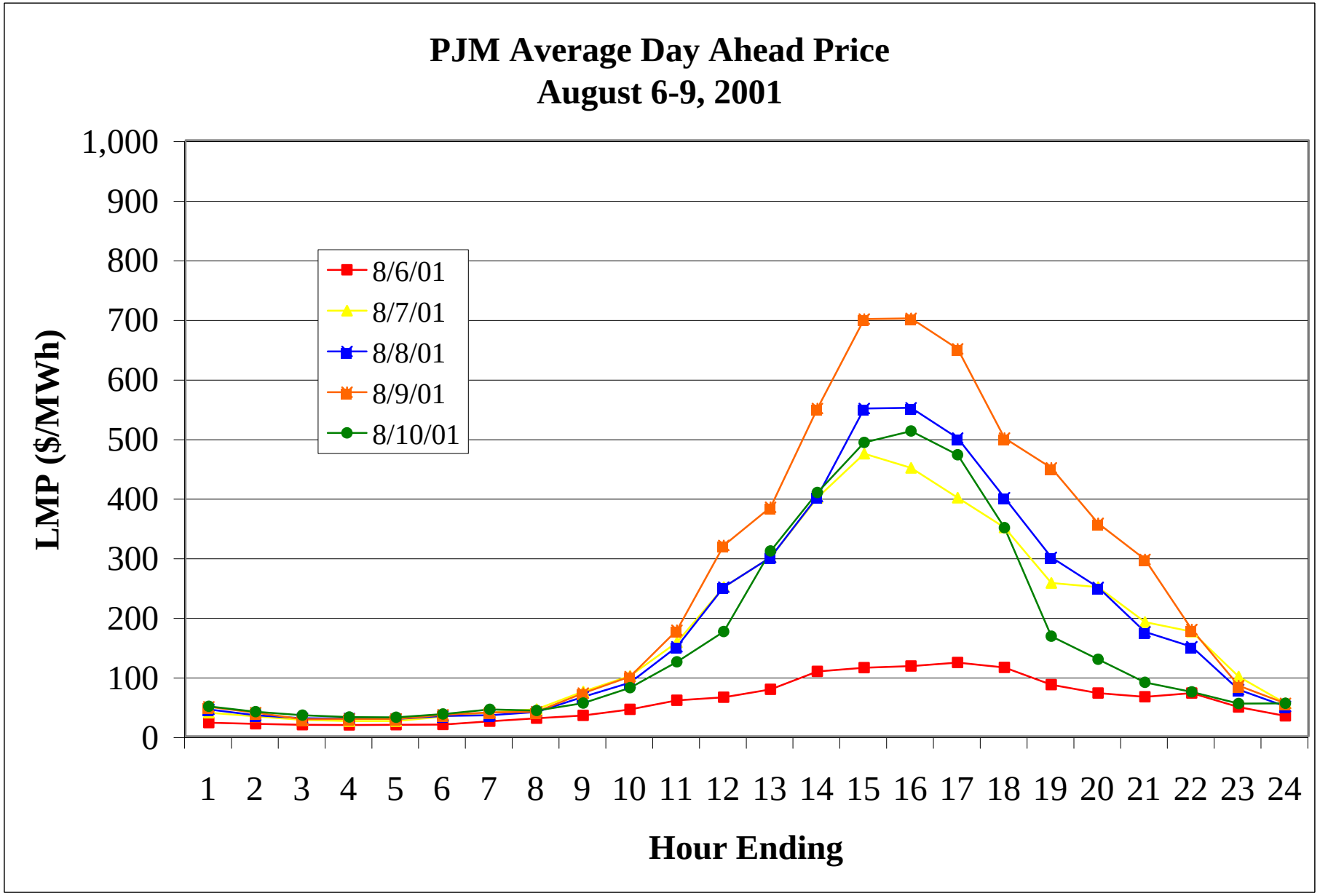
Real Time Market Hourly LMPs
August 9, 2001

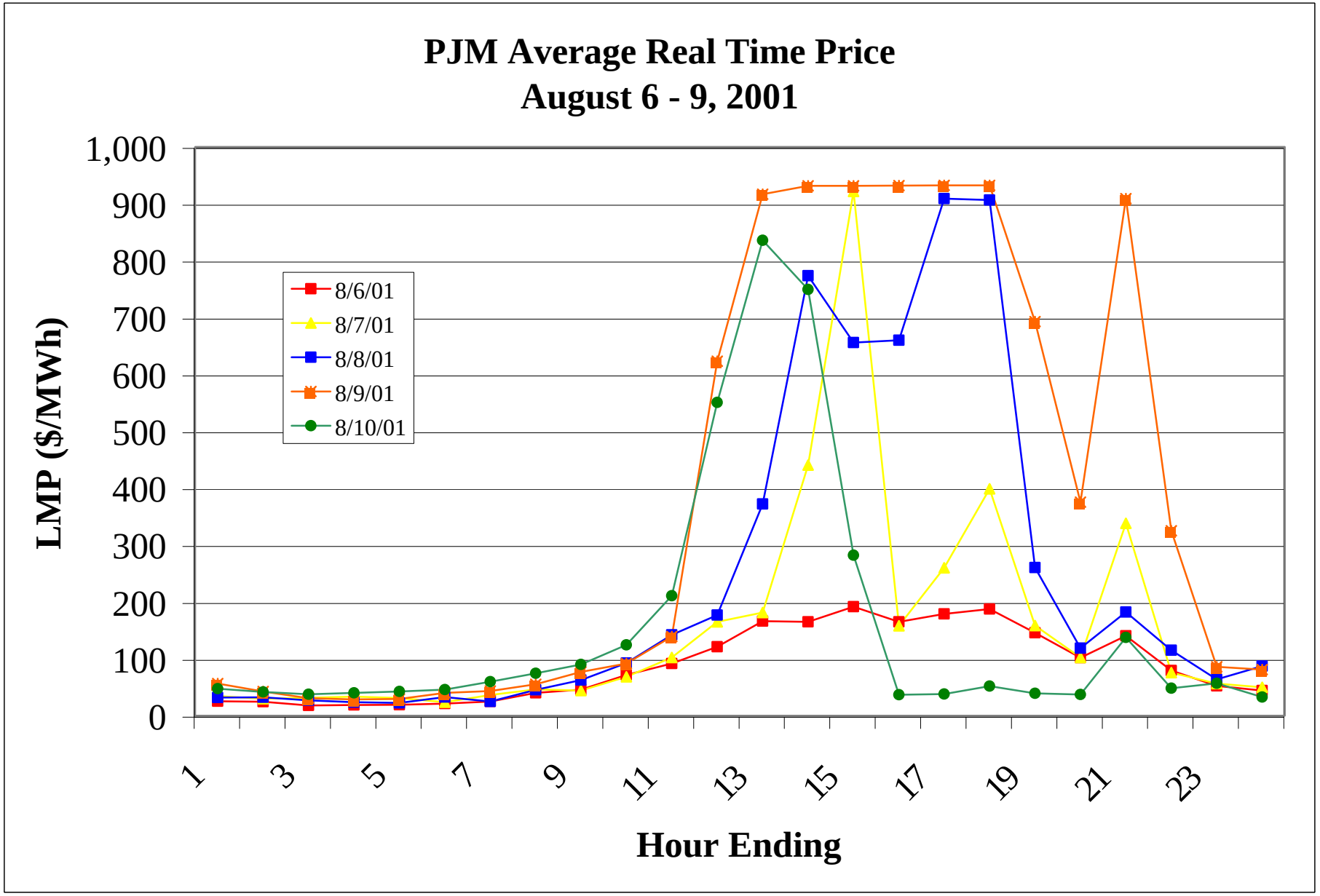


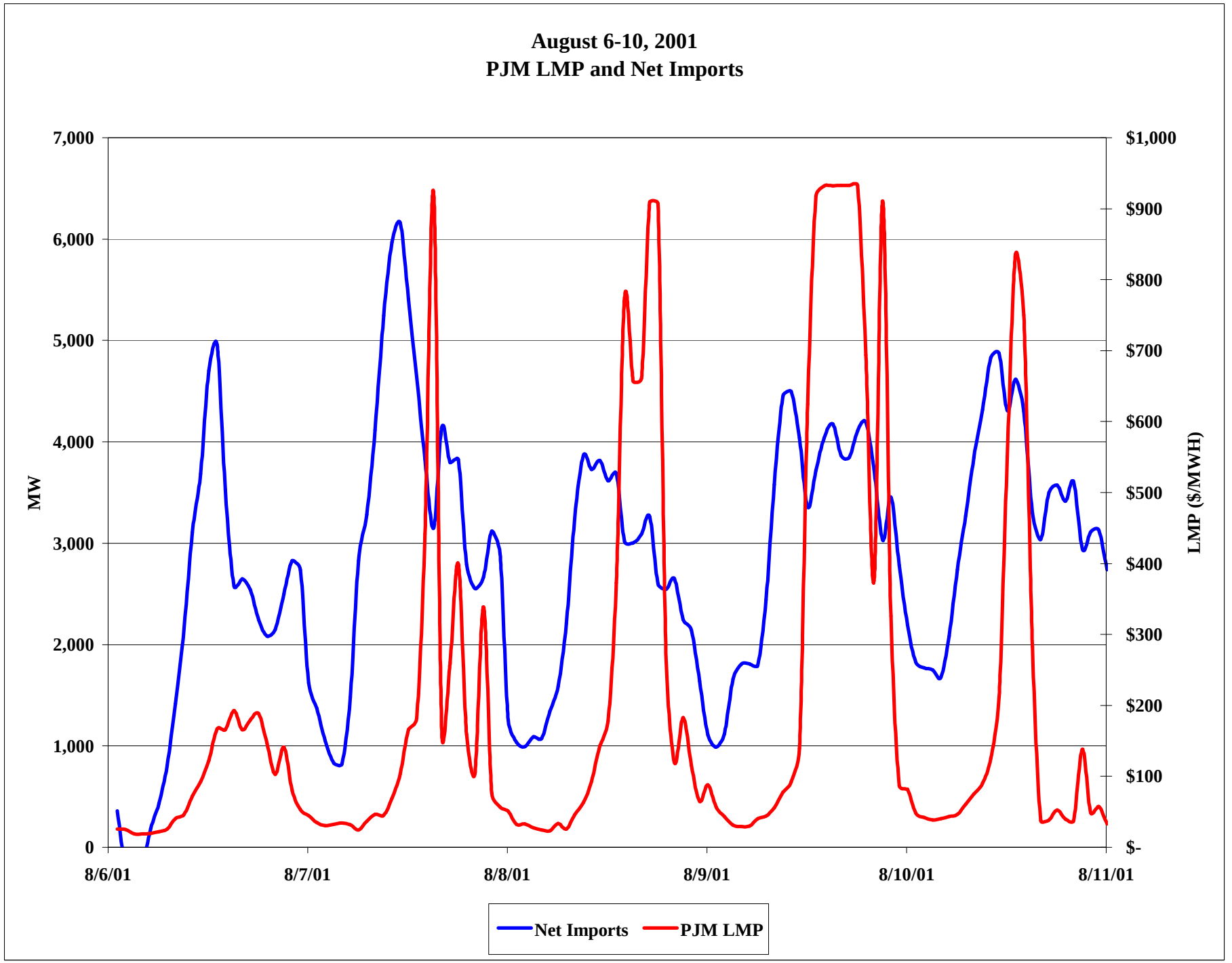

Day Ahead Market Hourly LMPs
August 10, 2001
LMP ($/MWh)
1E3
900
800
700
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Hour Ending
Zone
DPL SOUTH
EASTERN HUB
PJM
PSEG
WESTERN HUB

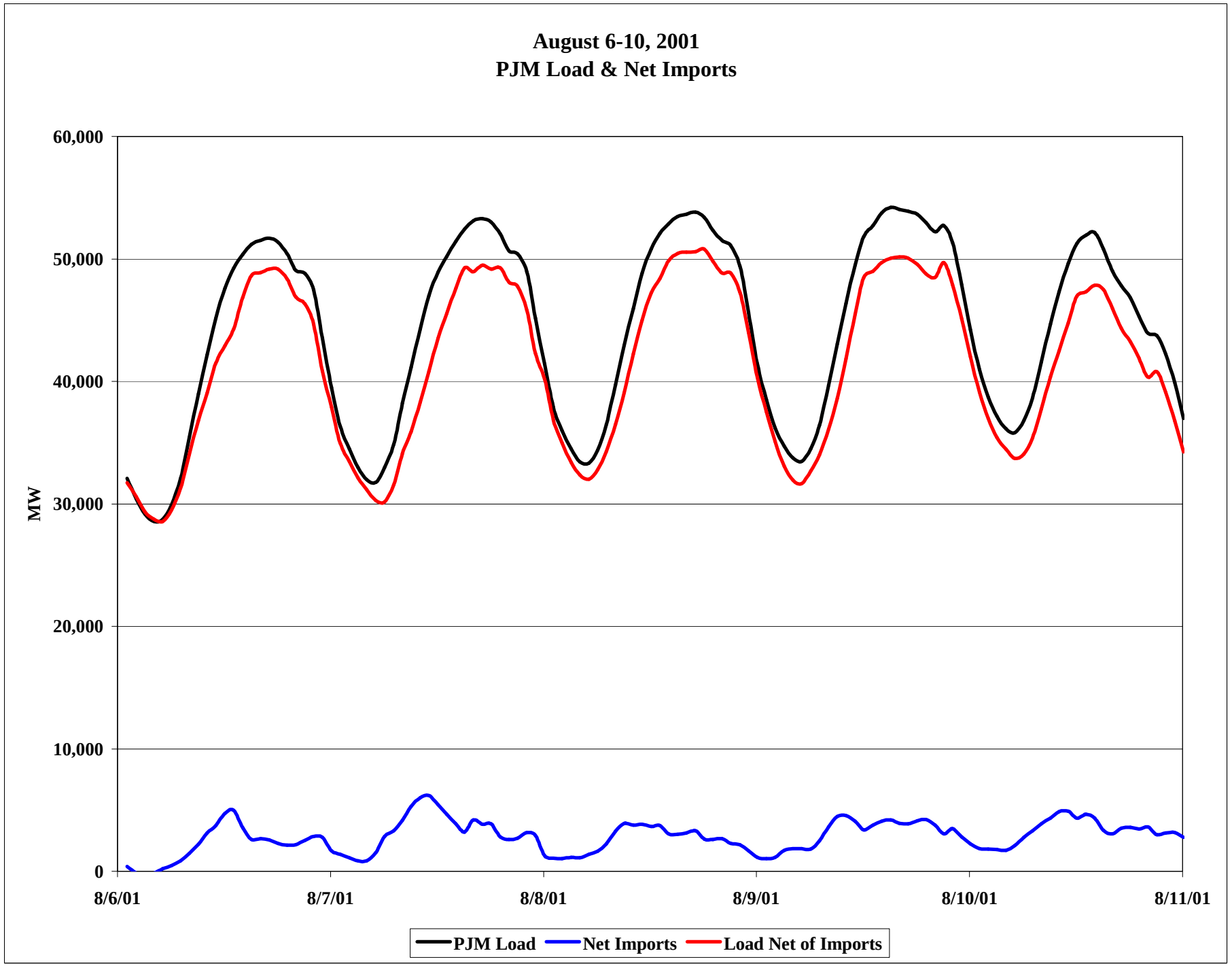
Real Time Market Hourly LMPs
August 10, 2001

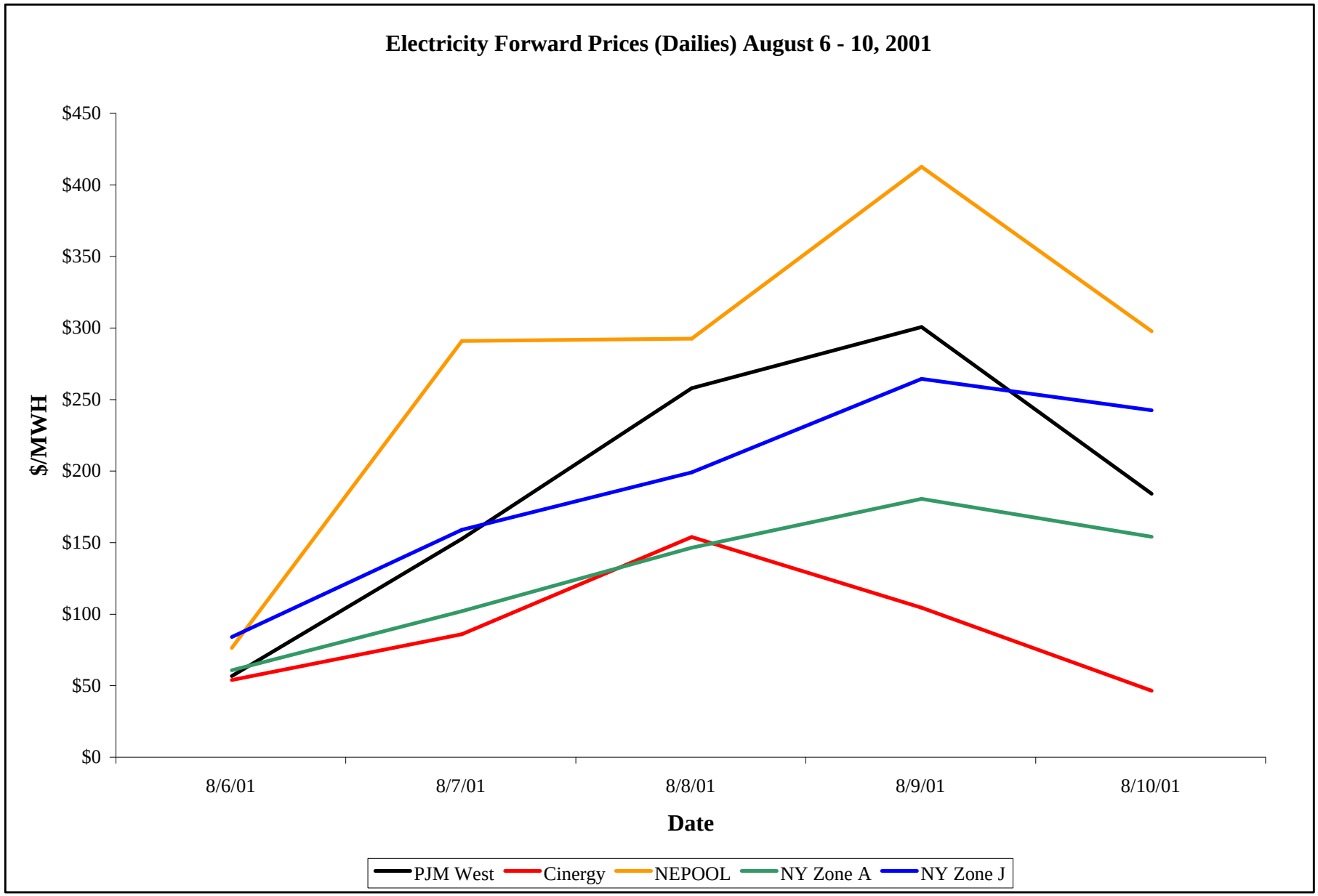


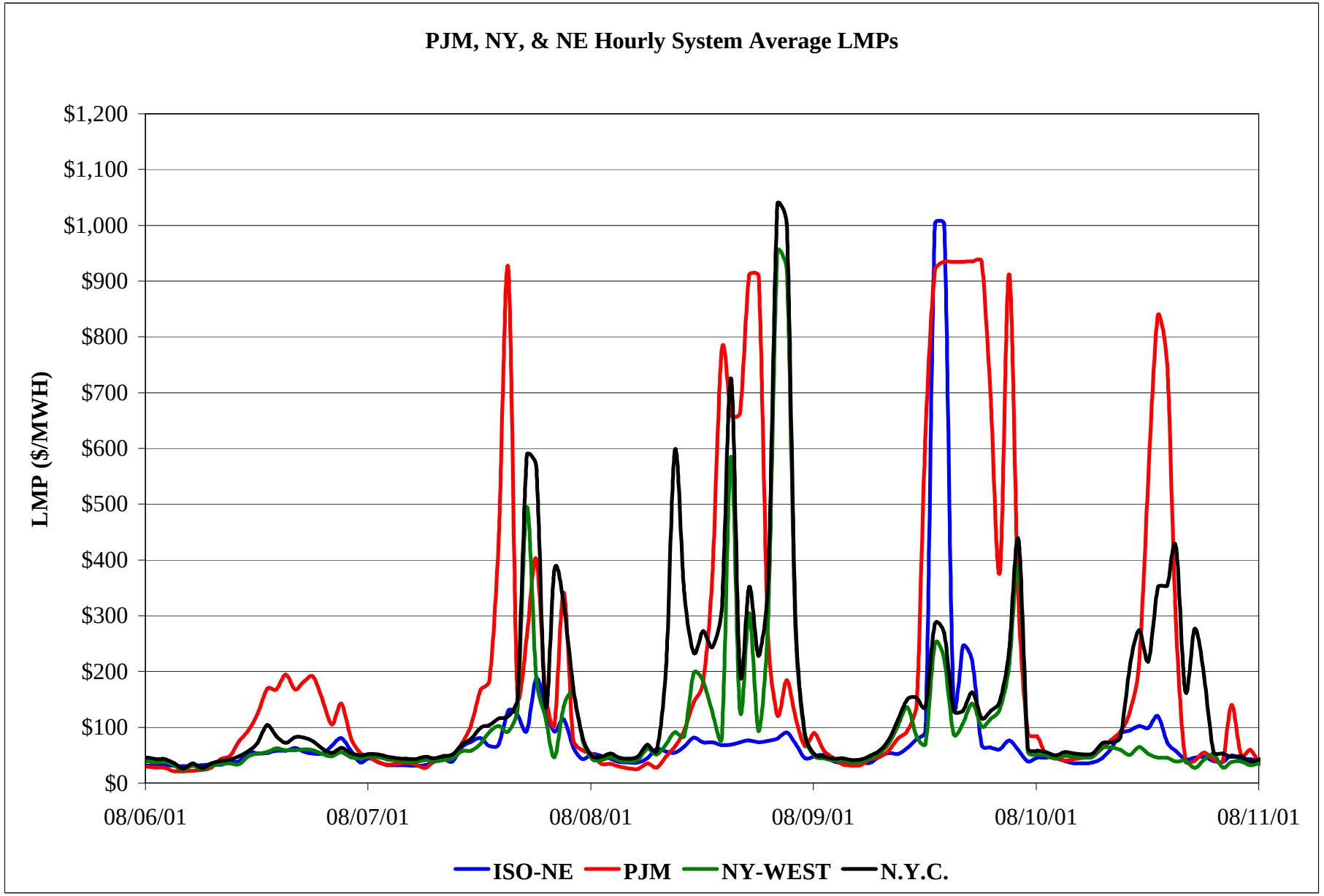

PJM Average Day Ahead Price
August 6-9, 2001
LMP ($/MWh)
1,000
900
800
700
600
500
400
300
200
100
0
8/6/01
8/7/01
8/8/01
8/9/01
8/10/01
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Hour Ending


PJM Average Real Time Price
August 6 - 9, 2001
LMP ($/MWh)
1,000
900
800
700
600
500
400
300
200
100
0
8/6/01
8/7/01
8/8/01
8/9/01
8/10/01
1
3
5
7
9
11
13
15
17
19
21
23
Hour Ending


August 6-10, 2001
PJM LMP and Net Imports
MW
LMP ($/MWH)
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
$1,000
$900
$800
$700
$600
$500
$400
$300
$200
$100
$-
8/6/01
8/7/01
8/8/01
8/9/01
8/10/01
8/11/01
Net Imports
PJM LMP


August 6-10, 2001
PJM Load & Net Imports
60,000
50,000
40,000
30,000
20,000
10,000
0
MW
8/6/01
8/7/01
8/8/01
8/9/01
8/10/01
8/11/01
PJM Load
Net Imports
Load Net of Imports


Electricity Forward Prices (Dailies) August 6 - 10, 2001
$450
$400
$350
$300
$250
$200
$150
$100
$50
$0
$/MWH
8/6/01
8/7/01
8/8/01
8/9/01
8/10/01
Date
PJM West
Cinergy
NEPOOL
NY Zone A
NY Zone J


PJM, NY, & NE Hourly System Average LMPs
LMP ($/MWH)
$1,200
$1,100
$1,000
$900
$800
$700
$600
$500
$400
$300
$200
$100
$0
08/06/01
08/07/01
08/08/01
08/09/01
08/10/01
08/11/01
ISO-NE
PJM
NY-WEST
N.Y.C.

PJM Emergency Procedure Messages

Emergency Operations Summary
Historical Emergency Procedure Messages - **Emergency Procedure Message Definitions**

08/10/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Primary Reserve Alert

As of 2340 hours, the **Primary Reserve Alert** has been cancelled for (08/10/01).

08/10/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Hot Weather Alert

As of 2331 hours, the **Hot Weather Alert** has been cancelled for 08/10/01).

08/10/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Maximum Emergency Generation Alert

As of 2331 hours, the **Maximum Emergency Generation Alert** has been cancelled for 08/10/01

08/10/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Load Management Curtailment Step 1

As of (1510) hours, the **Load Management Curtailment Step 1 Action** has been cancelled.

08/10/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Load Management Curtailment Step 3

As of (1510) hours, the **Load Management Curtailment Step 3 Action** has been cancelled.

08/10/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Load Management Curtailment Step 1

As of (1310) hours, the **Load Management Curtailment Step 1 Action** has been cancelled.

08/10/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Load Management Curtailment Step 4

As of 1440 hours, the **Load Management Curtailment Step 4 Action** has been cancelled.

08/10/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Load Management Curtailment Step 2

As of 1440 hours, the **Load Management Curtailment Step 2 Action** has been cancelled.

08/10/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Load Management Curtailment Step 3

As of 10:54 hours, **Load Management Curtailment Step 3 Action** has been issued effective 12:00.

08/10/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Load Management Curtailment Step 1

As of 1054 hours, **Load Management Curtailment Step 1 Action** has been issued effective 12:00.

08/10/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Load Management Curtailment Step 4

As of 0830 hours, **Load Management Curtailment Step 4 Action** has been issued effective 11:00.

08/10/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Load Management Curtailment Step 2

As of 0830 hours, **Load Management Curtailment Step 2 Action** has been issued effective 11:00.

08/10/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Special Notice

Due to a transmission equipment failure in VEPCO there is the POTENTIAL for large block curtailment of PJM imports from northern Virginia, up to and including firm contracts. There are no curtailments at this time but as loading increases the POSSIBILITY will become more imminent through the day.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Maximum Emergency Generation

As of 2133 hours, the **Maximum Emergency Generation Action** has been cancelled.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel - Load Reduction Action

As of 1900 hours, the Load Reduction Action from the Customer Load Reduction Pilot Program participants has been cancelled.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Load Management Curtailment Step 4

As of 1900 hours, the **Load Management Curtailment Step 4 Action** has been cancelled.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Load Management Curtailment Step 2

As of 1900 hours, the **Load Management Curtailment Step 2 Action** has been cancelled.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Primary Reserve Alert

As of 1900 hours, a **Primary Reserve Alert** has been issued for Friday, August 10, 2001. Estimated operating reserves are less than the primary reserve requirement of 1700 MW.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Maximum Emergency Generation Alert

As of 1803 hours, a **Maximum Emergency Generation Alert** has been issued for Friday, August 10, 2001. Maximum Emergency Generation has been called into the operating capacity.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Primary Reserve Warning

As of 1830 hours, the **Primary Reserve Warning** has been cancelled.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Voltage Reduction Warning and Reduction of Non-Critical Plant

As of 1830 hours, the **Voltage Reduction Warning and Reduction of Non-Critical Plant Load** has been cancelled.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Manual Load Dump Warning

As of 1830 hours, the **Manual Load Dump Warning** has been cancelled.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Load Management Curtailment Step 3

As of 1830 hours, the **Load Management Curtailment Step 3 Action** has been cancelled.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Load Management Curtailment Step 1

As of 1830 hours, the **Load Management Curtailment Step 1 Action** has been cancelled.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Maximum Emergency Generation

As of 1822 hours, the **Maximum Emergency Generation Action** has been cancelled.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Voluntary Customer Load Curtailment

As of 1815 hours, the **Voluntary Customer Load Curtailment Action** has been cancelled.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Voltage Reduction

As of 1815 hours, the **Voltage Reduction Action** of 5% has been cancelled for the Eastern Portion of the PJM System.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Voltage Reduction

As of 1709 hours, the **Voltage Reduction Action** of 5% has been cancelled for the Western Portion of the PJM System.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Voluntary Customer Load Curtailment

As of 1510 hours, a **Voluntary Customer Load Curtailment Action** has been issued to provide additional load relief reductions for the entire PJM System.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Voltage Reduction

As of 1510 hours, a **Voltage Reduction Action** of 5% has been issued for the entire PJM system to provided additional load relief reductions.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Voluntary Customer Load Curtailment

As of 1440 hours, a **Voluntary Customer Load Curtailment Action** has been issued for **Eastern PJM** to provide additional load relief reductions.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Voltage Reduction

As of 1440 hours, a **Voltage Reduction Action** of 5% has been issued for**EASTERN PJM** to provided additional load relief reductions.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Manual Load Dump Warning

As of 1330 hours, a **Manual Load Dump Warning** has been issued. Primary reserve is less than the largest operating generator.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Maximum Emergency Generation

As of 1315 hours, a **Maximum Emergency Generation Action** has been issued. PJM is loading Maximum Emergency Generation as requested.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Voltage Reduction Warning and Reduction of Non-Critical Plant Load

As of 1315 hours, a **Voltage Reduction Warning and Reduction of Non-Critical Plant Load** has been issued. Actual spinning reserves are less that the spinning reserve requirement.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Primary Reserve Warning

As of 1315 hours, a **Primary Reserve Warning** has been issued. Actual primary reserves are less that the requirement of 1700 MW.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Request to Purchase Emergency Energy

As of 11:20 hours, PJM has issued a **Request to Purchase Emergency Energy**. PJM is accepting bids for Emergency Energy. PJM anticipates the need for emergency energy from the period of 12:30 through 19:00 hours EDT today. Please submit your bids in accordance with Section 2 (Capacity Conditions) of the Emergency Procedures Manual. PJM's ability to import from the West **may** be limited by external TLRs and encourages Emergency Bids from the North if the energy is available.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Load Reduction Action

As of 11:20 hours, a Load Reduction Action is requested from the Customer Load Reduction Pilot Program participants.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Maximum Emergency Generation

As of 11:20 hours, a **Maximum Emergency Generation Action** has been issued. Any off system energy sales from PJM capacity resources may be recalled as necessary. PJM is not requesting Maximum Emergency Generation be loaded at this time.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Load Management Curtailment Step 3

As of 11:04 hours, **Load Management Curtailment Step 3 Action** has been issued effective 12:00 through 18:00.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Load Management Curtailment Step 1

As of 1104 hours, **Load Management Curtailment Step 1 Action** has been issued effective 12:00 through 18:00.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Load Management Curtailment Step 4

As of 10:00 hours, **Load Management Curtailment Step 4 Action** has been issued effective 12:30 through 18:30.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Load Management Curtailment Step 2

As of 1000 hours, **Load Management Curtailment Step 2 Action** has been issued effective 12:30 - 18:30.

08/09/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Special Notice

PJM has issued a Maximum Emergency alert for the day and evening periods of Thursday 8/9/01. Maximum Emergency Generation has been caled in to the system capacity.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Maximum Emergency Generation

As of 2115 hours, the **Maximum Emergency Generation Action** has been cancelled.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Maximum Emergency Generation Alert

As of 2115 hours, the **Maximum Emergency Generation Alert** has been cancelled for 08/08/01.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Primary Reserve Warning

As of 1850 hours, the **Primary Reserve Warning** has been cancelled.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Voltage Reduction Warning and Reduction of Non-Critical Plant

As of 1830 hours, the **Voltage Reduction Warning and Reduction of Non-Critical Plant Load** has been cancelled.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Manual Load Dump Warning

As of 1830 hours, the **Manual Load Dump Warning** has been cancelled.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel - Load Reduction Action

As of 1800 hours, the Load Reduction Action from the Customer Load Reduction Pilot Program participants has been cancelled.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Load Management Curtailment Step 4

As of 1830 hours, the **Load Management Curtailment Step 4 Action** has been cancelled.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Load Management Curtailment Step 3

As of 1800 hours, the **Load Management Curtailment Step 3 Action** has been cancelled.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Load Management Curtailment Step 2

As of 1830 hours, the **Load Management Curtailment Step 2 Action** has been cancelled.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Load Management Curtailment Step 1

As of 1800 hours, the **Load Management Curtailment Step 1 Action** has been cancelled.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Special Notice

As of 1700 hours, the Hot Weather Message (H-2) that was issued to the public for Tuesday and Wednesday of this week has been extended for Thursday also. PJM and its local control centers are expected to experience extremely high demand for electricity due to very hot, humid weather

forecasted to contiune into Thursday. PJM requests that the public takes steps to conserve electric use, providing that your health permits. PJM may be required to initiate further actions to preserve the integrity of the region's electric power grid.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Manual Load Dump Warning

As of 1348 hours, a **Manual Load Dump Warning** has been issued. Primary reserve is less than the largest operating generator or, the loss of a transmission facility jeopardizes reliable operation.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Voltage Reduction Warning and Reduction of Non-Critical Plant Load

As of 1315 hours, a **Voltage Reduction Warning and Reduction of Non-Critical Plant Load** has been issued. Actual spinning reserves are less that the spinning reserve requirement.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Manual Load Dump Warning

As of 1341 hours, a **Manual Load Dump Warning** has been issued. Primary reserve is less than the largest operating generator or, the loss of a transmission facility jeopardizes reliable operation.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Voltage Reduction Warning and Reduction of Non-Critical Plant Load

As of 1315 hours, a **Voltage Reduction Warning and Reduction of Non-Critical Plant Load** has been issued. Actual spinning reserves are less that the spinning reserve requirement.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Maximum Emergency Generation

As of 1240 hours, a **Maximum Emergency Generation Action** has been issued. Any off system energy sales from PJM capacity resources may be recalled as necessary. PJM is not requesting that Max Emergency Generation be loaded at this time.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Primary Reserve Warning

As of 1240 hours, a **Primary Reserve Warning** has been issued. Actual primary reserves are less that the requirement of 1700 MW.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Load Reduction Action

As of 1240 hours, a Load Reduction Action is requested from the Customer Load Reduction Pilot Program participants.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Load Management Curtailment Step 3

As of 1240 hours, **Load Management Curtailment Step 3 Action** has been issued effective 13:30.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Load Management Curtailment Step 1

As of 1240 hours, **Load Management Curtailment Step 1 Action** has been issued effective 13:30 hours.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Request to Purchase Emergency Energy

As of 1235 hours, PJM has issued a **Request to Purchase Emergency Energy**. PJM is accepting bids for Emergency Energy. PJM anticipates the need for emergency energy from the period of 1400 through 1900 hours EDT today. Please submit your bids in accordance with Section 2 (Capacity Conditions) of the Emergency Procedures Manual. FAX - (610-666-4287)

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Manual Load Dump Warning for Transmission Contingency Control

As of 1130 hours, a Manual Load Dump Warning has been issued in the Cedar area of NJ (Conectiv) for Transmission Contingency Control.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Manual Load Dump Warning for Transmission Contingency Control

As of 1011 hours, a Manual Load Dump Warning has been issued in the Erie area of PA (Penelec) for Transmission Contingency Control.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Load Management Curtailment Step 4

As of 1030) hours, **Load Management Curtailment Step 4 Action** has been issued. PJM has requested implementation for hours 1300 to 1900 hours.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Load Management Curtailment Step 2

As of 1030 hours, **Load Management Curtailment Step 2 Action** has been issued. PJM required hours for implementation are 1300 to 1900 hours.

08/08/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Manual Load Dump Warning

As of 2025 hours on 8/7, the Manual Load Dump Warning for the Cedar area in N.J. was cancelled.

08/07/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Maximum Emergency Generation Alert

As of2130 hours, the Maximum Emergency Generation Alert has been cancelled for8/7/01.

08/07/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Maximum Emergency Generation Alert

As of 2130 hours, the Maximum Emergency Generation Alert has been cancelled for8/7/01.

08/07/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Manual Load Dump Warning

As of 1828 hours, a Manual Load Dump Warning has been issued for the Cedar area of N.J.

08/07/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Maximum Emergency Generation Alert

As of 1803 hours, a Maximum Emergency Generation Alert has been issued for day and evening periods of 8/8/01. Maximum Emergency Generation has been called into the operating capacity.

08/07/2001 PJM EMERGENCY PROCEDURE MESSAGE -- DISREGARD -- TEST MESSAGE

This is a **Test** of the Emergency Procedures Posting application --- There are no emergency steps being taken at this time...

08/07/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Emergency Bid Process Implementation

PJM is implementing the Emergency Bid Process. PJM will accept Emergency bids from 14:30 through 19:00. Please submit Emergency Bids in accordance with Section 2 of the PJM Emergency Procedures Manual. The bid form is Attachment H of the manual.
Fax bids to 610-666-4287.
Voice: 610-666-4505

08/07/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel - Manual Load Dump Warning for Transmission Contingency Control

As of 1130 hours, the Manual Load Dump Warnings for the Erie and Roxbury areas of PA (Pennelec) which was needed for Transmission Contingency Control has been cancelled.

08/07/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Manual Load Dump Warning for Transmission Contingency Control

As of 0940 hours, a Manual Load Dump Warning has been issued in the Roxbury area of PA (Penelec) for Transmission Contingency Control.

08/07/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Manual Load Dump Warning for Transmission Contingency Control

As of 0930 hours, a Manual Load Dump Warning has been issued in the Erie area of PA (Pennelec) for Transmission Contingency Control.

08/06/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Cancel --Maximum Emergency Generation Alert

As of 2200 hours, the Maximum Emergency Generation Alert has been cancelled for 08/06/01.

08/06/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Maximum Emergency Generation Alert

As of 1805 hours, a Maximum Emergency Generation Alert has been issued for 8/7/01, day and evening periods. Maximum Emergency Generation has been called into the operating capacity.

08/06/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Special Notice

As of 1500 hours, a Hot Weather Message (H-2) has been issued to the public for Tuesday and Wednesday of this week. PJM and its local control centers are expected to experience extremely high demand for electricity due to very hot, humid weather. PJM may be required to initiate further actions to preserve the integrity of the region's electric power grid. Therefore, PJM requests that the public takes steps to conserve electricity use, providing that your health permits.

08/06/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Special Notice

As of 1030 hours, a Hot Weather Emergency Message (H-1) has been issued to the public for this week. PJM and its local control centers expect higher that usual demand for electricity this week due to very hot weather. Although no specific action is required at this time, PJM and local control centers suggest that you use electricity prudently to help prevent possible power supply problems.

08/05/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Hot Weather Alert

As of 1320 hours, a **Hot Weather Alert** has been issued for 08/06/01 thru 08/10/01. The purpose of this alert is to prepare personnel and facilities for extreme hot weather, which may cause generating unit unavailability to be higher than normal.

08/05/2001 PJM EMERGENCY PROCEDURE MESSAGE -- Maximum Emergency Generation Alert

As of 1320 hours, a **Maximum Emergency Generation Alert** has been issued for (08/06/01). Maximum Emergency Generation has been called into the operating capacity.

PJM Manual for

Emergency Operations

Manual M-13

Revision: 11
Effective Date: June 1, 2001

Prepared by
System Operations Division
Operations Planning Department
PJM Interconnection, L.L.C.

PJM Manual for

Emergency Operations

Table of Contents

Revsion History

Introduction

Section 1: Overview

Section 2: Capacity Conditions

Section 3: Conservative Operation

Section 4: Assistance to Adjacent Control Areas

Section 5: Fuel Limitation Reporting

Section 6: Disturbance Conditions

Section 7: Severe Weather Conditions

Section 8: System Restoration

Attachment H: Emergency Bid Form

Welcome to the PJM Manual for ***Emergency Operations***. In this Introduction, you will find the following information:

- What you can expect from the PJM Manuals in general (see "*About PJM Manuals*").
- What you can expect from this PJM Manual (see "*About This Manual*").
- How to use this manual (see "*Using This Manual*").

About PJM Manuals

The PJM Manuals are the instructions, rules, procedures, and guidelines established by the PJM OI for the operation, planning, and accounting requirements of the PJM Control Area and the PJM Energy Market. Exhibit I.1 lists the PJM Manuals.

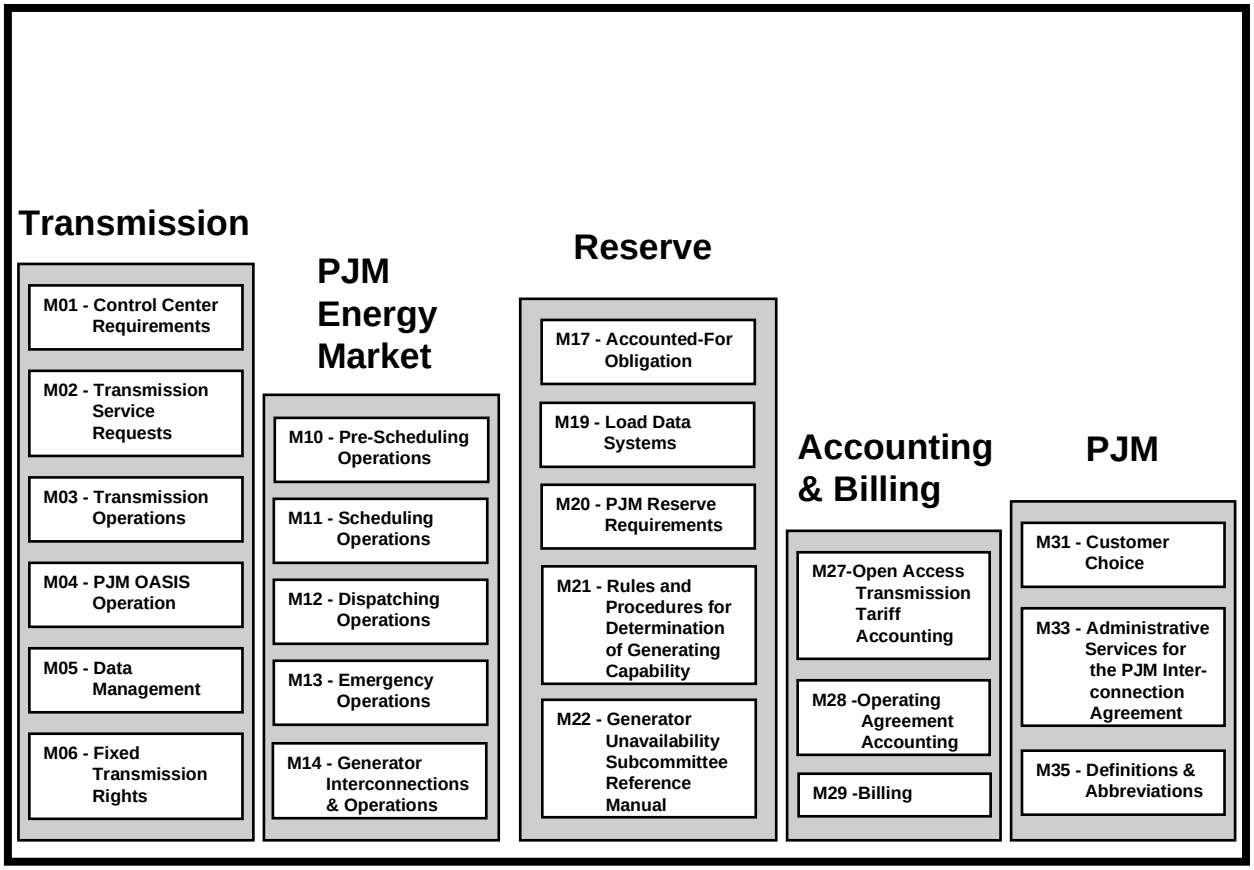


Exhibit I.1: List of PJM Manuals

About This Manual

The PJM Manual for ***Emergency Operations*** is one of a series of manuals within the PJM Energy Market manuals. This manual focuses on how the PJM OI and the PJM Members are expected to respond to emergency conditions. Emergency conditions include:

- an abnormal condition requiring manual or automatic action to maintain system frequency or to prevent loss of firm load, equipment damage, or tripping of system elements that could adversely affect the reliability of an electric system or the safety of persons or property

- a fuel shortage requiring departure from normal operating procedures in order to minimize the use of such scarce fuel

- a condition that requires implementation of emergency procedures as defined in the manuals

The PJM Manual for ***Emergency Operations*** consists of nine sections. The sections are as follows:

Section 1: Overview

Section 2: Capacity Conditions

Section 3: Conservative Operation

Section 4: Assistance to Adjacent Control Areas

Section 5: Fuel Disruption Plans

Section 6: Disturbance Conditions

Section 7: Severe Weather Conditions

Section 8: System Restoration

Section 9: Transmission Loading Relief

Target Users

The target users for the PJM Manual for ***Emergency Operations*** are:

- *PJM OI dispatchers* — Declare and implement emergency procedures.

- *Local Control Center dispatchers* — Respond to PJM OI dispatcher requests for emergency procedures.

- *PJM OI operations staff* — Perform system studies.
- Government, Regulatory, and Emergency Response personnel
- All PJM Members

References

The references to other documents that provide background or additional detail directly related to the PJM Manual for ***Emergency Operations*** are:

- PJM Manual for ***Dispatching Operations***
- PJM Manual for ***Operating Agreement Accounting***
- PJM Manual for ***Definitions & Abbreviations***

Using This Manual

Because we believe that explaining concepts is just as important as presenting the procedures, we start each section with the "big picture". Then, we present details and procedures. This philosophy is reflected in the way we organize the material in this manual. The following paragraphs provide an orientation to the manual's structure.

What You'll Find In This Manual

- A table of contents
- An approval page that lists the required approvals and the revision history
- This introduction
- Sections containing the specific guidelines, requirements, or procedures including PJM OI actions and participant actions
- Attachments that include additional supporting documents, forms, or tables in this PJM Manual

Section 1: Overview

Welcome to the *Overview* section of the PJM Manual for ***Emergency Operations***. In this section, you will find the following information:

- A description of the PJM OI policy statements for emergency conditions (see " *Policy Statements*").
- A description of the notification procedures for emergency operations (see "*Governmental Notifications & Public Appeals Procedures*").

Policy Statements

Power system disturbances are most likely to occur as the result of loss of generating equipment, transmission facilities, or as the result of unexpected load changes. These disturbances may be of, or develop into, a magnitude sufficient to affect the reliable operation of the PJM Control Area. The associated conditions under severe system disturbances generally result in critically loaded transmission facilities, critical frequency deviations, or high or low voltage conditions.

This manual addresses the PJM OI and the PJM Members responsive actions to emergency conditions.

An Emergency in the PJM Control Area is defined as:

- an abnormal system condition requiring manual or automatic action to maintain system frequency, to prevent loss of firm load, equipment damage, or tripping of system elements that could adversely affect the reliability of an electric system or the safety of persons or property
- a fuel shortage requiring departure from normal operating procedures in order to minimize the use of such scarce fuel
- a condition that requires implementation of emergency procedures

The policy of the PJM OI is to maintain, at all times, the integrity of the PJM Control Area's transmission system and to prevent any unplanned separation of the Transmission Owner's systems.

In the case of the PJM Control Area's inter-area transmission lines, the policy of the PJM OI is to give maximum reasonable assistance to adjacent systems when a disturbance that is remote from the PJM Control Area occurs. However, when such a disturbance is endangering equipment or unduly impairing or jeopardizing the reliable operation of the PJM Control Area, immediate relief is requested by the PJM OI dispatcher.

Under certain operating conditions it is necessary to curtail or interrupt customer load. In view of the coordinated planning and operating policies and practices of the PJM OI, the PJM OI dispatcher requests the local control center to curtail or interrupt customer load to meet their obligation to the total requirement of the PJM OI. The PJM OI dispatcher has the absolute authority to order load dumping within the PJM Control Area in order to preserve system reliability.

The PJM OI operates so that there are no cascading loss of transmission facilities. Every effort is made to avoid dumping system load, except; whenever line loadings exceed emergency ratings and cannot be relieved by other means, or when a further contingency results in line loadings that are in excess of known transient stability limits or could otherwise cause a major interruption, customer load is manually dumped.

Each Local Control Center has an obligation to protect their own system's equipment and reliability. However, steps taken to do so are coordinated, if at all possible, with the PJM dispatchers so as to solve the problem in the best manner, realizing that actions taken may have a far reaching effect.

PJM OI ACTIONS:

In general, the PJM OI is responsible for the following activities:

- taking actions that it determines are consistent with Good Utility Practice and are necessary to maintain the operational integrity of the PJM Control Area
- entering into written agreements with the dispatchers of other Control Areas that include Emergency provisions
- declaring that an Emergency exists or has ceased to exist
- implementing the Emergency procedures of agreements with other Control Areas
- purchasing energy from outside the PJM Control Area, as needed, to alleviate or end an Emergency
- selling energy to other Control Areas as requested during Emergency conditions in other Control Areas
- directing the operations of any PJM Member as necessary to manage, alleviate, or end an Emergency, including but not limited to load shedding, increasing or decreasing generation output, and other actions
- providing information to and receiving information from PJM Members in the PJM Control Area and other control areas, as appropriate to manage, alleviate, or end an Emergency in the PJM Control Area or in another Control Area

- providing information to the PJM Members, as needed, in order to facilitate notification of governmental authorities and other interested entities of Emergency conditions and providing such notification if appropriate

- preparing or assisting the PJM Members in preparing reports required by governmental or industry agencies as a result of an Emergency

- coordinating restoration of all or parts of the bulk power system in the PJM Control Area, as necessary

PJM MEMBER ACTIONS:

When an Emergency is declared by the PJM OI, the PJM Members are responsible for performing the following activities:

- taking other actions, as requested or directed by the PJM OI, to manage, alleviate, or end an Emergency

- cooperating with each other and the PJM OI to carry out the Emergency procedures and to implement requests and instructions received from the PJM OI for the purpose of managing, alleviating, or ending an Emergency

- providing notification and other information to governmental agencies as appropriate

- collecting, storing, and providing data and other information to the PJM OI, as necessary, to facilitate preparation of reports required by governmental or industry agencies as a result of an Emergency

- cooperating and coordinating with the PJM OI and other PJM Members in the restoration of all or parts of the bulk power system in the PJM Control Area

A PJM Member controlling the output of a Capacity Resource must take or arrange for any or all of the following actions as directed by the PJM OI in order to manage, alleviate, or end an Emergency, or such actions as the PJM OI may deem appropriate for these purposes:

- reporting the operating status and fuel situation

- canceling testing and maintenance

- reducing non-critical plant load

- directing personnel to unattended generation sites

- starting, including black-start, and load such generation, as directed

- reducing output to Emergency Minimum Generation

- shutting down such generation
- interrupting sales for delivery to loads outside the PJM Control Area
- selling energy to other control areas
- maintaining records of emergency actions taken and the results achieved

A Load Serving Entity must take any or all of the following actions as directed by the PJM OI in order to manage, alleviate, or end an Emergency, or such actions as the PJM OI may deem appropriate for these purposes:

- installing and maintaining underfrequency load shedding relays
- providing capability for manual shedding of specified amounts of load
- reducing energy purchases
- reducing non-essential office load
- implementing voltage reductions
- requesting voluntary customer energy conservation or load curtailment
- implementing manual load dumping
- managing, curtailing, or interrupting load
- maintaining records of Emergency actions taken and the results achieved

PJM Members taking action to manage, alleviate, or end an Emergency affecting any facilities not designated as part of the bulk power system in the PJM Control Area must perform the following actions:

- exerting their best efforts to avoid impairing the operational integrity of the bulk power system in the PJM Control Area
- notifying the PJM OI in advance of taking any such action if possible, or if not provide such notification immediately after taking such action

Note: All alerts, warnings, and actions are communicated to the Local Control Centers via an ALL-CALL message. Local Control Centers are responsible for notifying Load Serving Entities (LSE), assuring they receive the same information.

Governmental Notifications & Public Appeals Procedures

When the potential exists for a serious PJM bulk power emergency, the PJM OI advises the Local Control Centers as far in advance as possible. This permits the Local Control Centers and the PJM OI the maximum lead time in determining the appropriate steps to take, including governmental and public notification. Depending on the situation, Local Control Centers and the PJM OI may each have responsibilities in notifying State agencies and the Department of Energy (DOE). Due to the wide variety of conditions and the potential for the conditions to change rapidly, it is difficult to provide precise criteria that fits all situations to trigger the issuance of an early alert to the governmental agencies and the public. Each situation is evaluated to determine if any early alert to governmental agencies is required, and if an early alert to the public is appropriate. It is the ultimate responsibility of each Local Control Center to adjust their guidelines to respond to any escalated concerns from governmental agencies. It is also essential that the Local Control Centers and the PJM OI are informed of any Local Control Center's unilateral actions.

When Maximum Emergency Generation is added to the schedule, a severe weather condition is issued, or a transmission system limitation affecting area supply is anticipated, the PJM OI performs a situation analysis and prepares a capacity/load/reserve projection for the appropriate area and future time periods, including the effect of possible imports due to the supply situation of various neighbors. The analysis indicates expected emergency conditions.

Section 2: Capacity Conditions

Welcome to the *Capacity Conditions* section of the PJM Manual for ***Emergency Operations***. In this section, you will find the following information:

- A general description of the system alert and emergency actions (see "*Overview*").
- How the PJM OI and the PJM Members respond to capacity shortage situations (see "*Capacity Shortages*").
- How the PJM OI and the PJM Members respond to capacity excess situations (see "*Light Loads*").

Overview

The PJM OI monitors the operation of the PJM Control Area. The PJM OI is responsible for determining and declaring that an Emergency is expected to exist, exists, or has ceased to exist in any part of the PJM Control Area or in any other Control Area that is interconnected directly or indirectly with the PJM Control Area. The PJM OI directs the operations of the PJM Members as necessary to manage, allocate, or alleviate an emergency.

- *PJM Control Area Reserve Deficiencies* — If the PJM OI determines that the PJM OI-scheduled resources available for an Operating Day in combination with Capacity Resources operating on a self-scheduled basis are not sufficient to maintain appropriate reserve levels for the PJM Control Area, the PJM OI performs the following actions:

  (1) recalls and dispatches to serve load in the PJM Control Area energy from Capacity Resources that otherwise deliver to loads outside the Control Area

  (2) purchases capacity or energy from resources outside the Control Area. The PJM OI uses its best efforts to purchase capacity or energy at the lowest prices available at the time such capacity or energy is needed. The price of any such capacity or energy is not considered in determining Locational Marginal Prices in the PJM Energy Market. The cost of capacity or energy is allocated among the Market Buyers as described in the PJM Manual for ***Operating Agreement Accounting***

- *Low Load Procedures* — If the PJM OI determines that the forecasted load in the PJM Control Area falls below a margin of 1,000 megawatts above the sum of the output of the self-scheduled resources and the total Normal Minimum Generation of all PJM OI-scheduled resources, the PJM OI implements the alert and possibly Minimum Generation Emergency procedures as described later in this section. To the extent it deems appropriate in order to avoid or reduce the cost of a Minimum Generation Emergency, the PJM OI sells energy to other Control Areas. Any costs or revenues

resulting from such sales are allocated as described in the PJM Manual for ***Operating Agreement Accounting***.

If the PJM OI is requested to purchase energy from another Control Area in order to alleviate an actual or threatened Minimum Generation Emergency in the other control area, the PJM OI may purchase energy if the PJM OI determines that the purchases can be made without adversely affecting the safe or reliable operation of generators within the PJM Control Area and without unduly increasing the cost of energy of the PJM Members. Any energy purchased and associated costs or revenues are allocated as described in the PJM Manual for ***Operating Agreement Accounting***.

Capacity Shortages

The PJM OI is responsible for monitoring the operation of the PJM Control Area, for declaring the existence of an Emergency, and for directing the operations of the PJM Member as necessary to manage, alleviate, or end an Emergency. The PJM OI also is responsible for transferring energy on the PJM Members behalf to meet an Emergency. The PJM OI is also responsible for agreements with other Control Areas interconnected with the PJM Control Area for the mutual provision of service to meet an Emergency.

Exhibit 2.1 illustrates that there are three general levels of emergency actions for capacity shortages:

- alerts
- warnings
- actions

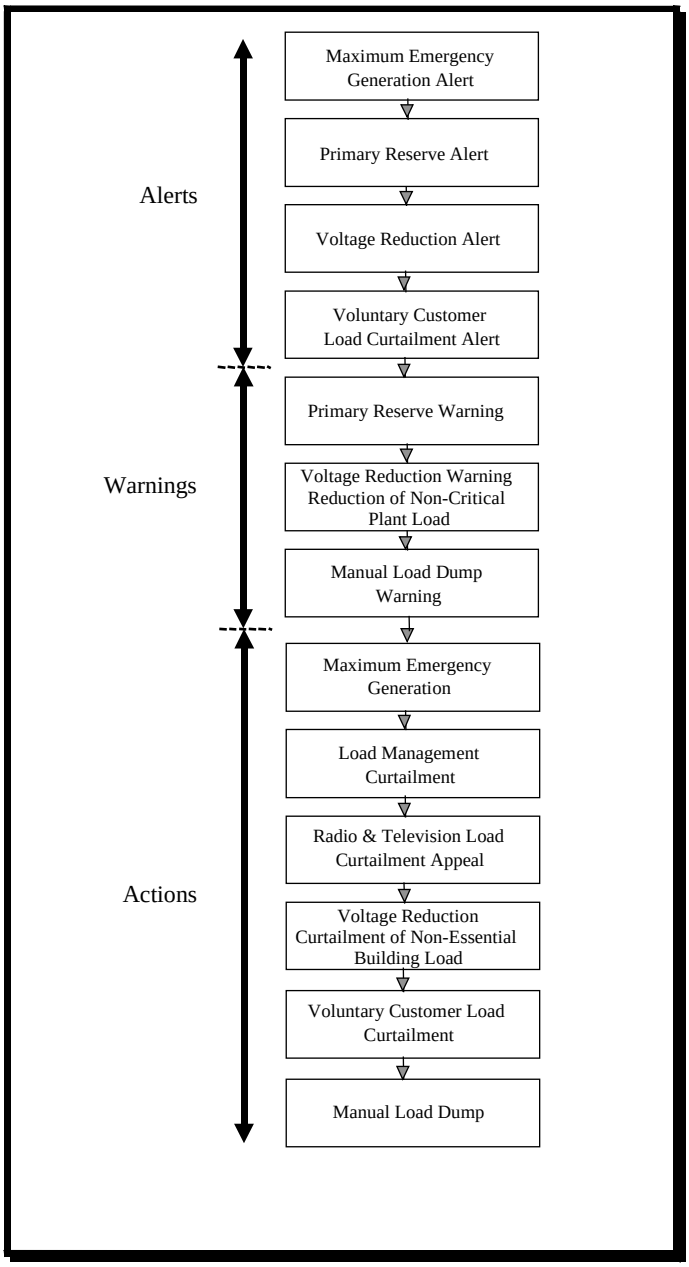


Exhibit 2.1: Emergency Levels

Exiting emergency procedures are achieved in a controlled, deliberate manner so as to not adversely affect system reliability, while minimizing the impact of these emergency actions on the LSE's customers. The PJM OI dispatcher has the flexibility of implementing the emergency procedures in whatever order is required to ensure overall system reliability. The PJM OI dispatcher has the flexibility to exit the emergency procedures in a different order than they are implemented when conditions necessitate.

The PJM OI strives to meet customer energy demands either through the use of available generating resources, power purchases from PJM Members, or through the use of planned

load management programs. If customer demand cannot be met, Emergency actions, such as voltage reductions, and as a last resort, manual load dumping, are used.

Alerts

The intent of the alerts is to keep all affected system personnel aware of the forecast and/or actual status of the PJM Control Area. All alerts and cancellation thereof are broadcast on the "ALL-CALL" system to assure that all members receive the same information.

Alerts are issued in advance of a scheduled load period to allow sufficient time for members to prepare for anticipated initial capacity shortages. Exhibit 2.2 presents the general order for implementing alert actions.

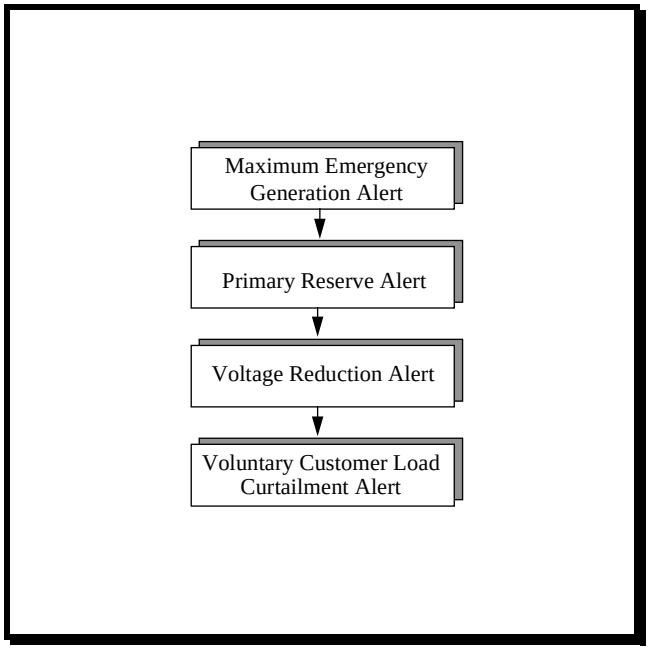


Exhibit 2.2: Alert Actions

Maximum Emergency Generation Alert

The purpose of the Maximum Emergency Generation Alert is to provide an early alert that system conditions may require the use of the PJM emergency procedures. It is implemented when Maximum Emergency Generation is called into the operating capacity.

PJM OI ACTIONS:

(1) The PJM OI dispatcher notifies PJM OI management.

(2) The PJM OI dispatcher performs a situation analysis and prepares capacity/load/ interchange/reserve projections for that day and appropriate future operating periods. The

PJM OI dispatcher schedules a conference call with SOS members to discuss the projections.

(3) The PJM OI dispatcher issues an alert to members, stating the amount of estimated operating reserve capacity and the requirement.

(4) The PJM OI dispatcher reports significant changes in the estimated operating reserve capacity.

(5) The PJM OI dispatcher issues a NERC Energy Emergency Alert Level 1 (EEA1) via the Security Coordinator Information System (SCIS) to ensure all Security Coordinators clearly understand potential and actual PJM system energy emergencies. EEA1 signals that PJM foresees or is experiencing conditions where all available resources are committed to meet firm load, firm transactions, and reserve commitments, and is concerned about sustaining its required Operating Reserves.

(6) The PJM OI dispatcher cancels the alert, when appropriate.

PJM MEMBER ACTIONS:

(1) Member dispatchers notify management of the alert.

(2) Member dispatchers advise all stations and key personnel.

(3) Member dispatchers review plans to determine if any maintenance or testing, scheduled or being performed, on any monitoring, control, transmission, or generating equipment can be deferred or cancelled.

(4) Member dispatchers report to the PJM OI dispatcher any and all fuel limited facilities as they occur and update the PJM OI dispatcher as appropriate.

(5) Member dispatchers suspend any high risk testing of generating or transmission equipment.

Note: A Supplemental Status Report (Attachment A) is completed prior to the day the alert is in effect, and again as deemed necessary throughout the day. Based on this information, the level of expected emergency conditions can be better defined.

Primary Reserve Alert

The purpose of the Primary Reserve Alert is to alert members of the anticipated shortage of operating reserve capacity for a future critical period. It is implemented when estimated operating reserve capacity is less than the forecast primary reserve requirement.

PJM OI ACTIONS:

(1) The PJM OI dispatcher notifies PJM OI management and members.

(2) The PJM OI dispatcher issues alert to members, stating the amount of estimated operating reserve capacity and the requirement.

(3) The PJM OI dispatcher reports significant changes in the estimated operating reserve capacity.

(4) The PJM OI dispatcher cancels the alert, when appropriate.

PJM MEMBER ACTIONS:

(1) Member dispatchers notify management of the alert.

(2) Member dispatchers advise all stations and key personnel.

(3) Member dispatchers review plans to determine if any maintenance or testing, scheduled or being performed, on any generating equipment or critical monitoring, control, or bulk power transmission facility can be deferred or cancelled.

Voltage Reduction Alert

The purpose of the Voltage Reduction Alert is to alert members that a voltage reduction may be required during a future critical period. It is implemented when the estimated operating reserve capacity is less than the forecast spinning reserve requirement.

PJM OI ACTIONS:

(1) The PJM OI dispatcher notifies PJM OI management.

(2) The PJM OI dispatcher issues an alert to members, stating the amount of estimated operating reserve capacity and the requirement.

(3) The PJM OI dispatcher advises members that a possibility exists that a voltage reduction will be issued and the estimated hour of implementation.

(4) The PJM OI dispatcher issues a NERC Energy Emergency Alert Level 2 (EEA2) via the Security Coordinator Information System (SCIS) to ensure all Security Coordinators clearly understand potential and actual PJM system energy emergencies. EEA2 signals that PJM foresees or has implemented procedures up to, but excluding, interruption of firm load commitments. These procedures may include, but are not limited to, Public appeals to reduce demand, voltage reduction, interruption of non-firm retail loads in accordance with applicable contracts, demand-side management, or utility load conservation measures. The PJM OI dispatcher may wait to implement EEA2 concurrent with declaring a Voltage Reduction Warning, implementing PJM Load Management programs, or at his/her discretion based on the projected use of previously mentioned procedures.

(5) The PJM OI dispatcher cancels the alert, when appropriate.

PJM MEMBER ACTIONS:

(1) Member dispatchers notify management of the alert.

(2) Member dispatchers advise all stations and key personnel.

(3) Member dispatchers proceed on the basis that a voltage reduction warning will be issued during this future period and take steps that could expedite implementation of a voltage reduction, should one become necessary.

(4) If authorized by the PJM System Operations Subcommittee (SOS), issue system-wide Public/Media Notification Message C-1 or H-1 (whichever is applicable). *See Attachment G.*

Voluntary Customer Load Curtailment Alert

The purpose of the Voluntary Customer Load Curtailment Alert is to alert members of the probable future need to implement a voluntary customer load curtailment. It is implemented whenever the estimated operating reserve capacity indicates a probable future need for voluntary customer load curtailment.

PJM OI ACTIONS:

(1) The PJM OI dispatcher notifies PJM OI management, PJM OI public information personnel, and members.

(2) The PJM OI dispatcher issues an alert to members, stating the amount of estimated operating reserve capacity and the requirement.

(3) The PJM OI dispatcher advises members of the estimated hour of implementation.

(4) The PJM OI dispatcher cancels the alert, when appropriate.

PJM MEMBER ACTIONS:

(1) Member dispatchers notify management of the alert.

(2) Member dispatchers advise all stations and key personnel.

(3) Member dispatchers proceed on the basis that a voluntary customer load curtailment will be issued during this critical period and take steps that could expedite implementation, should one become necessary.

Warnings

Warnings are issued during present operations to inform members of actual capacity shortages or contingencies that may jeopardize the reliable operation of the PJM Control Area. The intent of warnings is to keep all affected system personnel aware of the forecast and/or actual status of the PJM Control Area. All warnings and cancellations are broadcasted on the "ALL-CALL" system to assure that all members receive the same information.

Exhibit 2.3 presents the general order for implementing warning actions.

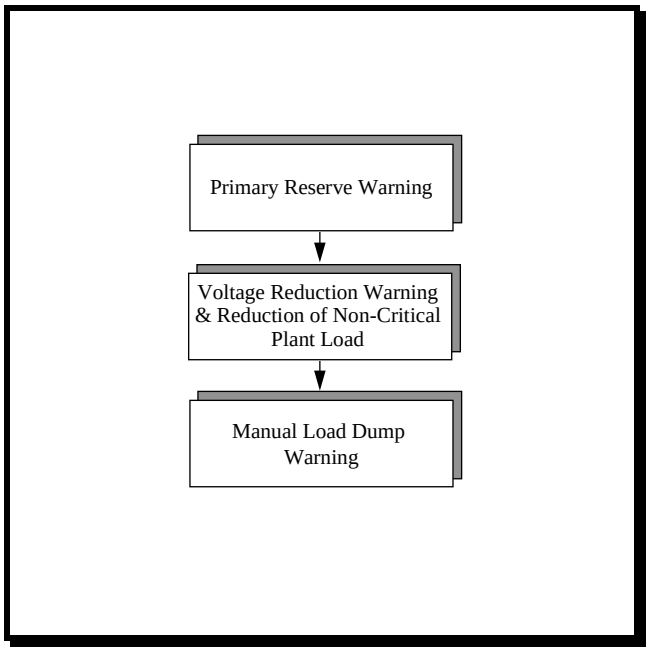


Exhibit 2.3: Warning Actions

Primary Reserve Warning

The purpose of the Primary Reserve Warning is to warn members that the available primary reserve is less than required and present operations are becoming critical. It is implemented when available primary reserve capacity is less than the primary reserve requirement, but greater than the spinning reserve requirement, after all available secondary reserve capacity (except restricted maximum emergency capacity) is brought to a primary reserve status and emergency operating capacity is scheduled from adjacent systems.

PJM OI ACTIONS:

(1) The PJM OI dispatcher issues a warning to members and PJM OI management stating the amount of adjusted primary reserve capacity and the requirement.

(2) The PJM OI dispatcher notifies PJM OI public information personnel.

(3) The PJM OI dispatcher rechecks with members to assure that all available equipment is scheduled and that requested secondary reserve is brought to primary reserve status.

(4) The PJM OI dispatcher ensures that all deferrable maintenance or testing on the control and communications systems is halted at the PJM OI Control Center.

(5) The PJM OI dispatcher cancels the warning, when appropriate.

PJM MEMBER ACTIONS:

(1) Member dispatchers notify management of the warning.

(2) Member dispatchers advise all stations and key personnel.

(3) Member dispatchers prepare to load all available primary reserve, if requested.

(4) Member dispatchers ensure that all deferrable maintenance or testing affecting capacity or critical transmission is halted. Any monitoring or control maintenance work that may impact operation of the system is halted.

Voltage Reduction Warning & Reduction of Non-Critical Plant Load

The purpose of the Voltage Reduction Warning & Reduction of Non-Critical Plant Load is to warn members that the available spinning reserve is less than required and that present operations have deteriorated such that a voltage reduction may be required. It is implemented when the available spinning reserve capacity is less than the spinning reserve requirement, after all available secondary and primary reserve capacity (except restricted maximum emergency capacity) is brought to a spinning reserve status and emergency operating capacity is scheduled from adjacent systems.

PJM OI ACTIONS:

(1) The PJM OI dispatcher issues a warning to members and PJM OI management, stating the amount of adjusted spinning reserve capacity and the requirement.

(2) The PJM OI dispatcher notifies PJM OI public information personnel.

(3) The PJM OI notifies the DOE.

(4) The PJM OI dispatcher cancels the warning, when appropriate.

PJM MEMBER ACTIONS:

(1) Member dispatchers notify management of the warning.

(2) Member dispatchers notify governmental agencies, as applicable.

(3) Member dispatchers advise all stations and key personnel.

(4) Member dispatchers order all generating stations to curtail non-essential station light and power.

(5) Member dispatchers prepare to reduce voltage, if requested.

(6) Member dispatchers notify appropriate personnel that there is a potential need to implement load management programs, in addition to interrupting their interruptible/curtailable customers in the manner prescribed by each policy.

Manual Load Dump Warning

The purpose of the Manual Load Dump Warning is to warn members of the increasingly critical condition of present operations that may require manually dumping load. It is issued when available primary reserve capacity is less than the largest operating generator or the loss of a transmission facility jeopardizes reliable operations after all other possible measures are taken to increase reserve. The amount of load and the location of areas(s) are specified.

PJM OI PARTICIPANTS:

(1) The PJM OI dispatcher issues the warning to members and PJM OI management, stating the reserve shortage and/or the most serious contingency affecting reliability and the estimated amount of load relief that is required.

(2) The PJM OI dispatcher notifies PJM OI public information personnel.

(3) The PJM OI dispatcher establishes a mutual awareness with the appropriate member dispatchers of the need to address the occurrence of a serious contingency with minimum delay.

(4) The PJM OI dispatcher examines bulk power bus voltages and alerts the appropriate member dispatchers of the situation.

(5) The PJM OI dispatcher issues a NERC Energy Emergency Alert Level 3 (EEA3) via the Security Coordinator Information System (SCIS) to ensure all Security Coordinators clearly understand potential and actual PJM system energy emergencies. EEA3 signals that PJM foresees or has implemented firm load obligation interruption. The PJM OI dispatcher may implement EEA3 concurrent with implementing PJM Load Management programs or prior to issuing a Manual Load Dump Warning or at his /her discretion based on projected system conditions.

(6) The PJM OI dispatcher cancels the warning, when appropriate.

PJM MEMBER ACTIONS:

(1) Member dispatchers notify management of the warning.

(2) Member dispatchers notify governmental agencies, as applicable.

(3) Member dispatchers advise all station and key personnel.

(4) Member dispatchers review local procedures and prepare to dump load in the amount requested.

(5) Member dispatchers reinforce internal communications so that load dumping can occur with minimum delay.

Actions

The PJM Control Area is normally loaded according to bid prices; however, during periods of reserve deficiencies, other measures must be taken to maintain system reliability. These measures involve:

- loading generation that is restricted for reasons other than cost
- load relief measures

The procedures to be used under these circumstances are described in the general order in which they are applied. Due to system conditions and the time required to obtain results, the PJM OI dispatcher may find it necessary to vary the order of application to achieve the best overall system reliability. Issuance and cancellation of emergency procedures are broadcast over the "ALL-CALL" and transmitted over the computer data transmission system. Only affected systems take action. The PJM OI dispatcher broadcasts the current and projected PJM Control Area status periodically using the "ALL-CALL" during the extent of the implementation of the emergency procedures.

Exhibit 2.4 presents the general order for implementing shortage actions:

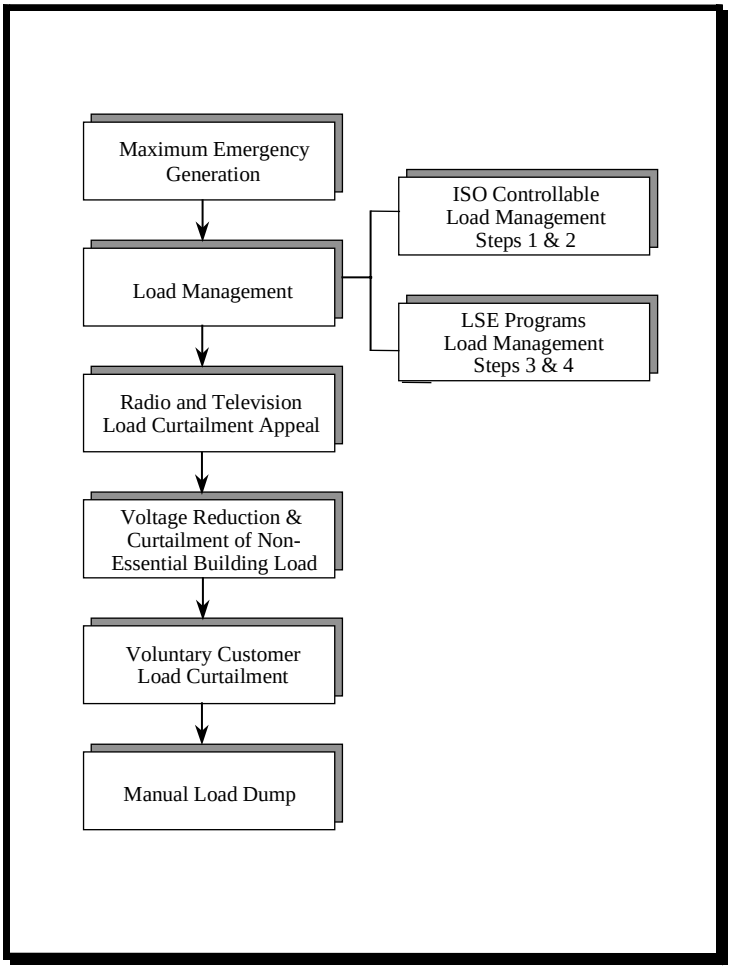


Exhibit 2.4: Shortage Actions

Note: Radio and Television Load Curtailment Appeal is implemented based on the outcome of a conference call that reviews system projections. Timing of issuance varies depending on prevailing or projected system conditions.

Maximum Emergency Generation

The purpose of the Maximum Emergency Generation is to increase the PJM Control Area generation above the maximum economic level. It is implemented whenever generation is needed that is greater than the highest incremental cost level.

Note: Maximum Emergency Generation can only be included in the daily operating capacity when requested by the PJM OI dispatcher.

PJM OI ACTIONS:

(1) The PJM OI dispatcher issues Maximum Emergency Generation.

(2) The PJM OI dispatcher notifies PJM OI management, PJM OI public information personnel, and member dispatchers. The PJM OI dispatcher notified outside systems through the ORNS information system and the NERC regional telephone system. PJM OI notifies NERC office.

(3) The PJM OI dispatcher requests through OASIS and SCIS the need for emergency energy and contacts the neighboring control areas.

(4) The PJM OI dispatcher instructs members to suspend Regulation on all units, except hydro generation.

(5) The PJM OI dispatcher recalls off-system capacity sales that are recallable (network resources).

(6) The PJM OI dispatcher begins to load Maximum Emergency Generation and begins to purchase available emergency energy from PJM Members and from neighboring Control Areas based on economics and availability.

(7) The PJM OI dispatcher continues to load Maximum Emergency Generation and proportions the required amount equitably, if the entire amount of Maximum Emergency Generation is not needed.

(8) The PJM OI dispatcher cancels, when appropriate.

Following issuance of Maximum Emergency Generation, PJM may purchase available energy from any PJM Member (as emergency) that is available up to the amount required or until there is no more available. The following rules are used to provide an orderly operation.

- The PJM Member is responsible for delivering (i.e., securing all transmission service) of the energy to one of PJM's borders with a neighboring control area.

- PJM attempts to provide 60-minutes notice before the energy is required by posting on OASIS an emergency procedures message stating that PJM anticipates requiring emergency energy purchases beginning at a specific time.

- Once PJM posts the request for emergency purchases all PJM Members can submit "bids" to make emergency energy sales to PJM. PJM Members may fax in their bids. The Emergency Bid form is found in *Attachment H* along with the rules for submitting (pages H-2 and H-3). Bids may also be called into a pre assigned, recorded voice line. They should be structured as follows:

  (1) time – of energy available

  (2) amount – of energy available

(3) price of energy

(4) duration (hours) energy is available and limits on minimum time required to take

(5) notification time to cancel/accept

(6) PJM Member identification

(7) interface and contract path

PJM accepts the offers and schedule the energy using the following guidelines:

- Energy is accepted based on economics (least cost offers will be accepted first based on energy price and minimum hours) if more energy is offered than required.

- Energy is accepted as required based on economics from the available bids (i.e., if PJM requires 500 MW immediately it takes the cheapest 500 MW bid at the time). PJM adjusts current schedules to correct economics if time permits (i.e., if a cheaper scheduled is bid after a more expensive schedule is loaded PJM only cancels the first if reasonable time exists to cancel one and load the other).

- Similarly priced offers are selected based on timestamps (i.e., first in first selected).

Bids accepted by PJM are Emergency Purchases by PJM and do not set the Locational Marginal Price. The energy received is accounted for according to the current Emergency Energy accounting procedures. See the PJM Manual for ***Operating Agreeement Accounting*** for more details.

PJM reserves the right to load maximum emergency equipment as required to control the system regardless of whether any bids were/were not accepted (i.e., sudden unit loss may not allow time to accept bids).

PJM implements and curtails emergency purchase transactions with as much notice as practical to allow for a reliable transition into and out of emergency conditions.

PJM requests emergency energy from neighboring Control Areas (under current Control Area agreements) after all energy offered by the PJM Members are accepted, unless there is an immediate need for the energy.

PJM can deviate from or change the order of the above actions as/if necessary.

PJM MEMBER ACTIONS:

(1) Member dispatchers notify management of the emergency procedure.

(2) Member dispatchers recall off-system capacity sales that are recallable.

(3) Member dispatchers suspend regulation, as requested, and load all units to the Maximum Emergency Generation level, as required.

Load Management Curtailments, Steps 1 and 2

The purpose of the Load Management Curtailments, Steps 1 and 2, is to provide additional load relief by using PJM OI controllable load management programs. Steps 1 and 2 are differentiated only by the expected time to implement. Load relief is required after initiating Maximum Emergency Generation.

Note: When requesting Load Management Curtailments, the PJM OI dispatcher provides an estimate of the magnitude of the curtailment required and the approximate duration of curtailment.

- Step 1: Short Time Frame to Implement (1 Hour or Less)

PJM OI ACTIONS:

(1) The PJM OI dispatcher notifies PJM OI management, PJM OI public information personnel, and members. The PJM OI dispatcher advises members to consider the use of public appeals to conserve electricity usage. The PJM OI dispatcher notifies other Control Areas through the ORNS information system and the NERC regional telephone system.

(2) The PJM OI dispatcher requests members to implement Load Management Curtailment, Step 1.

(3) The PJM OI dispatcher cancels, when appropriate.

PJM MEMBER ACTIONS:

(1) Member dispatchers notify their management of the emergency procedure and that they should consider the use of public appeals to conserve electricity usage.

(2) Member dispatchers notify governmental agencies, as applicable.

(3) Member dispatchers implement load management programs, as requested by PJM OI dispatchers.

- Step 2: Long Time Frame To Implement (Greater Than 1 Hour)

PJM OI ACTIONS:

(1) The PJM OI dispatcher notifies PJM OI management, PJM OI public information personnel, and members. The PJM OI dispatcher advises members to consider the use of public appeals to conserve electricity usage. The PJM OI dispatcher notifies other

Control Areas through the ORNS information system and the NERC regional telephone system.

(2) The PJM OI dispatcher requests members to implement Load Management Curtailment, Step 2.

(3) The PJM OI dispatcher cancels, when appropriate.

PJM MEMBER ACTIONS:

(1) Member dispatchers notify management of the emergency procedure and that they should consider the use of public appeals to conserve electricity usage.

(2) Member dispatchers notify governmental agencies, as applicable.

(3) Member dispatchers implement load management programs as requested by PJM OI dispatchers.

Note: Load management programs, whether under PJM OI control and directed by the PJM OI dispatcher or solely under the Local Control Center's direction, have various names including, but not limited to, interruptibles, curtailables, or load management. To simplify operations during these emergency situations, all curtailments are referred to as Load Management Curtailments. PJM Control Area Load Management Curtailments are not be used to provide assistance to adjacent Control Areas. Restoration of Load Management Curtailments is undertaken in a stepped approach, as necessary.

LCC Programs of Load Management Curtailments, Steps 3 and 4

The purpose of the Local Control Center Programs of Load Management Curtailments, Steps 3 and 4, is to provide additional load relief by requesting use of Local Control Center load management programs. Additional load relief is required beyond Load Management Curtailments, Steps 1 and 2.

- Step 3: Short Time Frame To Implement (1 Hour or Less)

PJM OI ACTIONS:

(1) The PJM OI dispatcher requests the Local Control Center to implement Load Management Curtailment, Step 3.

(2) The PJM OI dispatcher notifies PJM OI management, PJM OI public information personnel, and the Local Control Center dispatchers. The PJM OI dispatcher advises Local Control Centers to consider the use of public appeals to conserve electricity usage. The PJM OI dispatcher notifies other Control Areas through the ORNS information system and the NERC regional telephone system.

(3) The PJM OI dispatcher cancels, when appropriate.

PJM MEMBER ACTIONS:

(1) The Local Control Center dispatchers implement load management programs requested by PJM OI dispatchers.

- Step 4: Long Time Frame to Implement (Greater Than 1 Hour)

PJM OI ACTIONS:

(1) The PJM OI dispatcher requests Local Control Centers to implement Load Management Curtailment, Step 4.

(2) The PJM OI dispatcher cancels, when appropriate.

PJM MEMBER ACTIONS:

(1) The Local Control Center dispatchers implement load management programs as requested by the PJM OI dispatcher.

Note: The load management programs, whether under PJM OI control, directed by the PJM dispatcher, or solely under Local Control Center's direction, have various names including, but not limited to, interruptibles, curtailables, or load management. To simplify operations during these emergency situations, all curtailments are referred to as Load Management Curtailments. PJM Control Area Load Management Curtailments are not used to provide assistance to adjacent Control Areas. Restoration of Load Management Curtailments is undertaken in a stepped approach, as necessary.

Voltage Reduction

The purpose of Voltage Reduction is to reduce load to provide a sufficient amount of reserve to maintain tie flow schedules and preserve limited energy sources. A curtailment of non-essential building load is implemented prior to or at this same time. It is implemented when load relief is still needed to maintain tie schedules.

PJM OI ACTIONS:

(1) The PJM OI dispatcher notifies PJM OI management, PJM OI public information personnel, and members. The PJM OI dispatcher advises members to consider the use of public appeals to conserve electricity usage. The PJM OI dispatcher notifies outside systems through the ORNS information system and the NERC regional telephone system. The PJM OI dispatch notifies DOE.

(2) The PJM OI dispatcher issues the order for a 5% voltage reduction.

(3) The PJM OI dispatcher cancels the reduction, when appropriate.

PJM MEMBER ACTIONS:

(1) Member dispatchers notify management of the emergency procedure and to consider the use of public appeals to conserve electricity usage. If authorized by the PJM System Operations Subcommittee (SOS), issue system-wide Public/Media Notification Message C-2 or H-2, (whichever is applicable). *See Attachment G.*

(2) Member dispatchers notify governmental agencies, as applicable.

(3) Member dispatchers take steps to implement the voltage reduction.

Note: Curtailment of non-essential building load may be implemented prior to, but no later than, the same time as a voltage reduction.

Curtailment of Non-Essential Building Load

The purpose of the Curtailment of Non-Essential Building Load is to provide additional load relief, to be expedited prior to, but no later than the same time as a voltage reduction.

PJM OI ACTIONS:

(1) The PJM OI dispatcher notifies PJM OI management, PJM OI public information personnel, and members. The PJM OI dispatcher advises members to consider the use of public appeals to conserve electricity usage. The PJM OI dispatcher notifies outside systems through the ORNS information system and the NERC regional telephone system.

(2) The PJM OI dispatcher issues a request to curtail non-essential building load.

(3) The PJM OI dispatcher cancels the request, when appropriate.

PJM MEMBER ACTIONS:

(1) Member dispatchers notify management of the emergency procedure and to consider the use of public appeals to conserve electricity usage.

(2) Member dispatchers notify governmental agencies, as applicable.

(3) Member dispatchers switch off all non-essential light and power in LSE-owned commercial, operations, and administration offices.

Note: Curtailment of non-essential building load may be implemented prior to, but no later than the same time as a voltage reduction.

Voluntary Customer Load Curtailment

The purpose of the Voluntary Customer Load Curtailment (VCLC) is to provide further load relief. It is implemented when the estimated peak load minus the relief expected from curtailment of non-essential building load and a 5% voltage reduction is greater than operating capacity.

Note: When requesting VCLC, the PJM OI dispatcher provides an estimate of the duration of the need for the VCLC.

PJM OI ACTIONS:

(1) The PJM OI dispatcher notifies PJM OI management, PJM OI public information personnel, and members. The PJM OI dispatcher advises the members to consider the use of public appeals to conserve electricity usage. The PJM OI dispatcher notifies other Control Areas through the ORNS information system and the NERC regional telephone system.

(2) The PJM OI dispatcher issues the VCLC. To provide the optimum relief, this should be done at least 4 hours before the peak, but can be done up to 1 hour before the peak.

(3) The PJM OI dispatcher requests members to fulfill their curtailment as identified in Attachment B.

(4) The PJM OI dispatcher cancels the VCLC, when appropriate.

PJM MEMBER ACTIONS:

(1) Member dispatchers notify management of the emergency procedure and that they should consider the use of public appeals to conserve electricity usage.

(2) Member dispatchers notify governmental agencies, as applicable.

(3) Member dispatchers proceed according to procedures to implement the VCLC requirement.

Manual Load Dump

The purpose of the Manual Load Dump is to provide load relief when all other possible means of supplying internal PJM Control Area load have been used to prevent a catastrophe within the PJM Control Area or to maintain tie schedules so as not to jeopardize the reliability of the other interconnected regions. It is implemented when the PJM Control Area cannot provide adequate capacity to meet the PJM Control Area's load or critically overloaded transmission lines or equipment cannot be relieved in any other way and/or low frequency operation occurs in the PJM Control Area, parts of the PJM Control Area, or PJM Control Area and adjacent Control Areas that may be separated as an island.

PJM OI ACTIONS:

(1) The PJM OI dispatcher verifies that separations have not occurred and that load dumping is desirable on the system being controlled (i.e., make sure that a load dump will help, not aggravate the condition).

(2) The PJM OI dispatcher estimates the total amount of load to be dumped.

(3) The PJM OI dispatcher orders the appropriate member dispatchers to DUMP__MW of load according to Attachment C.

(4) The PJM OI dispatcher notifies PJM OI management, PJM OI public information personnel, and members. The PJM OI dispatcher advises members to consider the use of public appeals to conserve electricity usage and public announcements of the emergency. The PJM OI dispatcher notifies other Control Areas through the ORNS information system and the NERC regional telephone system and notifies DOE, FEMA, and NERC offices, using established procedures.

(5) The PJM OI dispatcher instructs members to suspend all remaining regulation.

(6) The PJM OI dispatcher cancels the load dump order and restores required regulation, when appropriate.

Note: If partial restoration of the load dumped is requested by the PJM OI dispatcher, confirmation of the load restored by each member must be made prior to further restoration requests by the PJM OI dispatcher.

PJM MEMBER ACTIONS:

(1) The affected member dispatchers promptly dump an amount of load equal to or in excess of the amount requested by the PJM OI dispatcher (refer to Attachment C).

(2) Member dispatchers notify management of the emergency procedure.

(3) Member dispatchers consider the use (or continued use) of public appeals to conserve electricity usage and consider the use of public announcements of the emergency. If authorized by the PJM System Operations Subcommittee (SOS) issue system-wide Public/Media Notification Message C-3 or H-3, (whichever is applicable). Ideally, this would be issued right before a Manual Load Dump. See Attachment G.

(4) Member dispatchers notify governmental agencies, as applicable.

(5) Member dispatchers suspend remaining regulation, when directed by PJM OI.

(6) Member dispatchers maintain the requested amount of load relief until the load dump order is cancelled by the PJM OI dispatcher.

Light Load Procedures

Each Control Area has a commitment to control its generation in a manner so as not to burden the interconnected systems. Failure to provide adequate control can result in deviations in frequency and inadvertent power flow. For the PJM Control Area to meet its commitment during light load periods, it may be necessary to deviate appreciably from normal operating procedures. PJM OI scheduling personnel are responsible for identifying light load conditions and projecting the extent of operating procedures.

Exhibit 2.5 presents the general sequence of actions that may be implemented during light load periods.

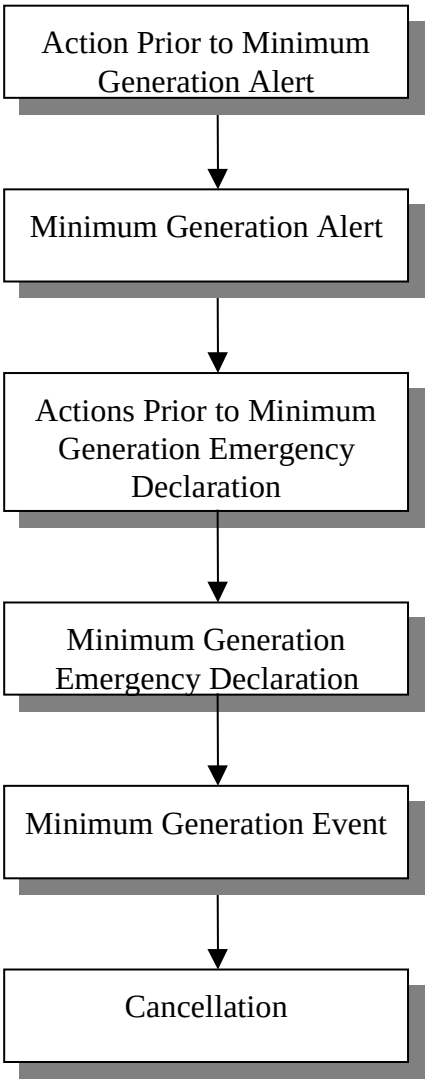


Exhibit 2.5: Sequence of Actions

Actions Prior to Minimum Generation Alert

The purpose of the Minimum Generation Alert is to provide an early alert that system conditions may require the use of the PJM Emergency Procedures. It is implemented when the expected generation level is within 1,000 MW of normal minimum energy limits.

PJM OI ACTIONS:

(1) The PJM OI prepares Minimum Generation Worksheet *(Attachment E, Exhibit E.2)* to determine if Minimum Generation Alert criteria is met and if Light Load Procedures are required for upcoming scheduling period.

(2) PJM OI personnel formulate a scheduling strategy for the light load period. Hydro plant schedules are reviewed to ensure, where possible, pumping at pumped storage plants is maximized and generation at run-of –river plants is minimized during the light load period(s).

Minimum Generation Alert

PJM OI ACTIONS:

(1) If the expected generation level is within 1000 MW of normal minimum energy limits, the PJM OI dispatcher issues the Alert for the specified light load period via the ALL-CALL. Adjusted Minimum generation, valley load estimate, and margin values are given to members.

PJM MEMBER ACTIONS:

(1) Member dispatchers review with station operating personnel, unit normal maximum and minimum energy limits, as well as emergency minimum energy limits.

(2) Member dispatchers compile their emergency reducible information and report to the PJM electronically via eDART or directly to the IO scheduling dispatcher. *(Attachment E, Exhibit E.1*) Joint-owned generation is reported by the operating company.

(3) Member dispatchers schedule additional unit maintenance, as appropriate, for the expected light load periods. PJM OI dispatchers are informed of any maintenance scheduled.

(4) Member dispatchers renew and update unit data in PJM's computer systems. Particular attention is given to unit availability and energy limits (normal maximum, normal minimum, and emergency minimum).

Actions Prior to Minimum Generation Emergency Declaration

PJM OI ACTIONS:

(1) Re-evaluate valley load estimate and amount of Spot in transactions.

(2) The PJM OI dispatcher updates the amount of emergency reducible generation available. Final strategy is determined from the results, including the anticipated amount of reducible generation to be reduced (by percentage) and a forecast time of the reduction.

(3) Reduce ALL units to normal minimum generation.

(4) Reduce Lambda to "0" and reduce Spot in contracts as required to maintain system control.

Note: Other system conditions may at times require the reducing of Lambda to "0". The implementation of any steps under the Light Load Procedures are NOT a pre-requisite to moving Lambda to "0".

Minimum Generation Emergency Declaration

PJM OI ACTIONS:

(1) The PJM OI dispatcher issues via the ALL-CALL a Minimum Generation Emergency Declaration and notifies members of survey results and strategy, including the anticipated amount of reducible generation to be reduced (by percentage) and a forecast time of the reduction.

PJM MEMBER ACTIONS:

(1) Member dispatchers reduce generation as reported via eDART on the Minimum Generation Input Form in the Reducible On Declaration column. (Also reference *Attachment E, Exhibit E.1*)

(2) Member dispatchers determine the specific units that will be reduced and the sequence and timing of reductions based on the direction given by PJM.

Minimum Generation Event

Minimum Generation Event is implemented when the PJM OI dispatcher can no longer match the decreasing load and utilization of emergency reducible generation is necessary.

PJM OI ACTIONS:

(1) If Transmission Constrained, follow the Guidelines for Constrained Operations.

(2) Declare a Minimum Generation Event.

(3) The PJM OI dispatcher requests Local Control Centers to reduce Emergency Reducible Generation (ERG), in proportion to the total amount of ERG reported.

(4) Attempt to sell Emergency Energy to external systems.

(5) In concert with individual members, the PJM OI dispatcher recommends the shut down of specific units that are not required for area protection during the current load period or the subsequent on-peak period. The PJM OI dispatcher recommends return times for these units.

Note: Having reviewed the conditions for the next on-peak period, the PJM OI dispatcher recommends the sequence of units being removed from service at this time and recommends the sequence of return for the units that would be needed for reliable operation for the next on-peak period.

PJM MEMBER ACTIONS:

(1) Member dispatchers follow the direction of the PJM OI dispatcher.

Note: If reduction of emergency reducible generation is requested, no update of the PJM dispatch lambda program is required.

Cancellation

The above steps are followed in reverse order as the PJM Control Area's load begins to exceed the generation. The PJM OI dispatcher cancels a Minimum Generation Emergency when actions taken under these procedures are no longer necessary.

PJM MEMBER ACTIONS:

(1) Enter actual generation that was reduced via eDART in the Minimum Generation Input Form or report directly to the IO scheduling dispatcher.