

Emergency Control Action Pricing Review

MPWG

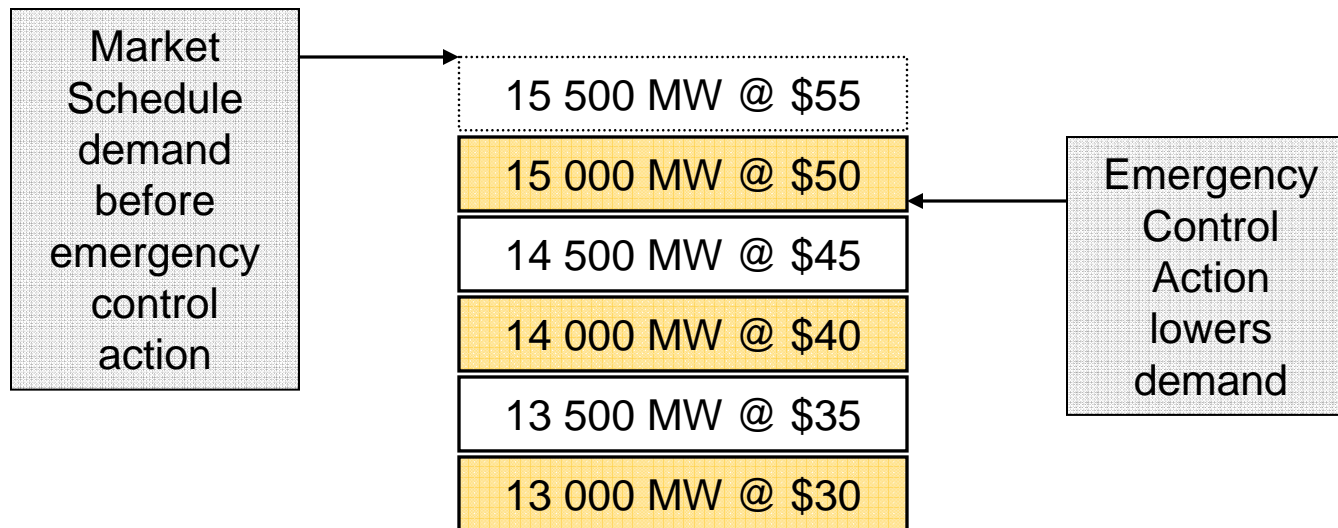
October 6, 2006



- Review of emergency control action pricing
- Review of event days
- Price simulation results
- Summary Statistics
- Administering Pricing Signals During Emergencies
- Proposed Conclusions

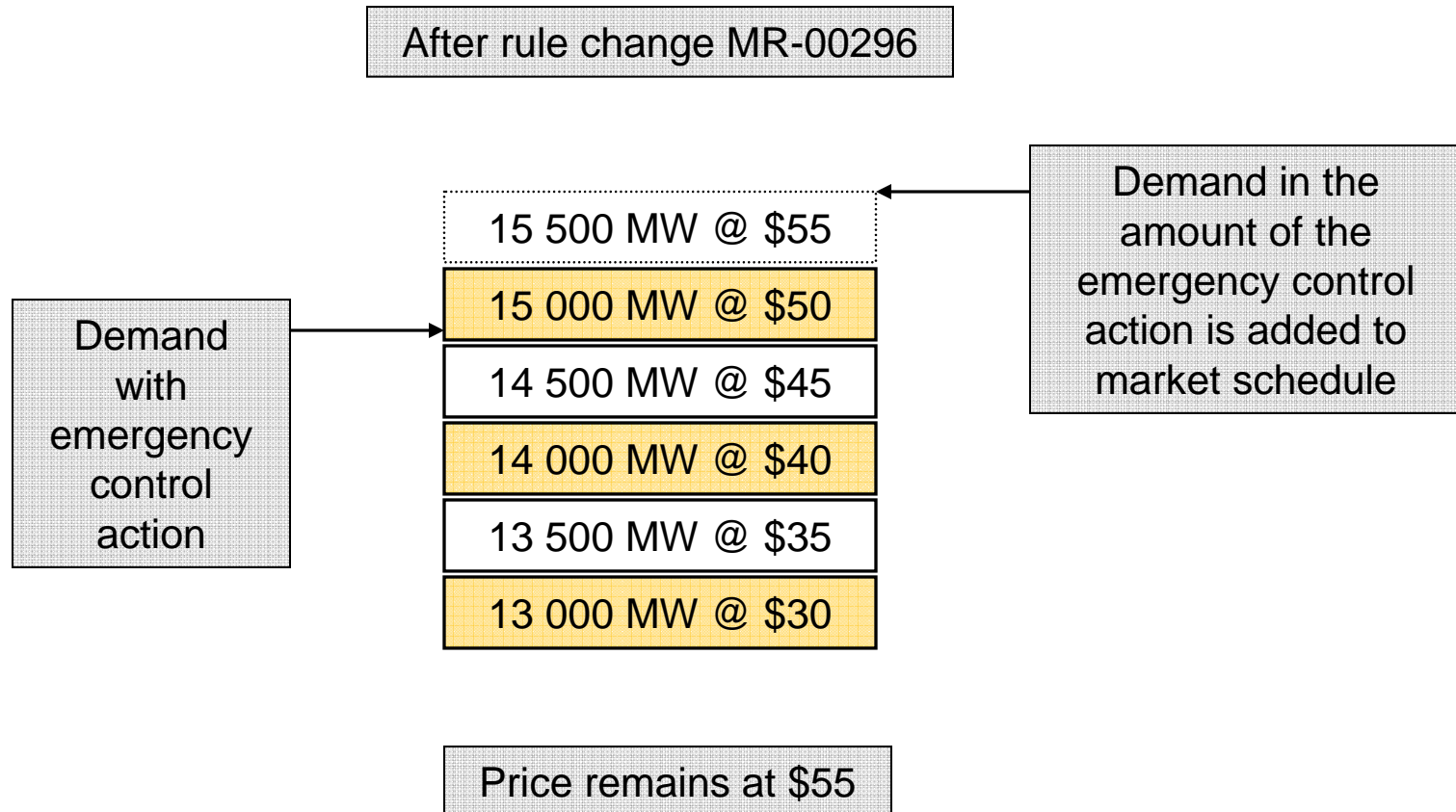
Emergency Control Action Pricing

Prior to August 10, 2005



The result is a counterintuitive price drop. The price falls from \$55 to \$50

Emergency Control Action Pricing

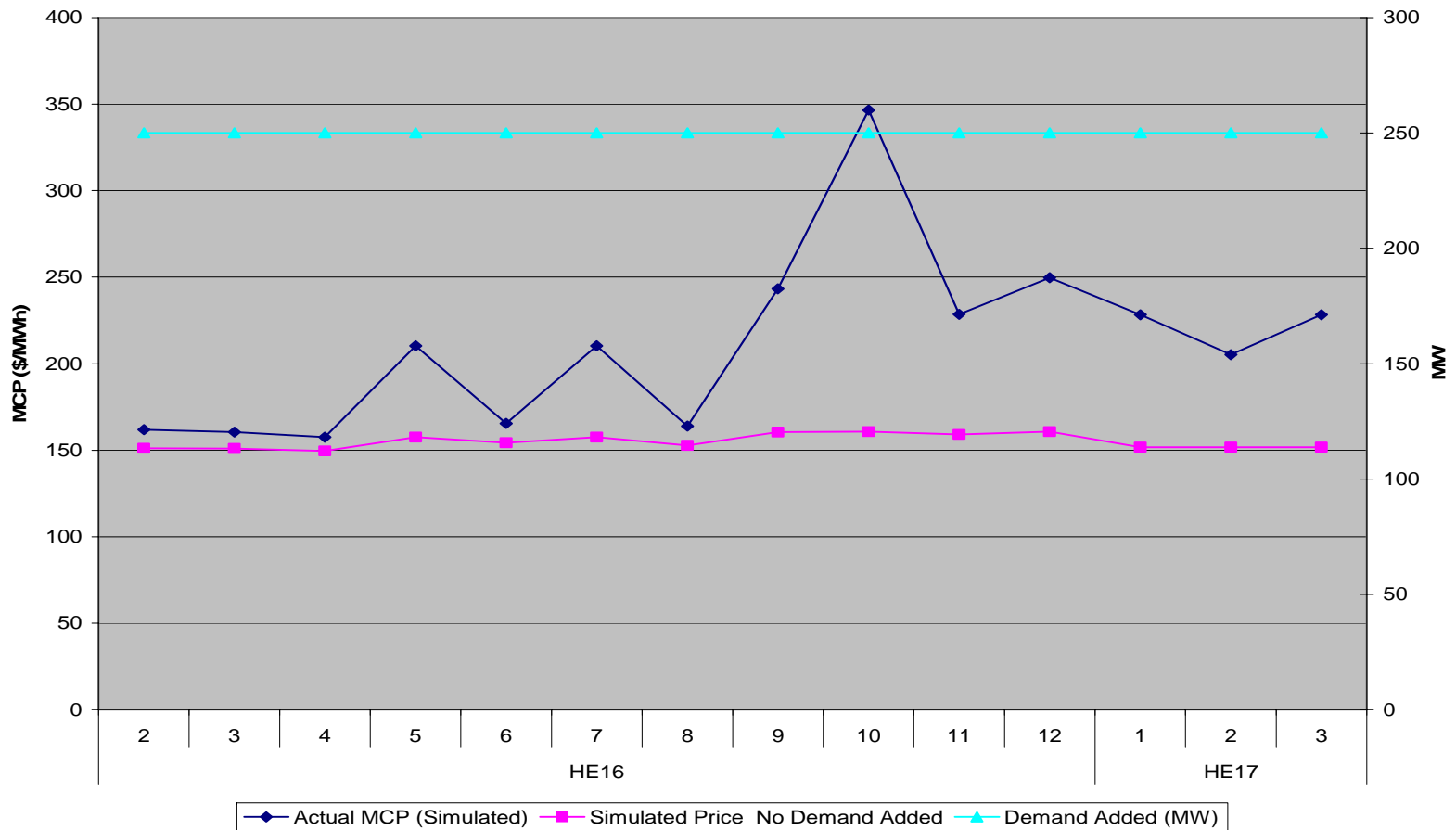


Emergency Control Actions included in MR-00296: Voltage Reductions, Emergency Energy Purchase and Load Shedding

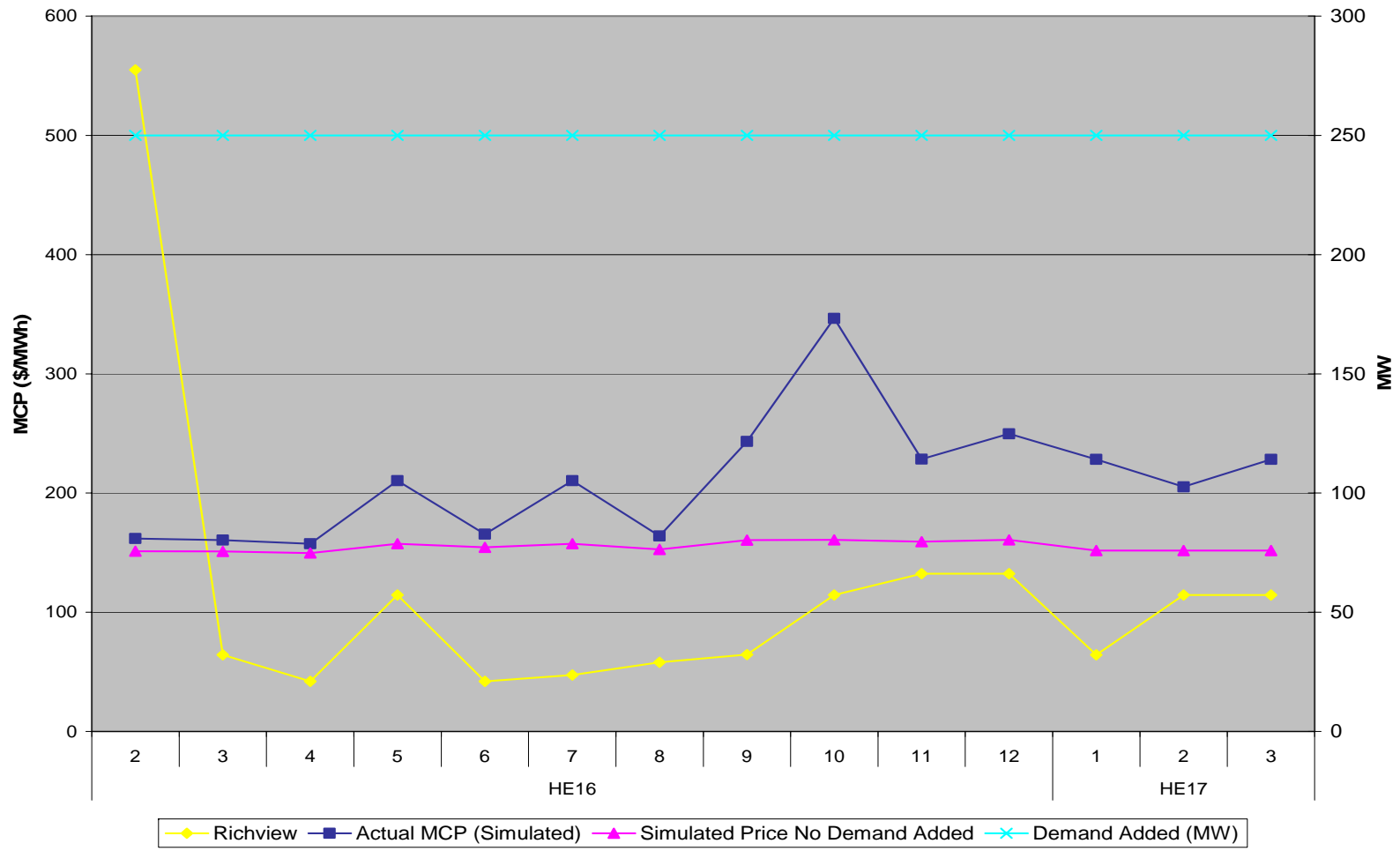
- Used the dispatch unconstrained simulator to estimate the impact of adding demand to the market schedule on energy and operating reserve prices
- Performed 2 simulations
 - Simulate actual market results
 - Simulate market results without adding demand to the market schedule
- The actual market results are simulated to isolate the impact of the demand addition.

- September 12, 2005
 - 5% Voltage Reduction in Toronto zone; demand reduction estimated at 250 MW
 - 15:08 – 16:14 250 MW was added to the market schedule

Event 1 Simulation Results



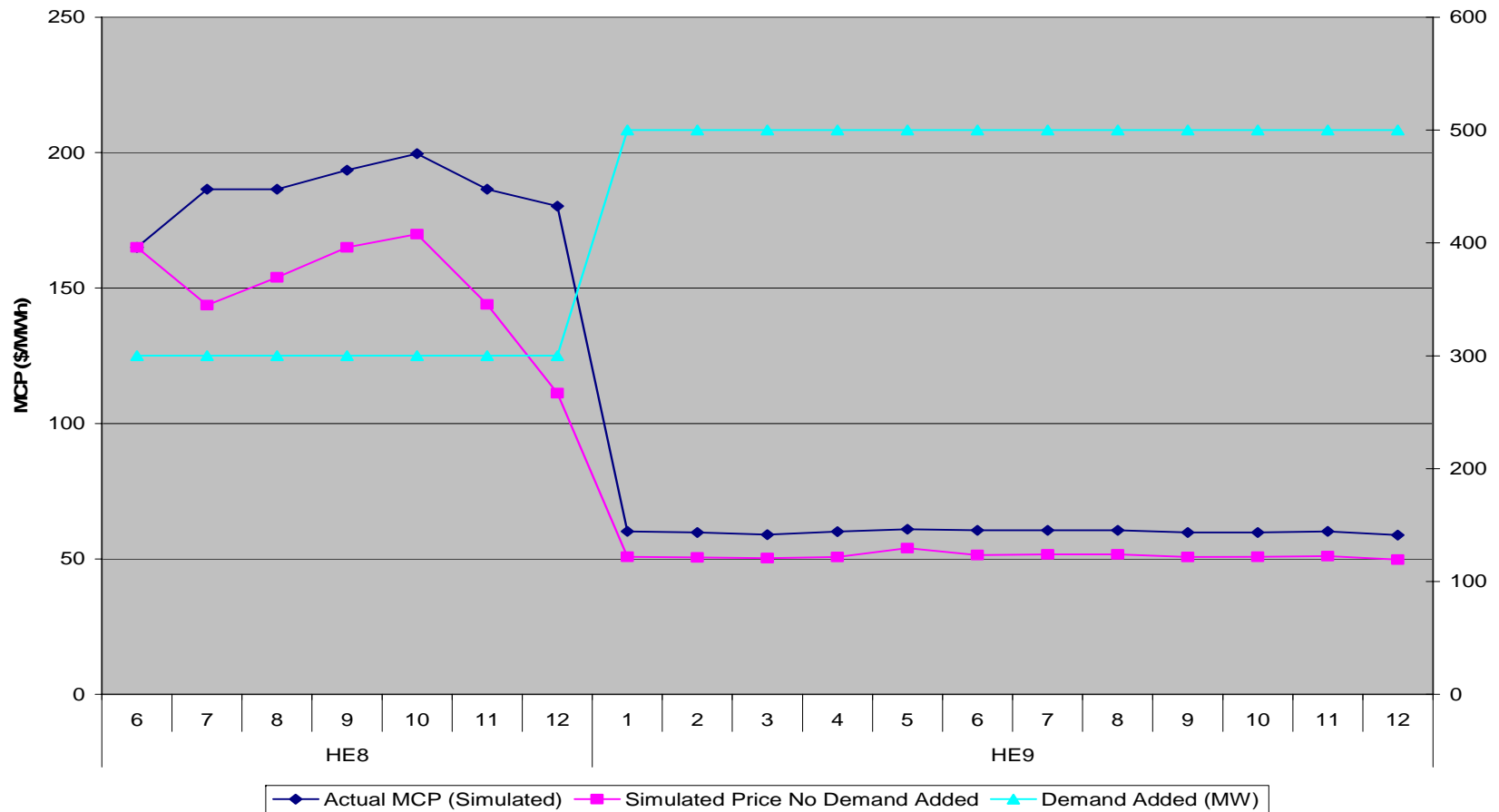
Event 1 Simulation Results



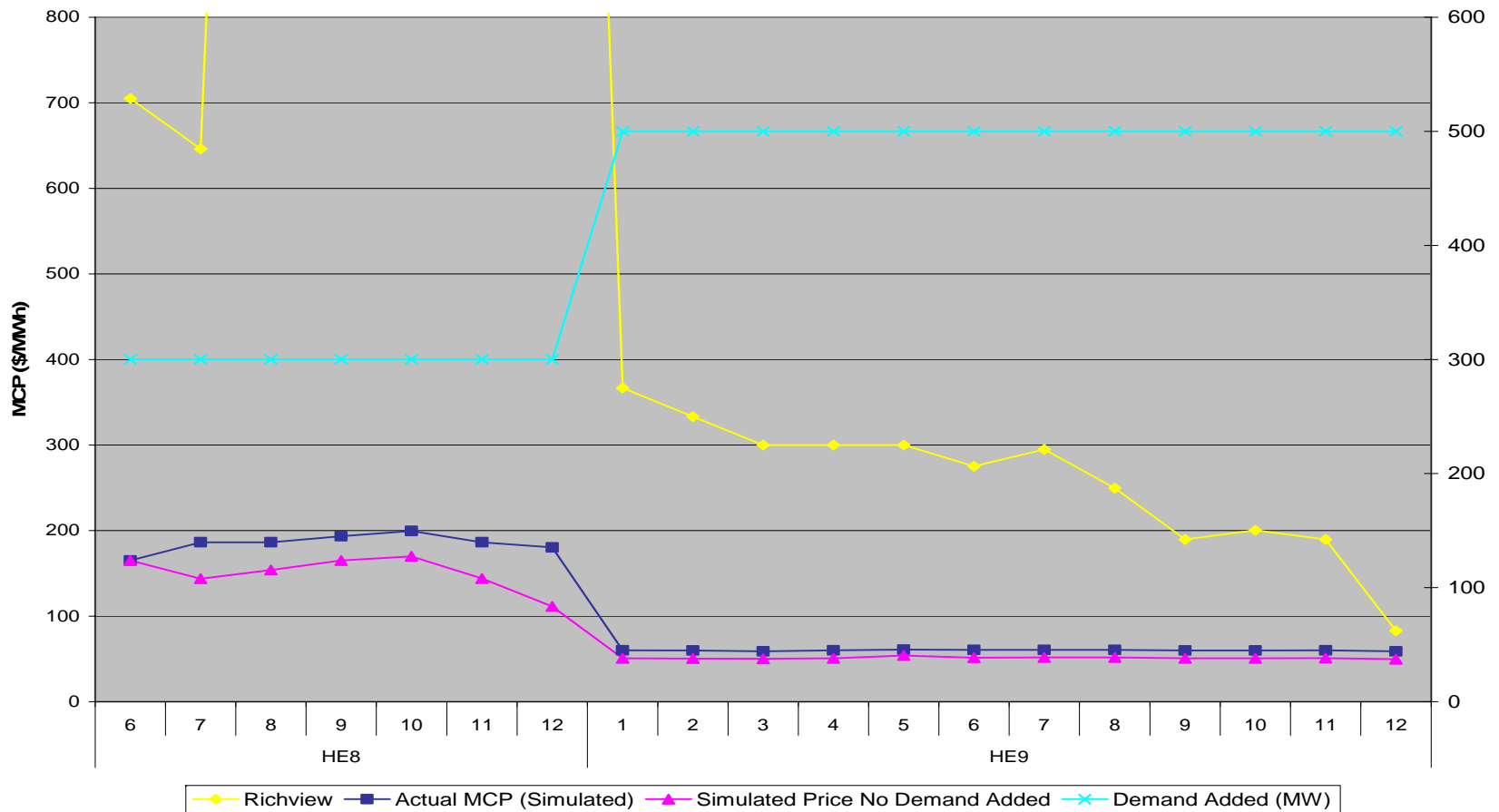
Difference between actual and simulated MCP	
Min	\$7.93
Max	\$185.87
Average	\$56.38

- December 12, 2005
 - Emergency energy purchase following a 500 kV circuit forced outage
 - 7:30 – 8:00 300 MW and 8:00 – 9:00 500 MW was purchased

Event 2 Simulation Results



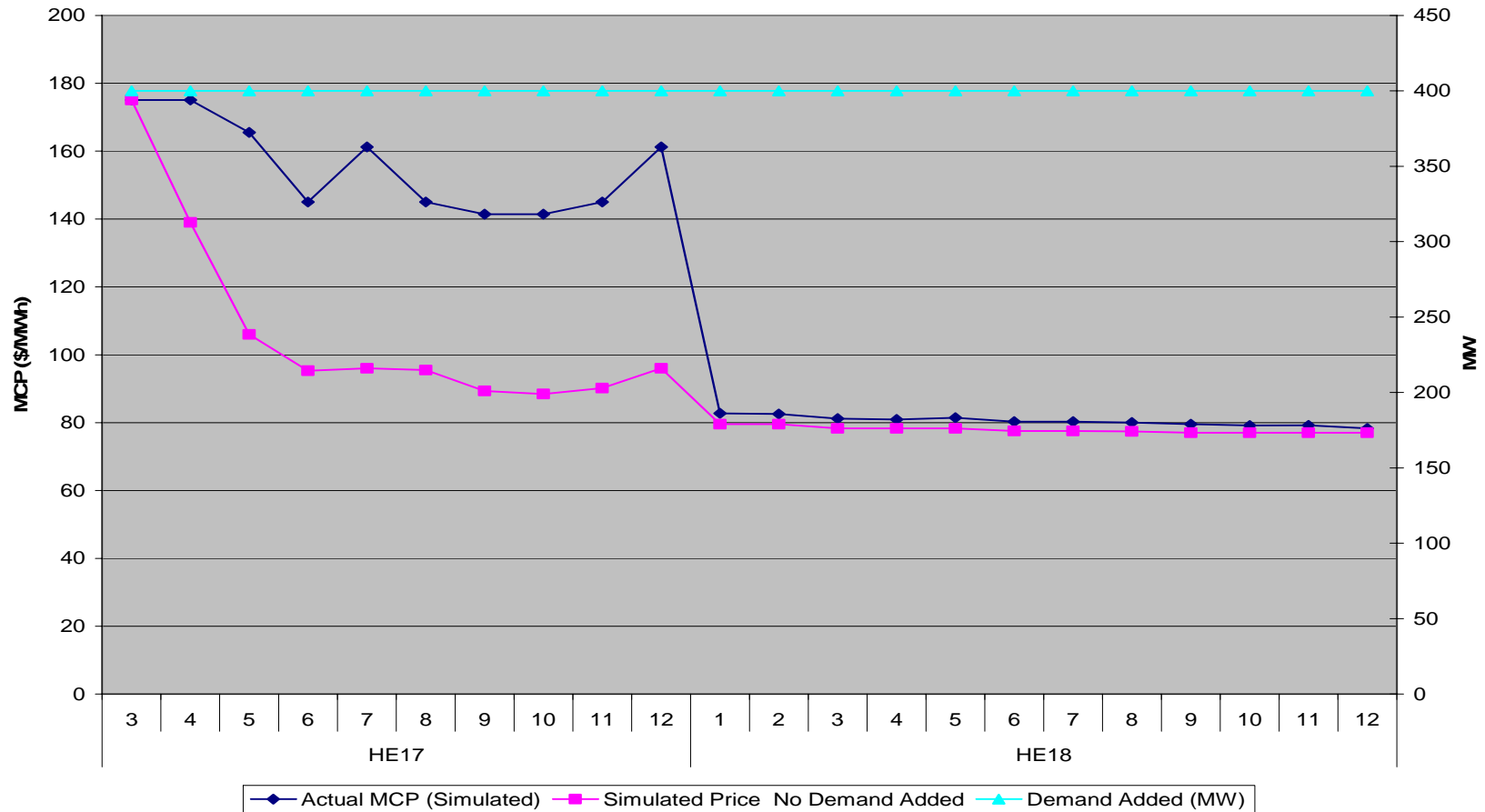
Event 2 Simulation Results



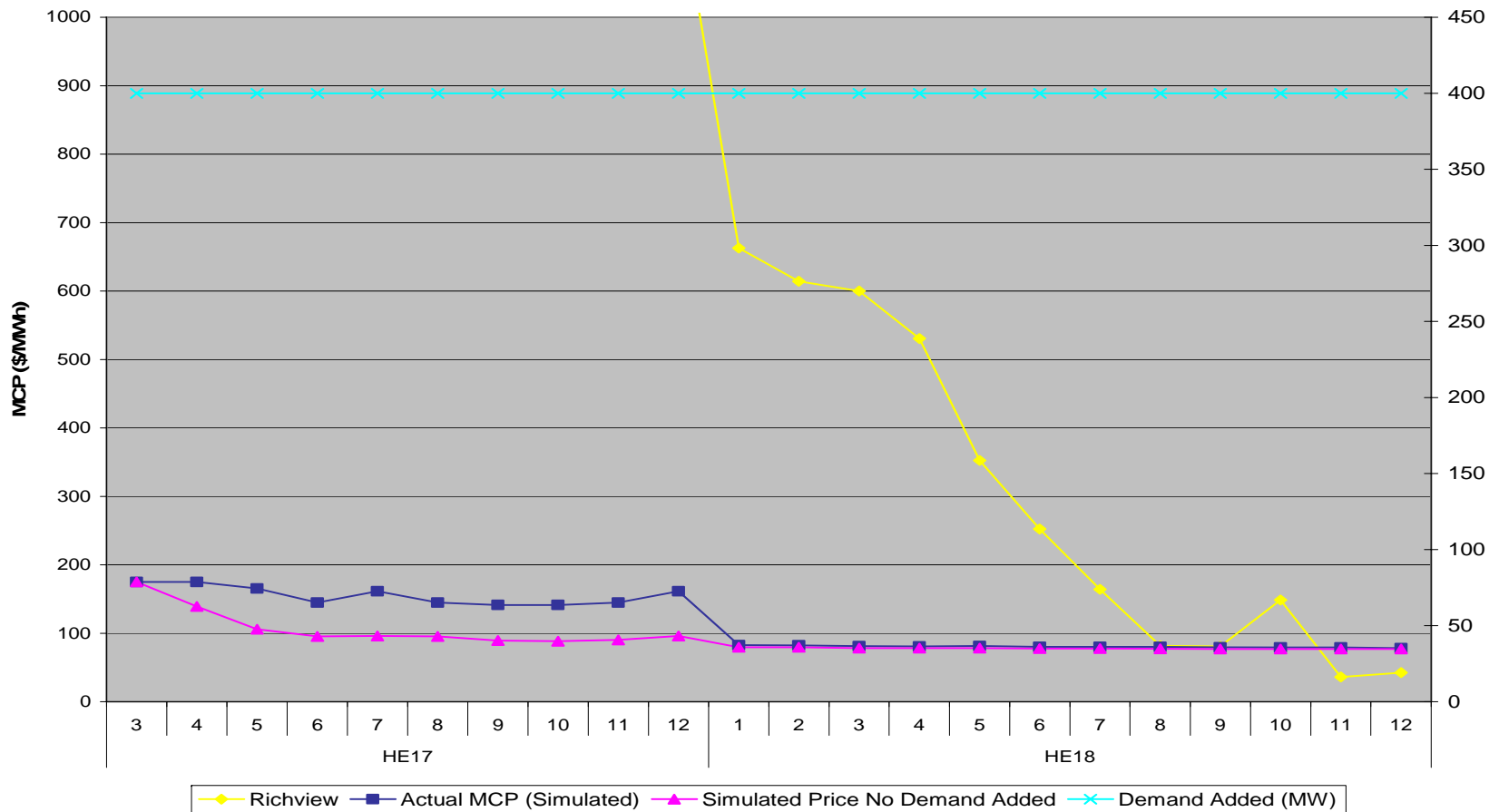
Difference between actual and simulated MCP	
Min	\$0.00
Max	\$69.01
Average	\$18.52

- Tuesday, May 30, 2006
 - Emergency Energy purchase following the loss of a 500 kV circuit in North Eastern Ontario
 - 16:15 – 18:00 400 MW was purchased

Event 3 Simulation Results



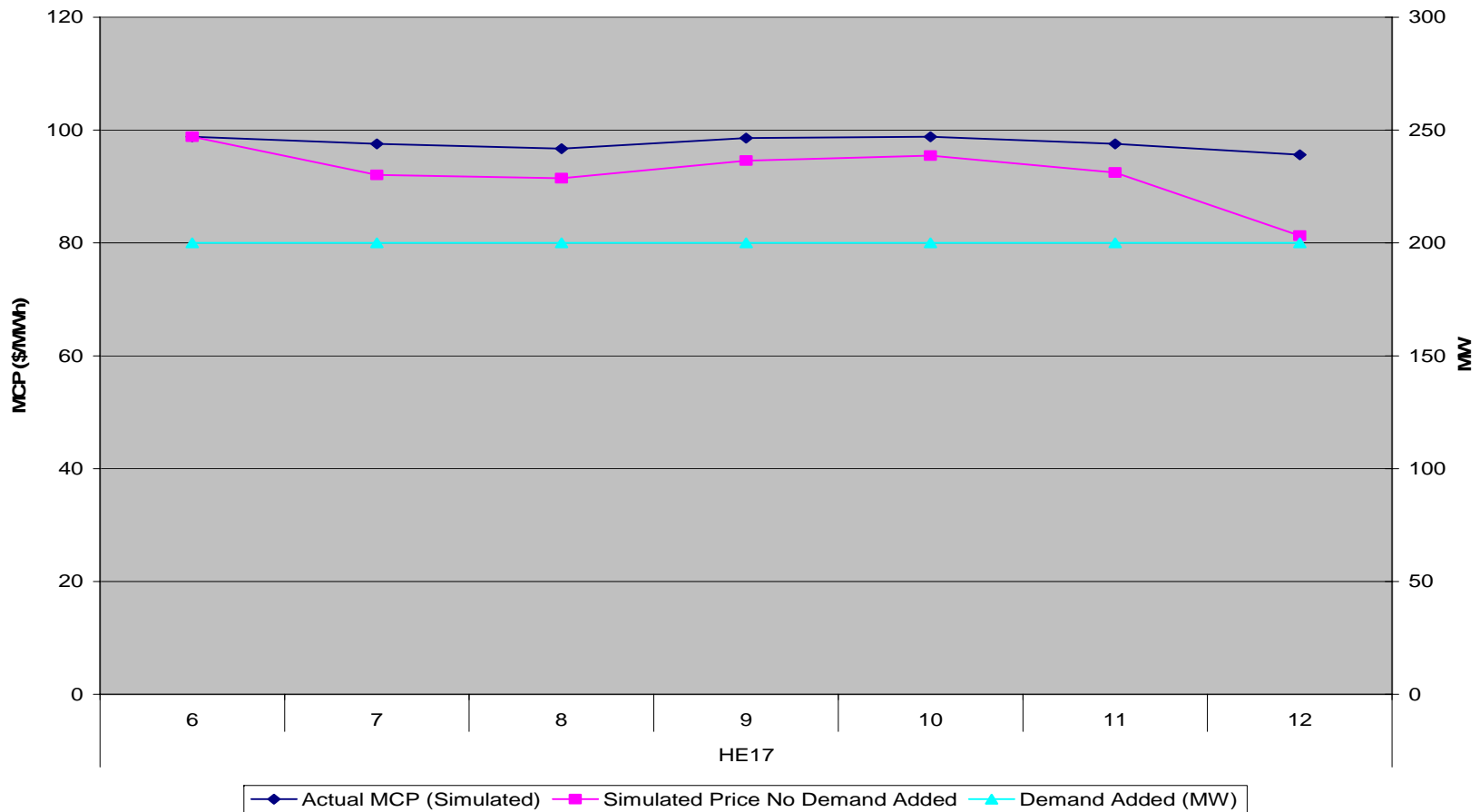
Event 3 Simulation Results



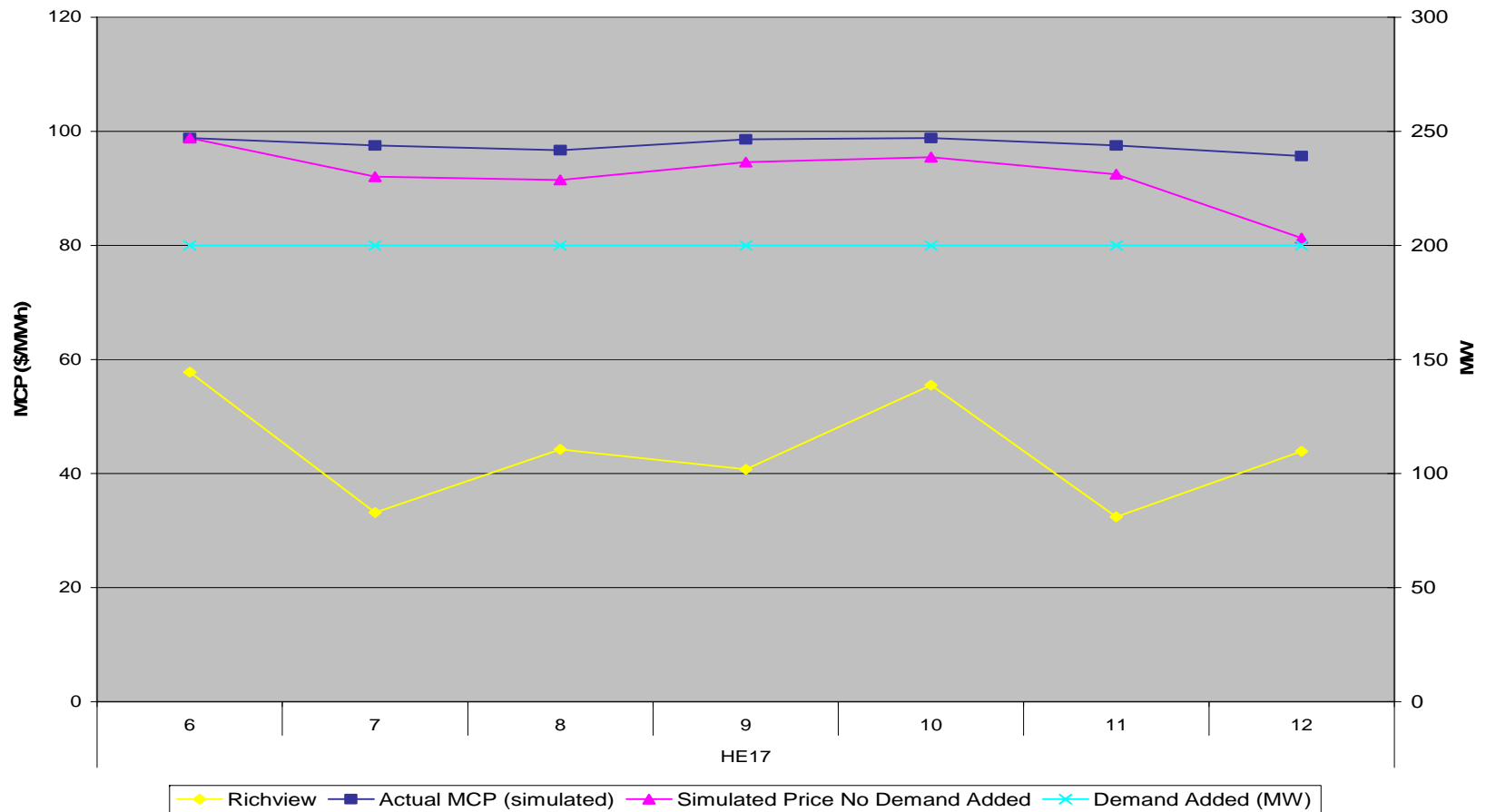
Difference between actual and simulated MCP	
Min	\$0.00
Max	\$69.01
Average	\$23.47

- Friday, July 28, 2006
 - Emergency Energy was purchased for HE 17 for local reliability concerns in the St. Lawrence area
 - 16:30 – 17:00 200 MW was purchased

Event 4 Simulation Results



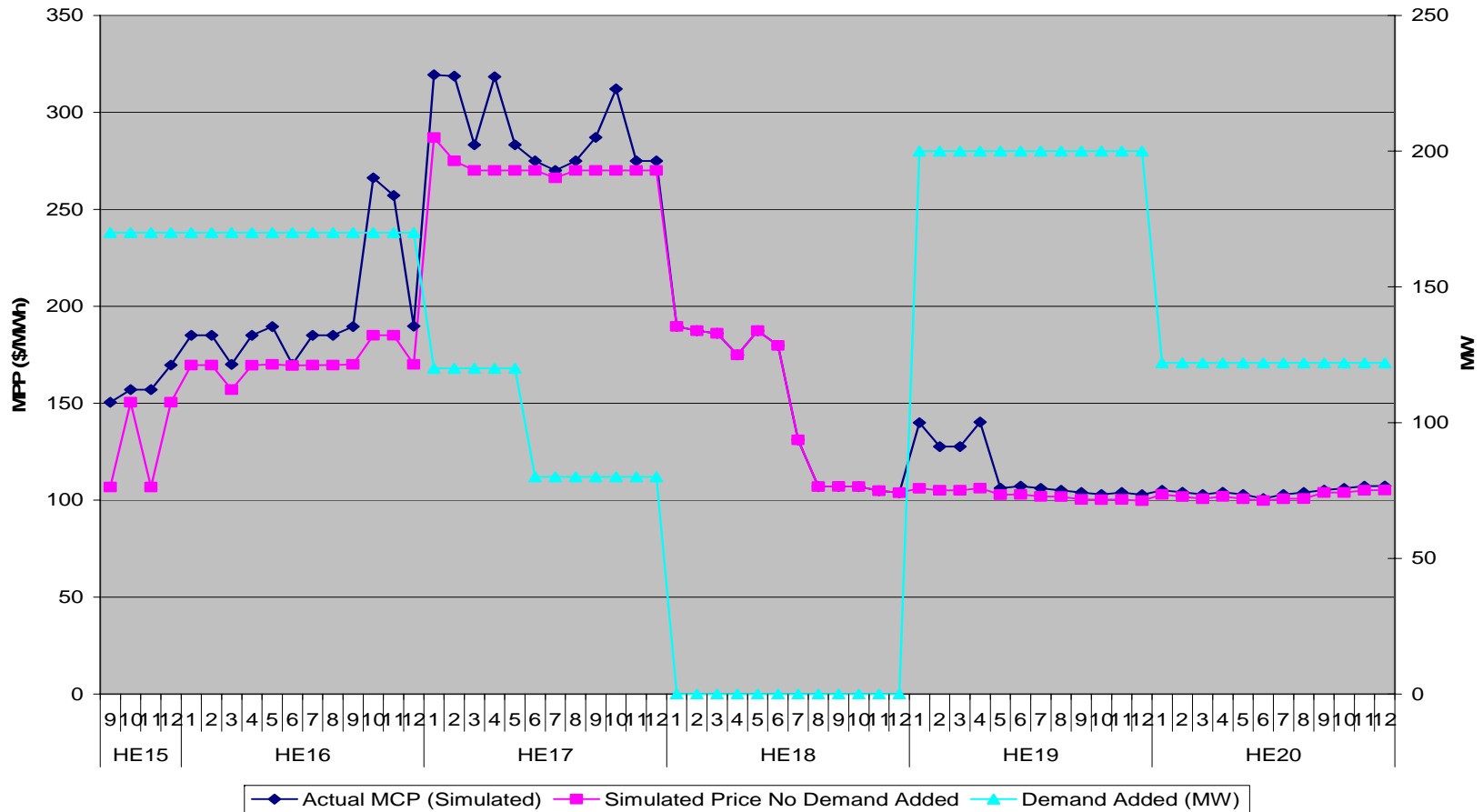
Event 4 Simulation Results



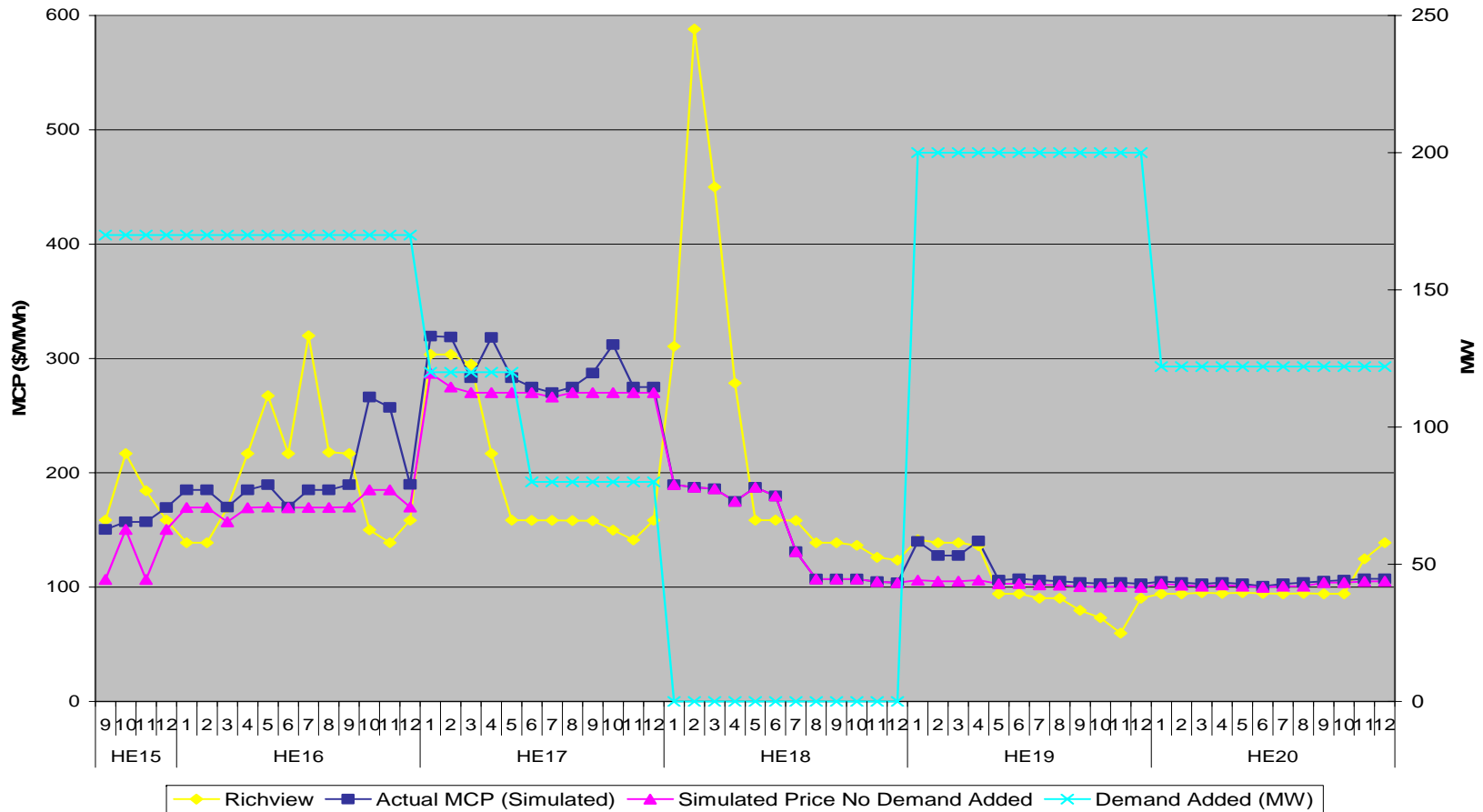
Difference between actual and simulated MCP	
Min	\$0.00
Max	\$14.36
Average	\$5.36

- Monday, July 31, 2006
 - Emergency Energy was purchased and voltage reductions were implemented to maintain the St. Lawrence area reliability
 - Emergency energy purchases
 - 14:54 – 16:00 90 MW
 - 16:00 – 17:00 40 MW
 - 18:00 – 19:00 200 MW
 - 19:00 – 20:00 122 MW
 - Voltage reductions
 - 14:40 – 16:25 80 MW relief
 - 16:25 – 17:00 40 MW relief

Event 5 Simulation Results



Event 5 Simulation Results



Difference between actual and simulated MCP	
Min	\$0.58
Max	\$81.18
Average	\$15.81

Number of occurrences	6 (4 EE + 2 VR)
Total duration demand added to market schedule	677 minutes
Average duration	112 minutes
Average demand added to Market Schedule	259 MW
Minimum demand added to market schedule	80 MW
Maximum demand added to market schedule	500 MW
Standard Deviation of demand added to market schedule	129 MW

	Simulated MCP		
	Actual	No Demand Added	Difference
Average	\$151.69	\$129.61	\$22
Min	\$58.83	\$49.74	\$0.58
Max	\$346.56	\$286.98	\$186
Standard Deviation	\$72.56	\$61.39	\$28.06

- System Wide Emergencies
- Local Emergencies
- Previous Issues Identified
 - Fairness
 - What price?
 - What trigger?

- Local Emergencies
 - Defer discussion until after the LMP study
 - LMP may influence the need for and nature of locational signals
- System Wide Emergencies
 - No experience with these events to date
 - Prices likely to be sufficiently high under these circumstances with MR-00296
 - For example, an overall adequacy emergency

- Changes made under MR-00296 have resulted in pricing that better reflects system conditions
- Emergency control actions are used infrequently
- No evidence that suggest further work is needed at this time
- Revisit once LMP study is complete

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