NEW YORK INDEPENDENT SYSTEM OPERATOR

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Effects of Fuel Derates on the NYISO Electrical Grid Winter 2004-‘05

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Fuel Deratings

- The most recent winter was slightly colder than the previous winter and the historical average, as measured in heating degree days, with several days in January characterized by extreme temperatures.

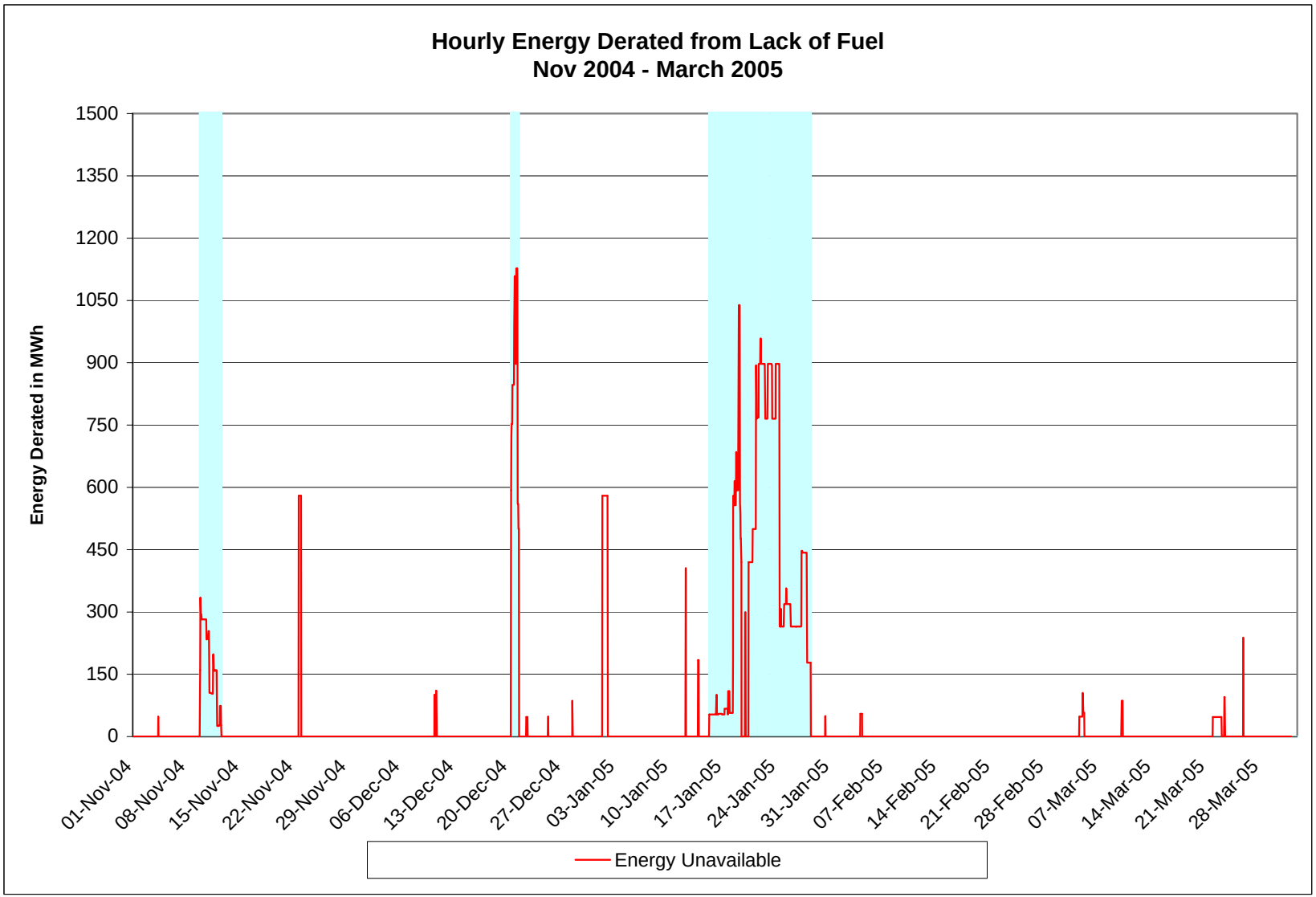
- Historical or average heating degree days for NY is 4,799 (November – March). The heating degree days for the 2004-'05 winter was 4,809, or 2.5% colder than the previous winter and 0.2% colder than normal.

	Fuel Deratings (in Unit Hours)	NY Heating Degree Days
2002	753	3,877
2003	1,636	5,102
2004	955	4,733
2005	1,223	4,809

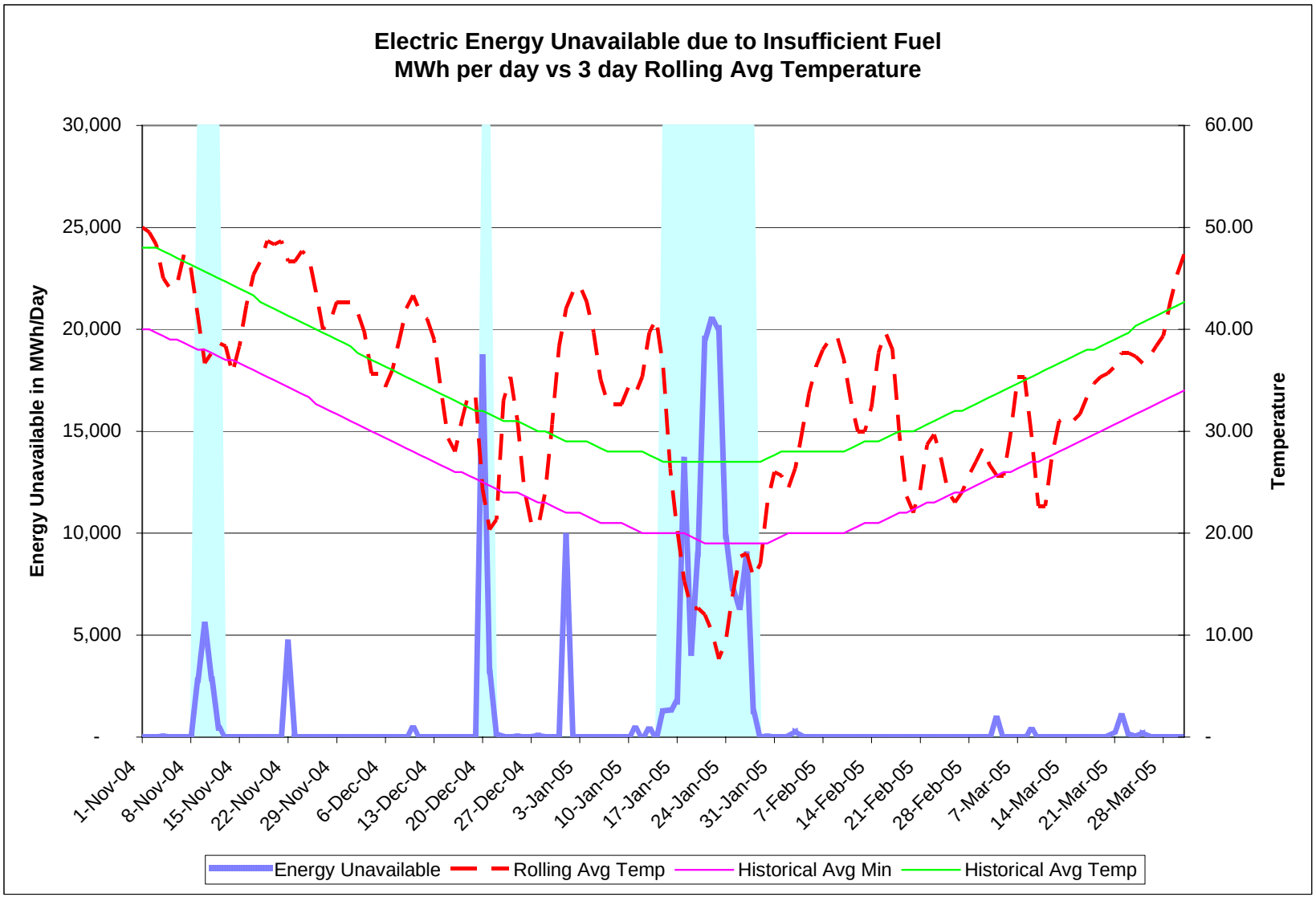
Fuel Deratings

- The total derated unit hours for the Winter 2004-'05 is estimated to be 1,223 hours.
- There were three distinct periods when the largest number of derates occurred:
  - November 9 – 12;
  - December 20 – 21; and
  - January 15 – 28.
- The largest hourly period of derates occurred on December 20, with 1,127 MWs of capacity unavailable. This compares to the previous maximum of 981 MWs of capacity unavailable in 2002-'03.

Fuel Deratings



Fuel Deratings



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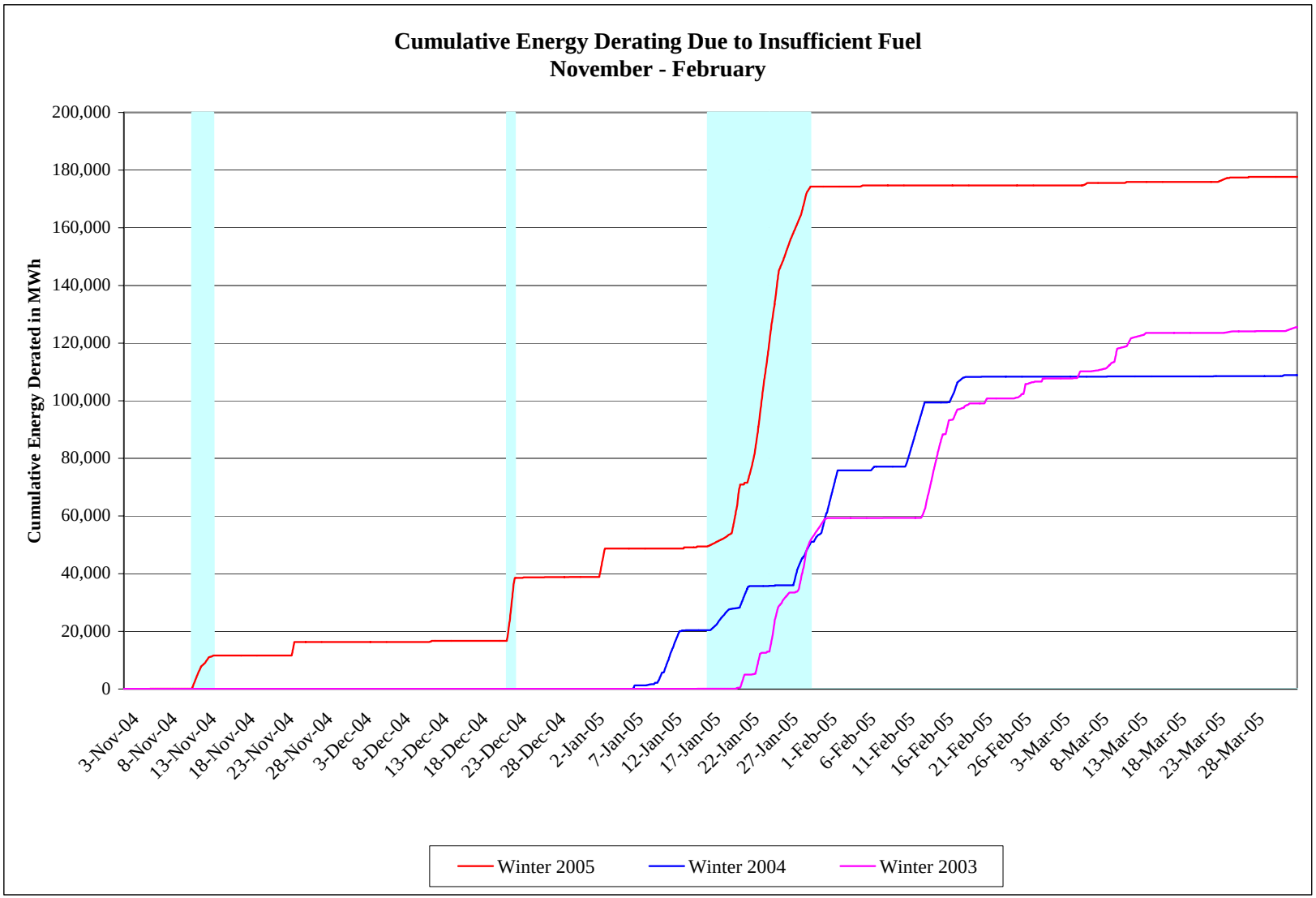
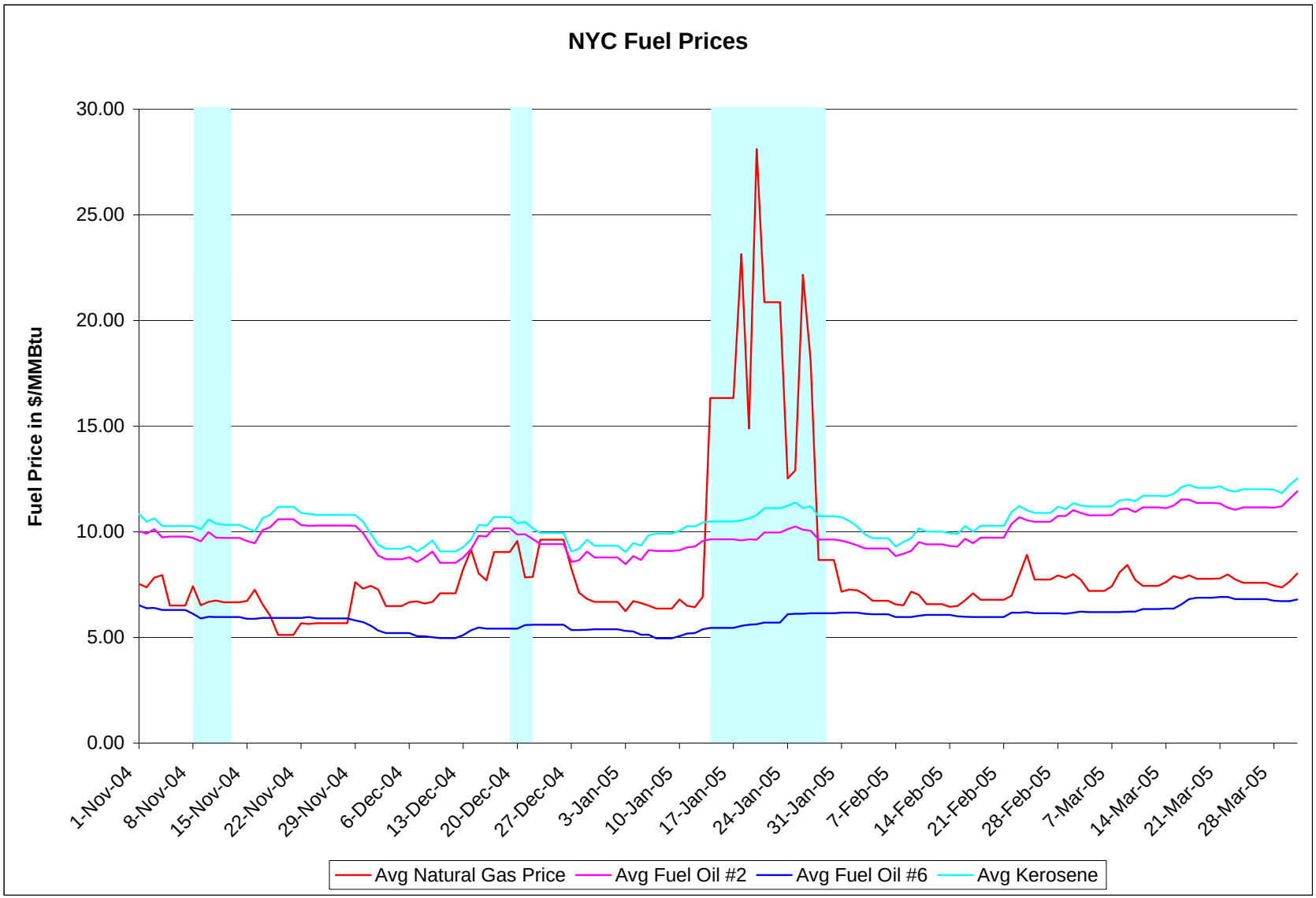


Fuel Markets

- ✓ Natural Gas prices remained very volatile during the winter season (similarly to last winter).
- ✓ Daily average prices at the NY city-gate reached $28 / MMBtu on January 20, 2005.
- ✓ Fuel Oil prices also increased during the winter months, as demand for heating increased, but not to the scarcity levels reflected by natural gas prices.
- ✓ Given the relative cost of natural gas to other fuels during the winter months, most dual fuel generators were running on fuel oil or kerosene.

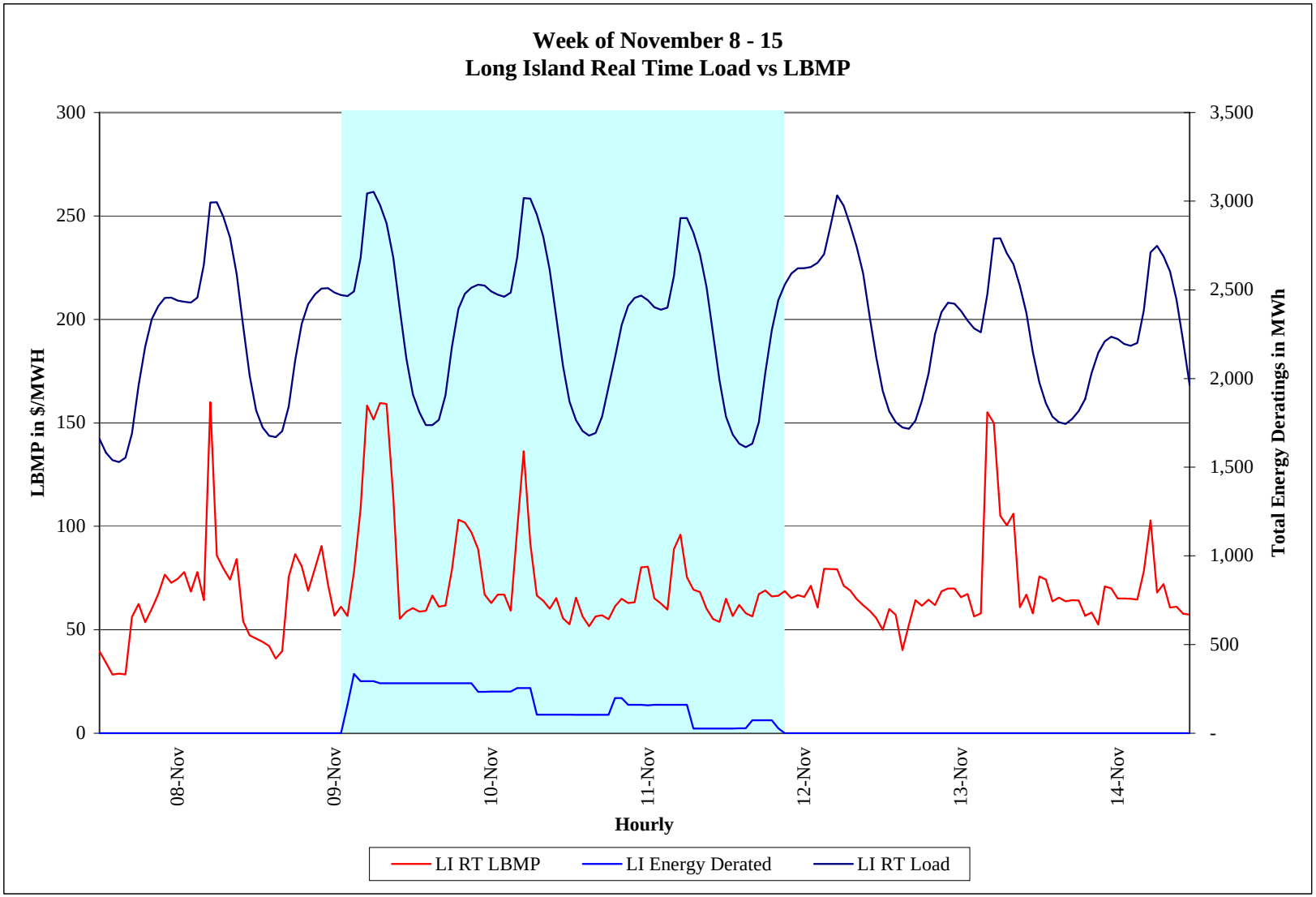
Fuel Markets



Events of November 9 - 12

- There was a crack discovered on the Transco interstate pipeline, significantly decreasing pressure the Long Beach lateral to Keyspan Long Island. This was discovered late Tuesday night, November 9th.
- The reduction in pressure forced several Long Island generators off-line. Some units were able to switch to their secondary fuel. Other gas fired units reduced their availability for the following days.
- This event did not seem to have a substantial impact on the operations of the electrical grid. LBMP prices on Long Island increased for the first few hours to $160/MWh.

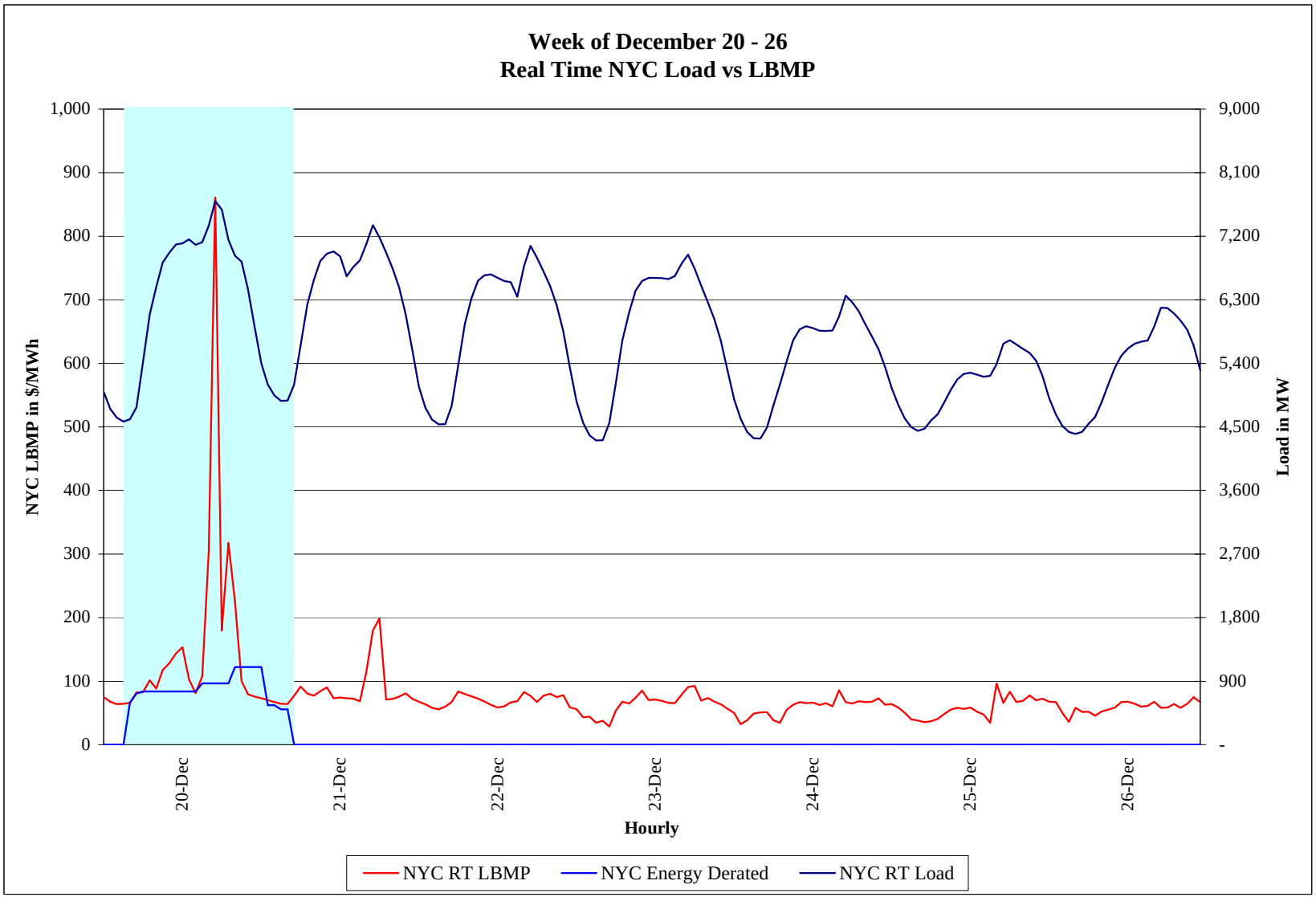
Events of November 9 – 12



Events of December 20-21

- This was the first cold weather event of the winter with the NY daily average temperatures dropping down to 9° F. The downstate gas LDCs issued an Operational Flow Order ("OFO") for the period, limiting generators natural gas fuel burns.
- NYISO reached a new all-time winter peak electric load of 25,540 MWs in HB 18 on December 20.
- There were numerous fuel deratings during this period, resulting in the highest hourly energy unavailable during the winter of 1,127 MWh for several hours.
- There were some deratings by dual-fuelled units as they were unsuccessful in switching to their alternative or back-up fuel. Other dual fuel units require natural gas for startup.

Events of December 20 - 21



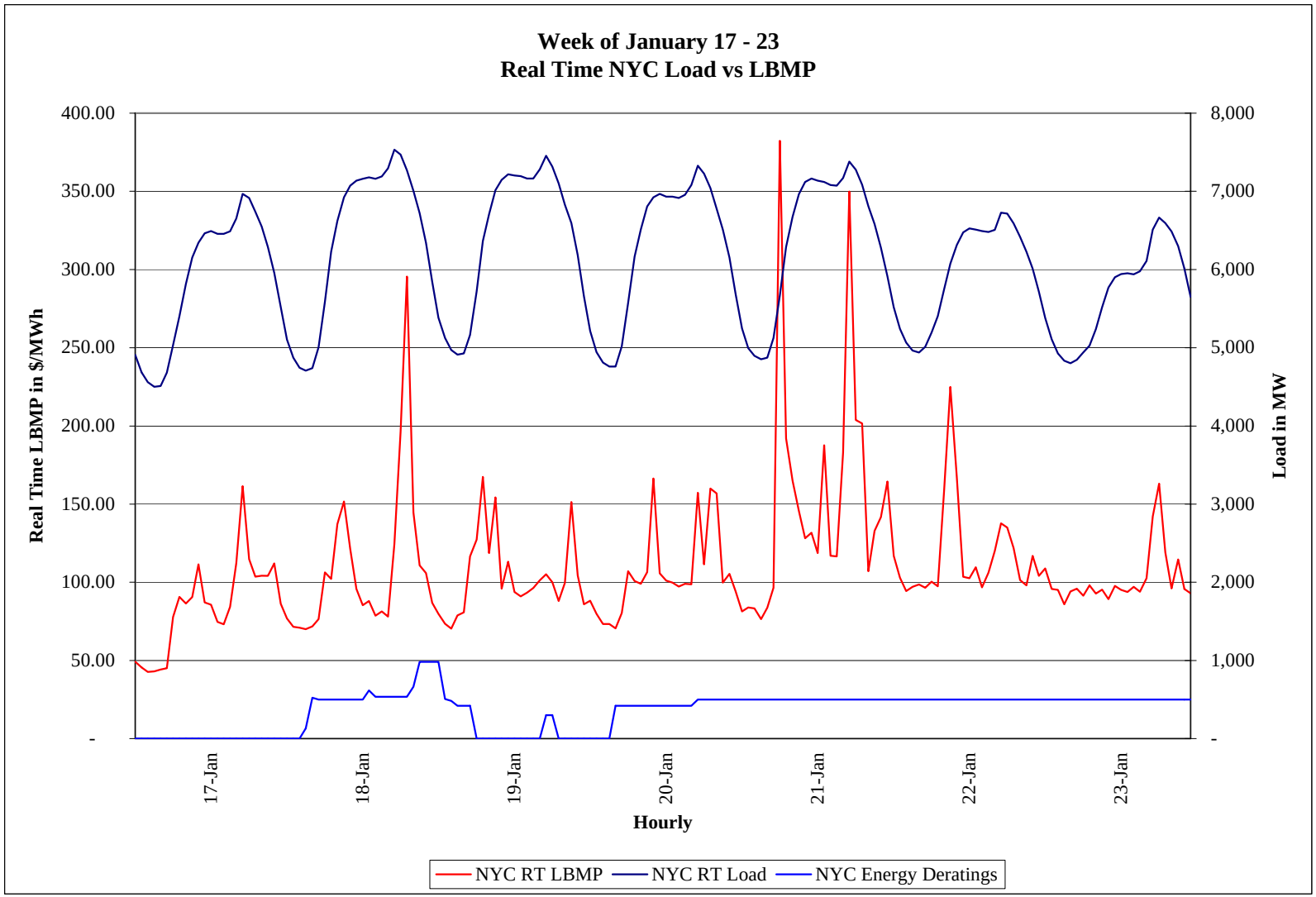
Events of December 20-21

- Significant Events on December 20
  - *09:55—200 MWs derated for curtailed gas supply.*
  - *11:29—250 MWs derated as unit tripped while trying to swap to secondary fuel.*
  - *14:58—ISONE reports they will be short of capacity during the peak hour and will request assistance when necessary.*
  - *17:01—Alert State declared. Reserve pickup initiated. NYCA short 10 Minute spinning reserves.*
  - *17:12—Reserve Pickup re-initiated. ACE at – 220 MW and has not crossed zero for 12 minutes.*
  - *17:23—Alert State was terminated.*
- While the derated units did not necessarily cause or contribute to the alert states during this period, their inability to provide energy did not help alleviate those conditions.

Events of January 15 - 28

- This was a sustained cold period with NY daily average temperatures dropping 9° F or below for several days. The downstate gas LDC issued an Operational Flow Order ("OFO") for the entire period, limiting generators natural gas fuel burns.
- There were numerous fuel deratings during this period, resulting in hourly energy unavailability of 1,039 MWh in one instance over a period of several hours and for smaller time increments throughout the period.
- Most of the deratings were isolated events and none of them seemed to cause any difficulties operating the electrical grid.

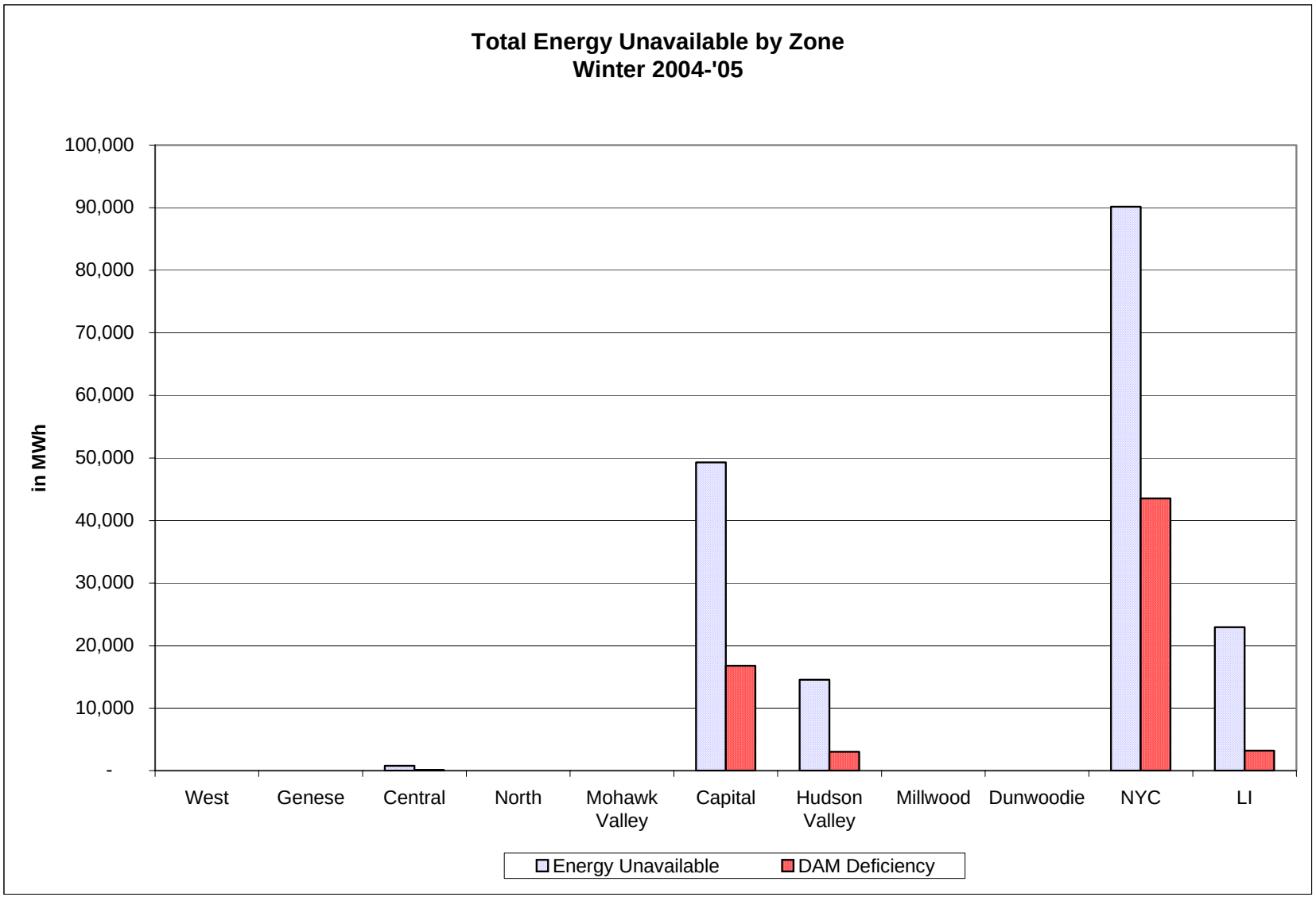
Events of January 15 - 28



Generators

- 46 different generating units were derated during the winter months of 2004-'05 due to lack of fuel. Greater than 90% of the derates occurred at 10 units.
- Of the 46 derated units, 21 of the units were GTs that represent only 14.5% of the total derated energy. Most of these units did not have day-ahead or hour ahead schedules at the time of their derating.
- A large number of the derated units, 16 out of the 46 units, were dual fuel units. Despite having alternative fuel capabilities, many dual fuel units require natural gas as their startup fuel. Also, some units tripped off-line when switching over to their alternative fuel.

Generators


Total Energy Unavailable by Zone
Winter 2004-'05
in MWh
100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
-
West
Genese
Central
North
Mohawk Valley
Capital
Hudson Valley
Millwood
Dunwoodie
NYC
LI
Energy Unavailable
DAM Deficiency

Generators

- Market Monitoring has investigated several unit deratings, focusing on the circumstances of the deratings and whether units properly reported these derates.
- Unavailability due to lack of fuel will reduce a generator's UCAP value in the NYISO capacity markets, reducing future capacity revenues it can sell on a going forward basis.

Conclusion

- While the NYISO experienced some deratings due to lack of fuel, these events did not materially impact the reliability of the electric grid.
- This following observations were significant in reaching this conclusion:
  - *The NYISO is a summer peaking region with sufficient resources to winter peak demand;*
  - *The generation mix in NYISO is more diverse than ISO-NE, with a greater number of dual fuel generators; and*
  - *Most generators serving NYISO were likely burning fuel oil during periods of high natural gas prices.*