

# Events of January 15, 2004

## Agenda Item # 1

Intertie Trading Sub-committee

Tuesday, June 1st

# Demand Situation

Set new record for winter peak demand:

- 25,258 MW in hour 19

Set new all-time record for daily energy:

- 528,061 MWh

New records for winter peak demand also set in New England and New York

# Supply Situation

All available Ontario generation on-line during peak hours:

- about 25,000 MW offered in hours 14 to 21
- about 3850 MW of supply unavailable (planned & forced)

Beginning at about 1:00 pm, several large generating units began experiencing weather related fuel delivery problems:

- these worsened over the next few hours
- about 2500 MW of supply affected
- available supply from within Ontario had fallen to about 22,500 MW by late afternoon

Therefore, Ontario relied on imports to meet demand:

- up to 4500 MW of imports offered in each of hours 17 to 22

# Complications

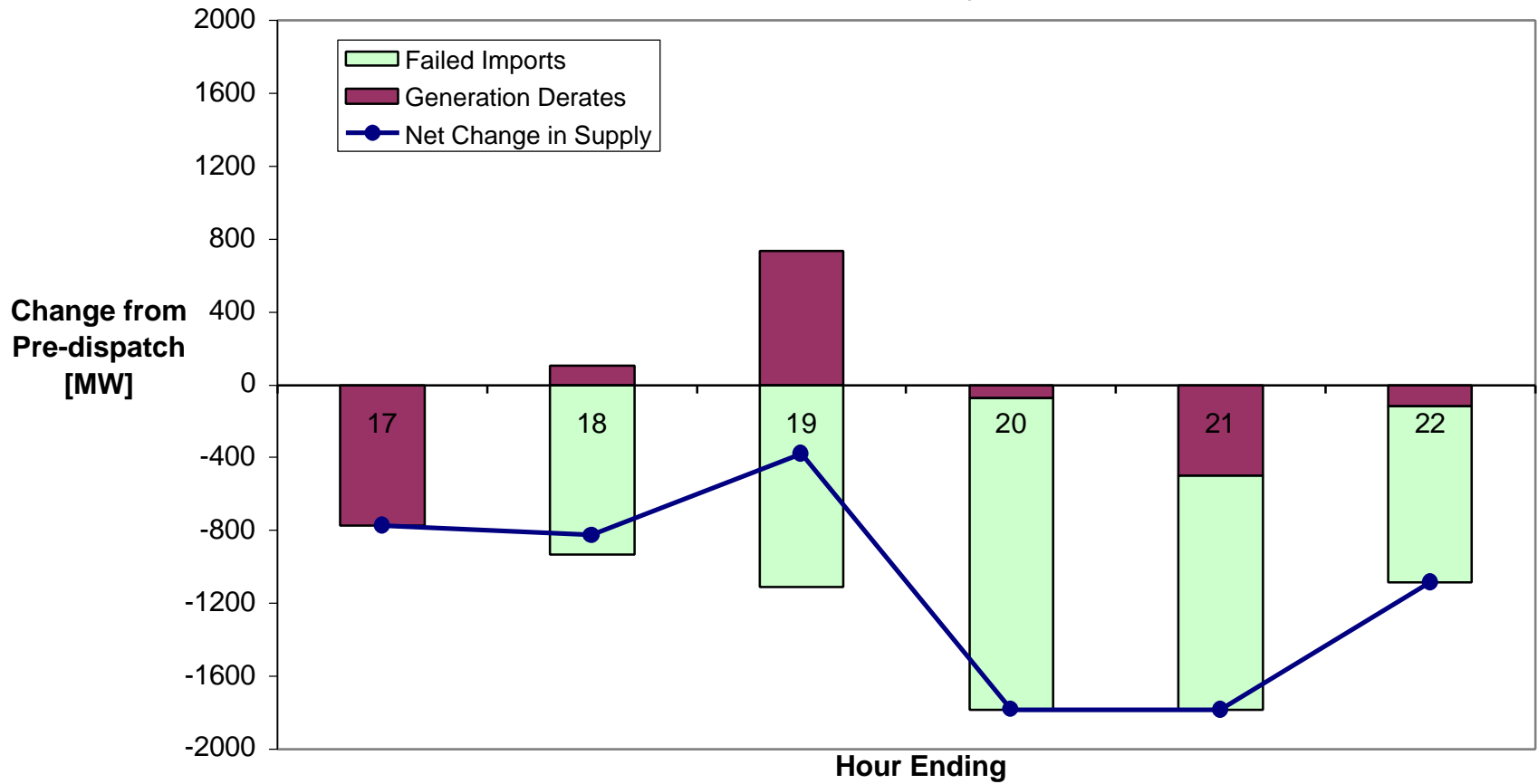
Inaccurate accounting of generation reductions in pre-dispatch:

- both supplier and IMO uncertain of future unit capabilities
- this results in differences between imports scheduled in PD and imports required in RT
- In several hours, PD overstated actual unit outputs by as much as 700 MW, resulting in underscheduling of imports
- out-of-market control actions are then required to meet demand

Failed imports were another major problem:

- unusually high amount of failures this day
- over 900 MW in each of hours 18 to 22
- this again results in the need for out-of-market control actions

### Changes in Supply After Final Pre-dispatch for Hours 17-22 on January 15, 2004



	17	18	19	20	21	22
Failed Imports	0	-933	-1112	-1712	-1284	-965
Generation Derates	-773	106	734	-71	-502	-120
Net Change in Supply	-773	-827	-378	-1783	-1786	-1085

## Out-of-Market Control Actions Taken

During hours 18 to 22, the following control actions were used:

- Use non-market sources of operating reserve
- Cancel exports after scheduled in final PD
- Purchase emergency energy from neighbouring control area
- Manually schedule additional imports from available offers after final PD

# Use of Non-Market Sources of Operating Reserve

During hours 18 to 21, at least one of the following control actions was being used by the IMO to provide operating reserve:

- Carry additional voltage reduction above 400 MW
- Disregard 30 minute reserve requirement
  - a 460 MW reduction in OR required
- Make an export recallable for OR
  - reserve requirement is lowered by the amount of the recallable export(s).
  - this allows export to continue until a contingency occurs (only cut if it occurs)
- Operating reserve from potential forced demand reduction
  - when reserve scheduled is less than requirement, load shedding may be required if contingency occurs.

# Cancel Exports After Final PD

Cancel exports initially scheduled in the final PD:

- This will be done if there is a material change in demand/supply situation that threatens system adequacy.
- Export is removed from RT constrained and unconstrained
  - no CMSC paid
  - lowering effect on MCP, however, the material change would put upward pressure on MCP
- Option only used if no available commercial option will solve the problem
- All exports in hours 17 to 22 were canceled on January 15

# Purchase Additional Imports

Purchase additional imports from available offers after the final PD:

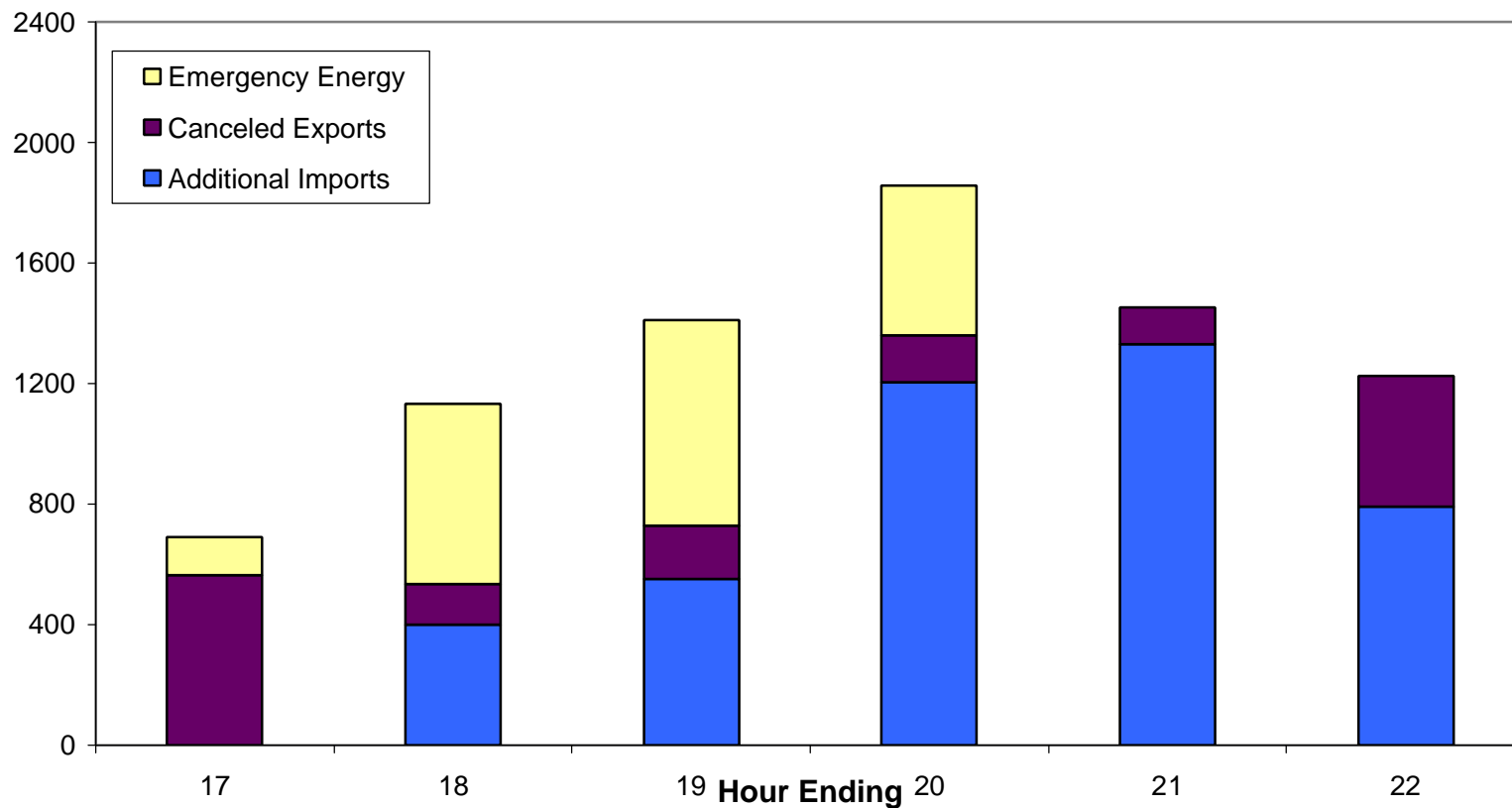
- This will be done if there is a material change in demand/supply situation that threatens system adequacy.
- Can select any import that was offered but not scheduled in PD
  - can only be selected if still available
- Import is added to constrained and unconstrained sequence
  - eligible for IOG
  - lowering effect on MCP, however, material change will put upward pressure on MCP
- Additional imports were purchased in hours 18 to 22 on January 15

# Purchase Emergency Energy

Purchase emergency energy from neighbouring control area:

- This will be done when insufficient resources are available to maintain system adequacy
- Purchased on an hourly basis and usually priced at some multiple of price in source market
- Energy quantity purchased is subtracted from market demand
  - affects both constrained and unconstrained demand
  - tends to result in a lowering of MCP
- Emergency energy was purchased in hours 17 to 20 on January 15

## Control Actions Taken After Final Pre-dispatch for Hours 17-22 on January 15, 2004



	17	18	19	20	21	22
Emergency Energy	125	600	680	500	0	0
Canceled Exports	566	133	177	156	120	434
Additional Imports	0	400	553	1204	1331	790

# Input Errors Leading to Administered Pricing

Related to code entered when the action to purchase additional imports not scheduled in final PD was used:

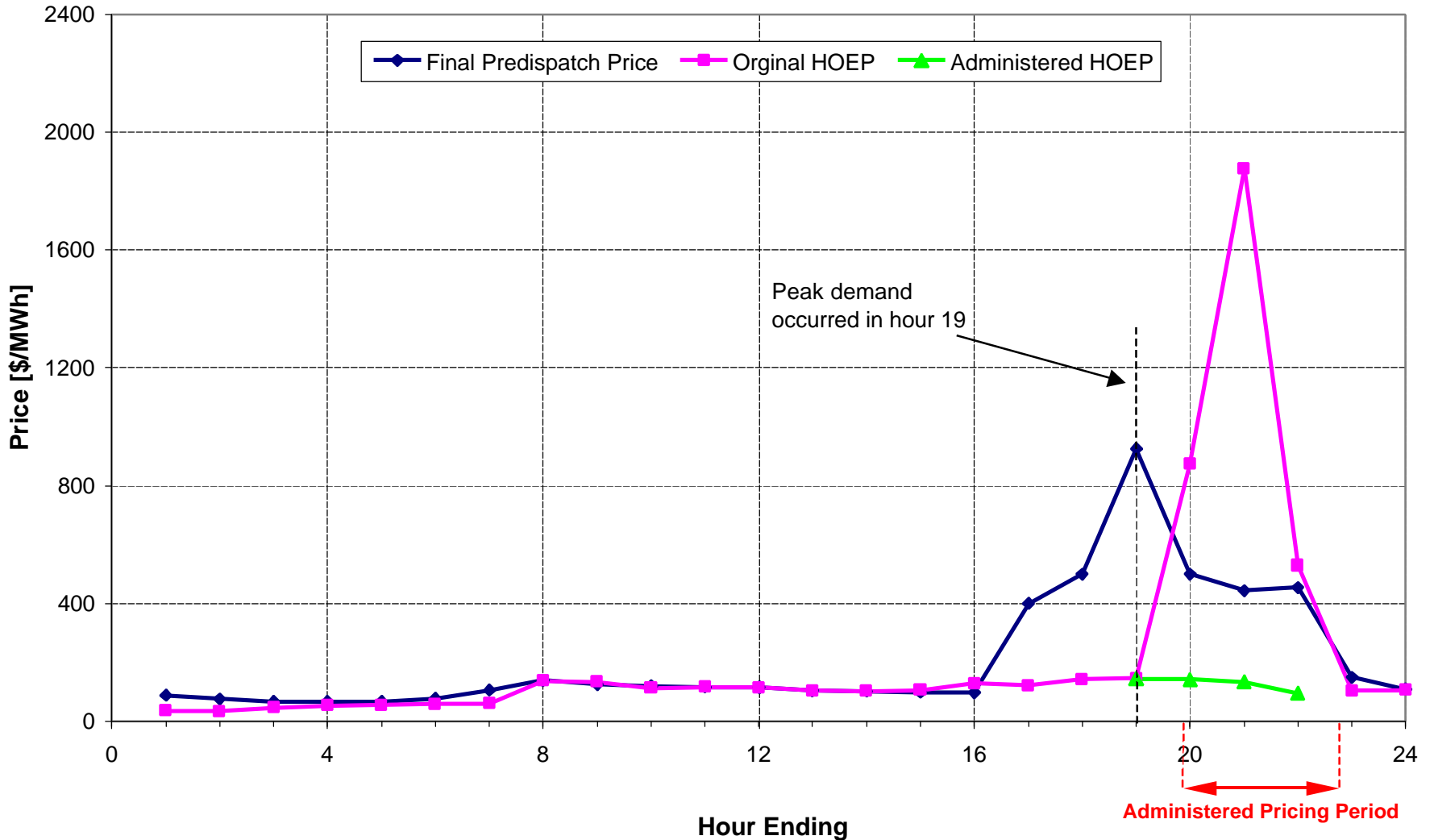
- Incorrect code used for these additional purchases resulted in their exclusion from the unconstrained sequence, which calculates price
- Prices increased dramatically to reflect the perceived shortage
- Market Rules allow IMO to administer prices when it is determined that incorrect inputs affected the dispatch algorithm
  - (Chapter 7, Section 8.4.2 & 8.4.3)

## Input Errors Leading to Administered Pricing (cont.)

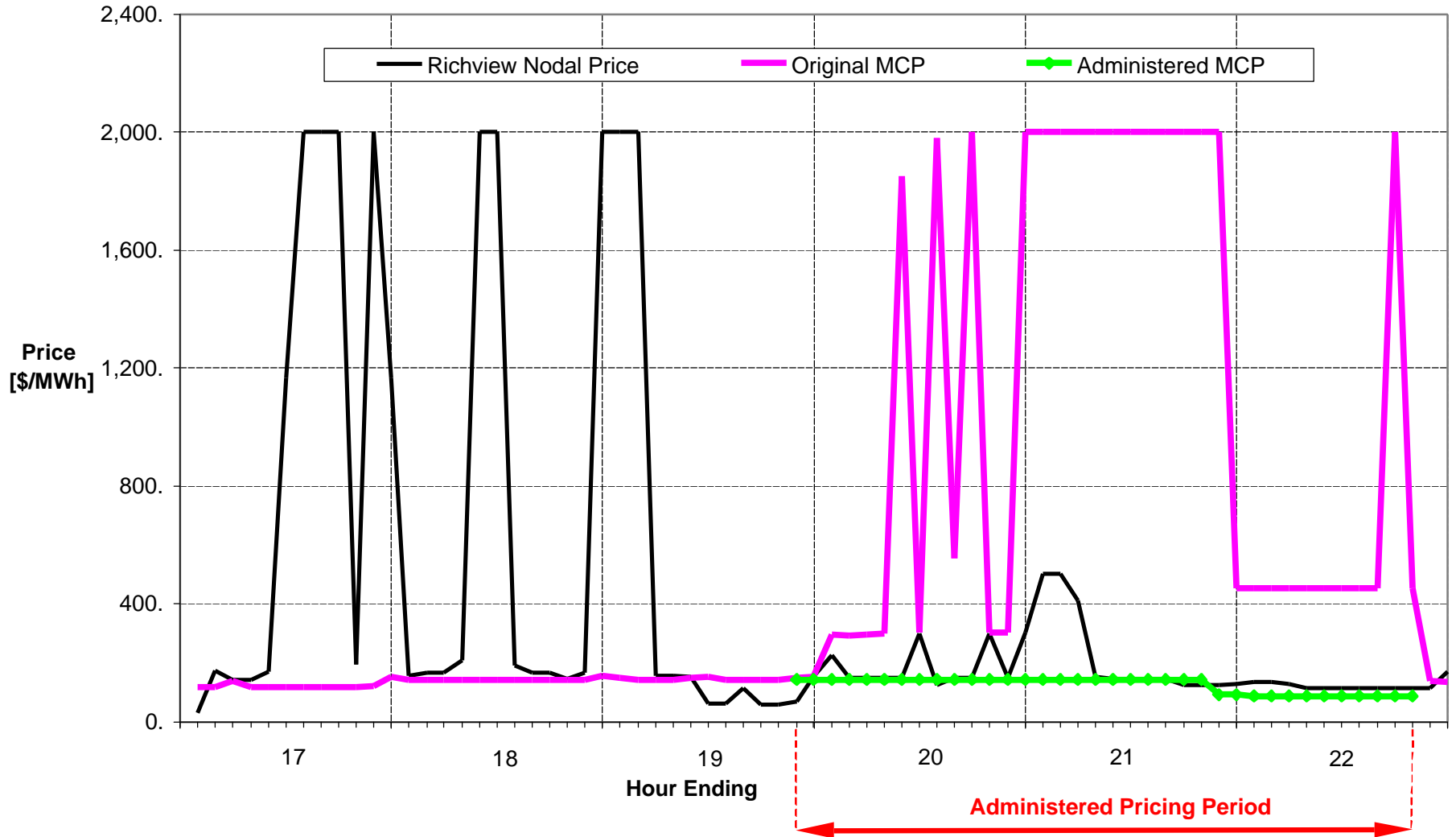
Prices administered from hour 19, interval 11 to hour 22, interval 10.  
(36 intervals or 3 hours)

- The first 24 administered intervals used price from hour 19, interval 10, which was \$142.55
- The last 12 administered intervals used HOEP from comparable hours on January 13, 2004 (\$92.65 and \$87.22)
- Input errors also affected intervals 1 to 10 of hour 19, however the effect on price was determined not to be material
  - therefore not administered

## Comparison of Pre-dispatch, HOEP and Administered HOEP for January 15, 2004



## Comparison of Original MCP, Administered MCP and Richview Nodal Prices for Hours 17-22 on January 15, 2004



## Other Considerations

The incorrect prices spiked *after* the peak demand hour:

- these prices were not indicative of the true situation at the time
- pre-dispatch price shows decreasing price trend after hour 19
- Richview nodal price confirms lower prices after peak

The out-of-market control action of purchasing additional available imports yields solution close to what market would otherwise have achieved:

- imports offered into the market are used
- associated schedules would have otherwise been included in both constrained and unconstrained sequences