The IESO Administered Markets November 2007 – April 2008

Market Surveillance Panel's

12th Monitoring Report

Presentation to the Stakeholder Advisory Committee

August 20, 2008

ONTARIO ENERGY BOARD
COMMISSION DE L'ÉNERGIE DE L'ONTARIO

Agenda

- Summary of Winter 2008 – Key Findings
- Recommendations
- Linked Wheels
- Future Activities
- Information Slides
  - Price Indicators
  - Demand Indicators
  - Supply Indicators
  - Hourly Market Uplifts

Winter of 2008– Key Findings

- Market worked reasonably well according to its design
- Hourly prices generally reflected underlying supply and demand forces
- No evidence of abuse of market power or gaming

Highlights

- Average HOEP higher than a year ago by \$0.25/MWh (0.5%)
- Effective load-weighted HOEP increased by \$1.95/MWh (3.7%) in the winter of 2008 compared to 2007
- Ontario HOEP the lowest 6 month price compared to surrounding markets: NY, PJM, MISO and New England, \$4.42/MWh lower than the contiguous New York zone
- Underlying fuel prices have increased, both coal (35% to 83%) and natural gas (50%) since this time last year
- 150-times increase in linked wheels from the previous year

Recommendations - Overview

Panel has made 14 recommendations in the report:

- Five relate to price fidelity
- Three relate to dispatch
- Four relate to transparency (for the purpose of enhancing market participants' ability to make informed consumption, production and investment decisions)
- Two are issues directed at the IESO with the purpose of reducing uplifts

Recommendations to IESO to Enhance Price Fidelity

Recommendation 3-7:

The MSP recommends that the IESO explore a solution to the emerging problem posed by recallable exports that are designated for Control Action Operating Reserve (CAOR), which induce counter-intuitive prices when rejected by the New York Independent System Operator and the Midwest Independent Transmission System Operator.

Recommendation 3-6 (2)

The MSP restates the recommendation in its December 2007 report that curtailed exports (or imports) for internal resource adequacy ('ADQh') should not be removed from the unconstrained schedule in order to ensure that actual market demand (or supply) is not distorted.

Recommendations to IESO to Enhance Price Fidelity (cont'd)

Recommendation 3-8 (1)

To avoid distorting market prices, the MSP recommends that the IESO maintain the Operating Reserve requirement when Operating Reserve is activated in response to Area Control Error (ACE);

Recommendation 3-6 (1)

For interjurisdictional transactions that fail because of market participants' ('OTH') or external system operators' actions ('TLRe' and 'MrNh'), the MSP recommends the IESO revise its procedures to avoid distorting the unconstrained schedule. This would prevent counter-intuitive pricing results (and would allow traders in those instances to receive the Congestion Management Settlement Credit payment consistent with other situations where such payments are currently available).

Recommendations to IESO to Enhance Price Fidelity (cont'd)

Recommendation 2-2:

The MSP reiterates the recommendations in its December 2006 and June 2007 reports, respectively, regarding Shared Activation of Reserve (SAR), and prompt replenishment of the Operating Reserve requirement levels. In addition, the MSP recommends the IESO review the application of Regional Reserve Sharing (RRS) because the current treatment of RRS in the unconstrained sequence also induces counter-intuitive prices.

Recommendations to IESO on Dispatch

Recommendation 2-1:

The MSP reiterates the recommendation in its June 2007 report that the IESO should review the 700 MW Net Interchange Scheduling Limit (NISL). This review should take into account the effects on potential efficient exports from Ontario in addition to the import issues raised in the MSP's prior report.

Recommendation 3-8 (2)

If the IESO believes that it must maintain a higher standard than the NERC Control Performance Standard, the MSP recommends that the IESO conduct a cost-benefit analysis comparing alternatives for responding to Area Control Error (ACE) deviations, that is: providing more Automatic Generation Control (AGC); using One-Time Dispatch (OTD); using Operating Reserve Activation (ORA); and establishing a capability to re-run the dispatch algorithm on demand.

Recommendations to IESO on Dispatch (cont'd)

Recommendation 3-8 (3)

In the interim, until a cost-benefit study of the alternatives for handling ACE deviations is completed, in accordance with Recommendation 3-8(2), and assuming the IESO adopts Recommendation 3-8(1) regarding the maintenance of the Operating Reserve requirement level when Operating Reserve is activated for ACE, the MSP recommends that the IESO should use ORA instead of One-Time Dispatch to deal with negative ACE whenever possible.

Recommendations to IESO to improve transparency

Recommendation 3-5

The IESO is planning to publish the supply cushion on a hourly basis. Its current calculation, however, does not represent actual supply capability. The MSP recommends that the IESO refine its formula to take into account forced outages, deratings, and import capabilities at the interties.

Recommendation 3-3:

The MSP recommends that the IESO publish generating unit output using a one-hour lag rather than the current two-hour lag.

Recommendations to IESO to improve transparency

Recommendation 3-4

The MSP recommends that when the System Status Reports indicate that a generating unit of greater than 250 MW has been forced from service, the IESO should also disclose the fuel type of the unit in order to increase the information available to all market participants regarding future market conditions.

Recommendation 3-2:

The MSP recommends that the IESO publish masked bid and offer data on a four-month time lag.

Recommendations to IESO on Uplifts

Recommendation 3-9:

The MSP recommends that the IESO review the benefits of constrained off payments with a view to their discontinuation.

Recommendation 3-1:

As market supply conditions have improved, an increasing fraction of Intertie Offer Guarantee (IOG) payments is being paid in hours when there appear to be negligible reliability concerns. The MSP recommends the IESO review the real-time IOG program and determine if it is providing commensurate improvements in reliability.

Linked Wheels

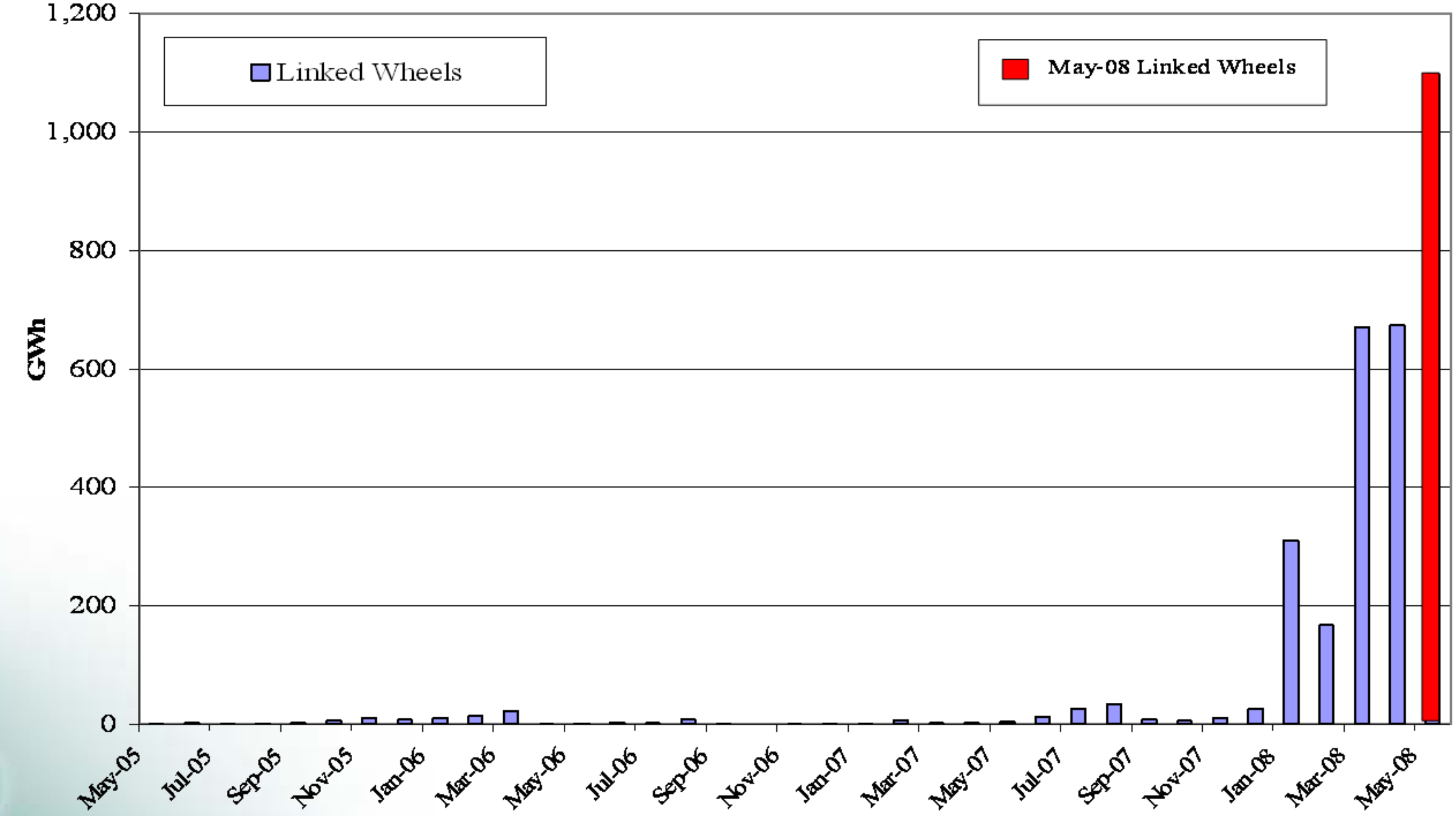
Wheeled Energy through Ontario has increased by over 150 times from the previous year.

The Market Assessment Unit identified this development and initiated discussions with its U.S. counterparts regarding the issue in January 2008.

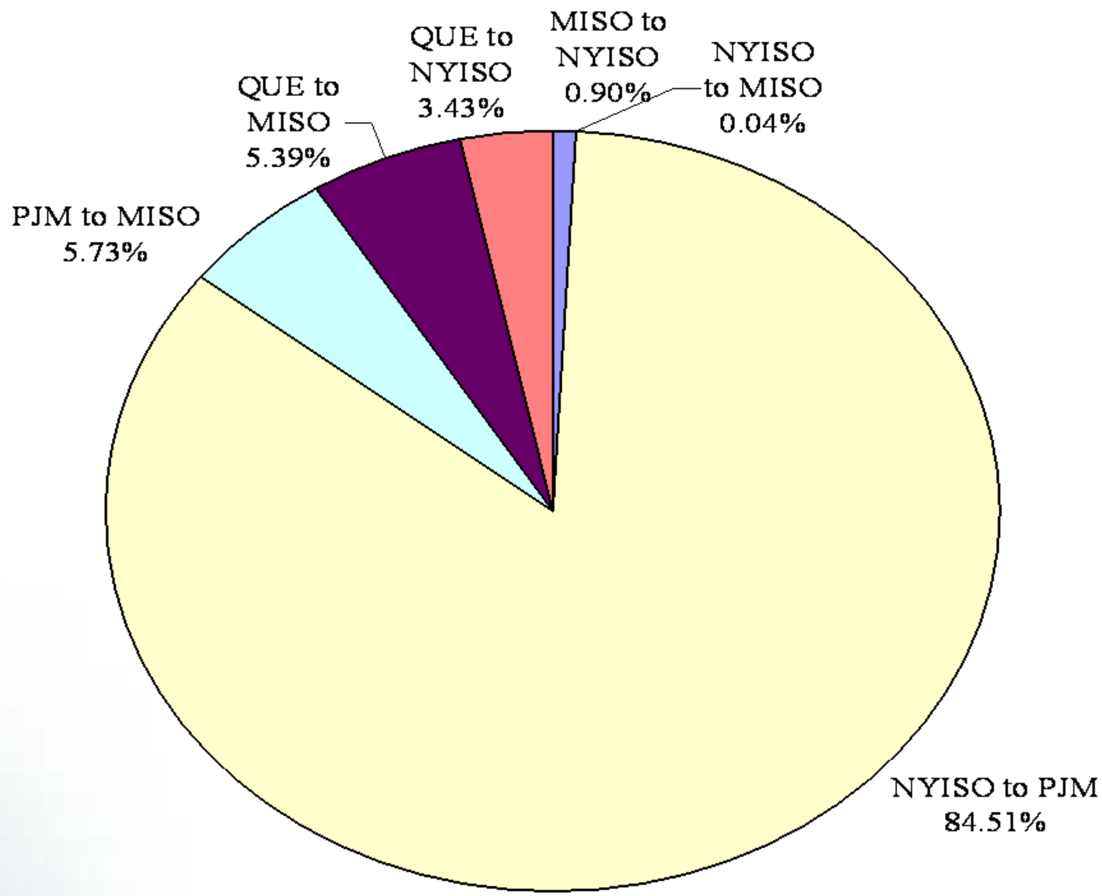
On July 21, 2008, the New York ISO filed an application with FERC for a prohibition on certain wheels that appear to be creating inefficiencies in its market.

The Panel has asked the MAU to both monitor the outcome of these changes on the Ontario market as well as continue it's dialogue with FERC and U.S. market monitors on the issue.

Monthly Linked Wheels in GWh
May 2005 through May 2008



Linked Wheels Sink and Source through Ontario Nov 2007 to April 2008



Future Activities

- Finalization of the Market Power Framework
  - The MSP continues to believe such a framework should be published to provide guidance for market participants
  - Comments received in 2007 have led the Panel to split the draft framework into a conceptual component that will be pursued this year and more detailed quantitative elements that will be deferred for further assessment

Slides for Information Purposes

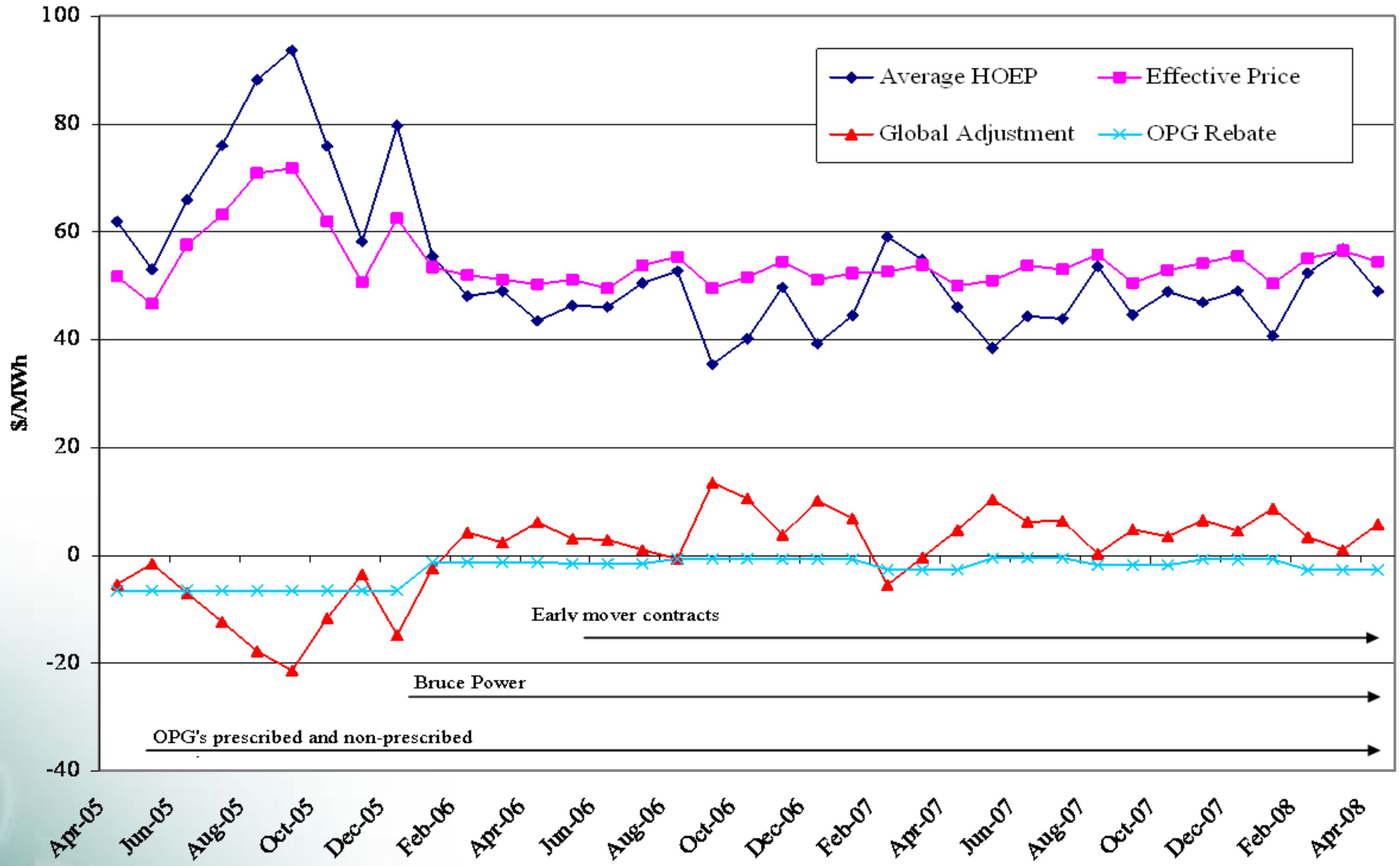
Price Indicators

- Average HOEP higher than a year ago by \$0.25/MWh (0.5%)
- Effective load-weighted HOEP increased by \$1.95/MWh (3.7%) in the winter of 2008 compared to 2007
- Energy Prices more dispersed with
  - Slightly more hours with prices above \$100/MWh and
  - Slightly more hours with prices below \$20/MWh.
- Ontario HOEP the lowest 6 month price compared to surrounding markets: NY, PJM, MISO and New England

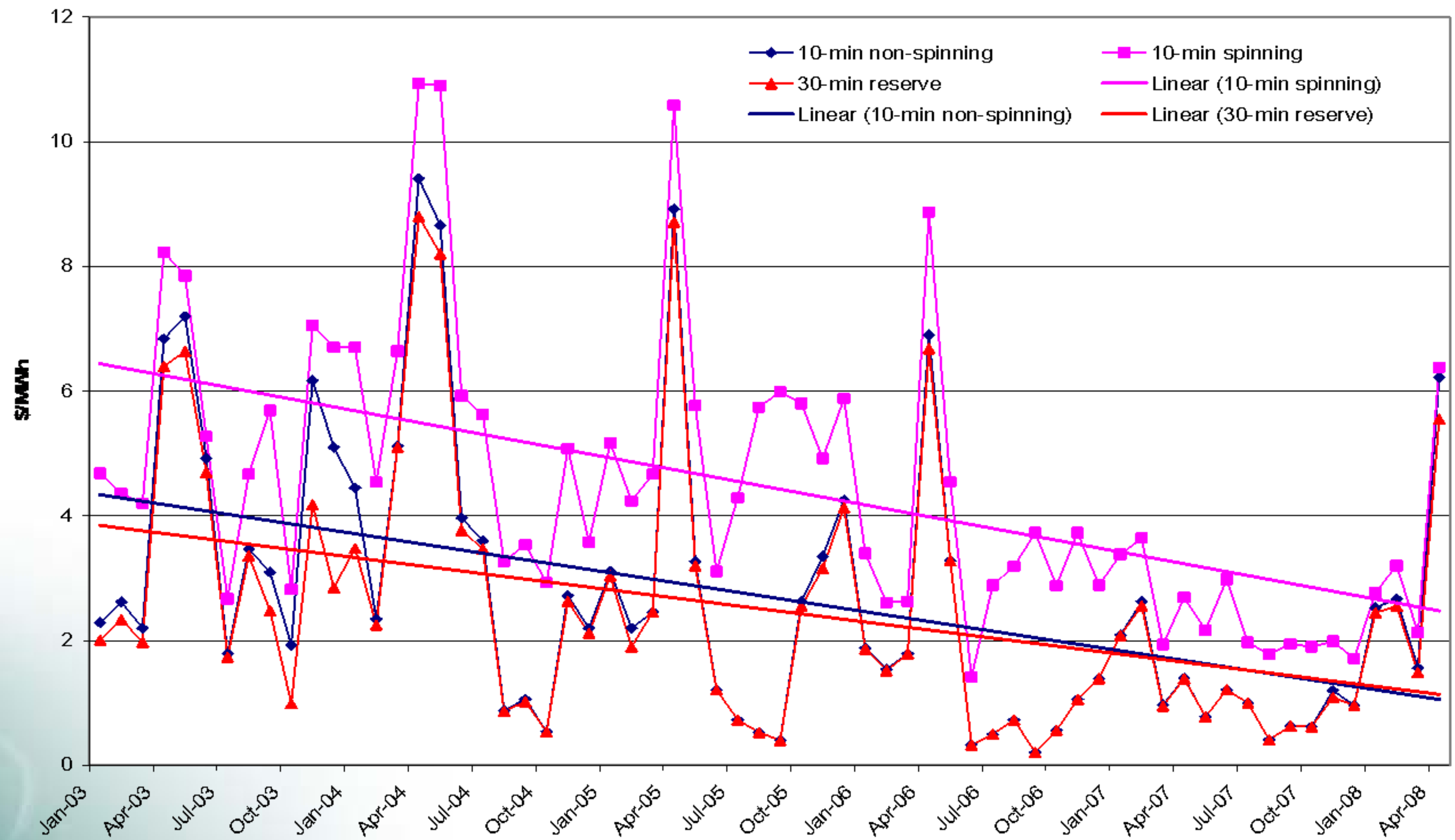
Non-Market Uplifts

- Effective price to consumers after the Global Adjustments and OPG Rebate, is higher by $1.95/MWh (3.7%).
- Upward pressure on the effective price is due to increased OPA uplifts.
- The Panel in the December 2007 report recommended more transparency on the OPA programs generating uplifts but such disclosures have not yet occurred.

Monthly HOEP versus Effective HOEP



OR Prices

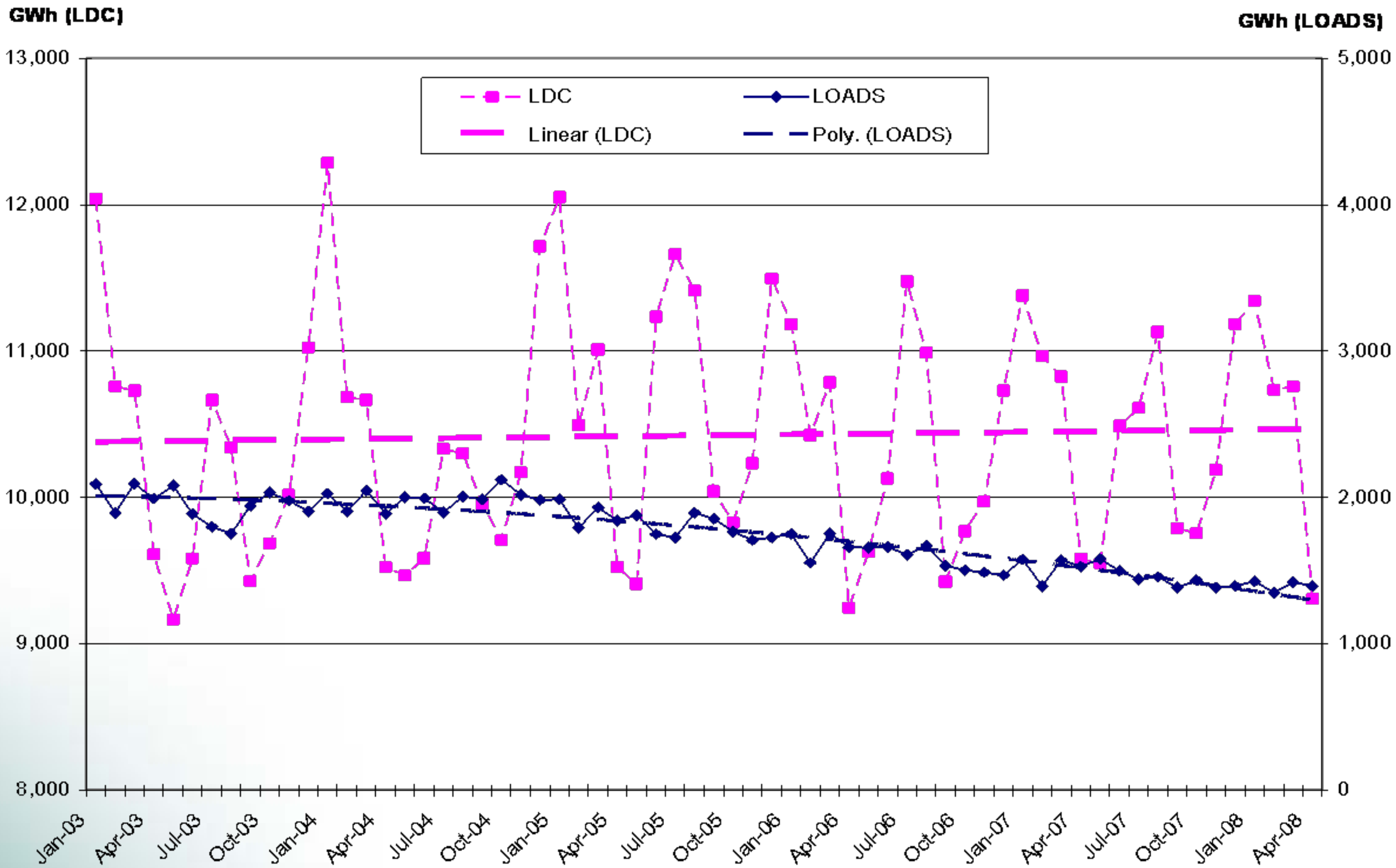


12
10
8
6
4
2
0
$/MWh
10-min non-spinning
10-min spinning
30-min reserve
Linear (10-min spinning)
Linear (10-min non-spinning)
Linear (30-min reserve)
Jan-03
Apr-03
Jul-03
Oct-03
Jan-04
Apr-04
Jul-04
Oct-04
Jan-05
Apr-05
Jul-05
Oct-05
Jan-06
Apr-06
Jul-06
Oct-06
Jan-07
Apr-07
Jul-07
Oct-07
Jan-08
Apr-08

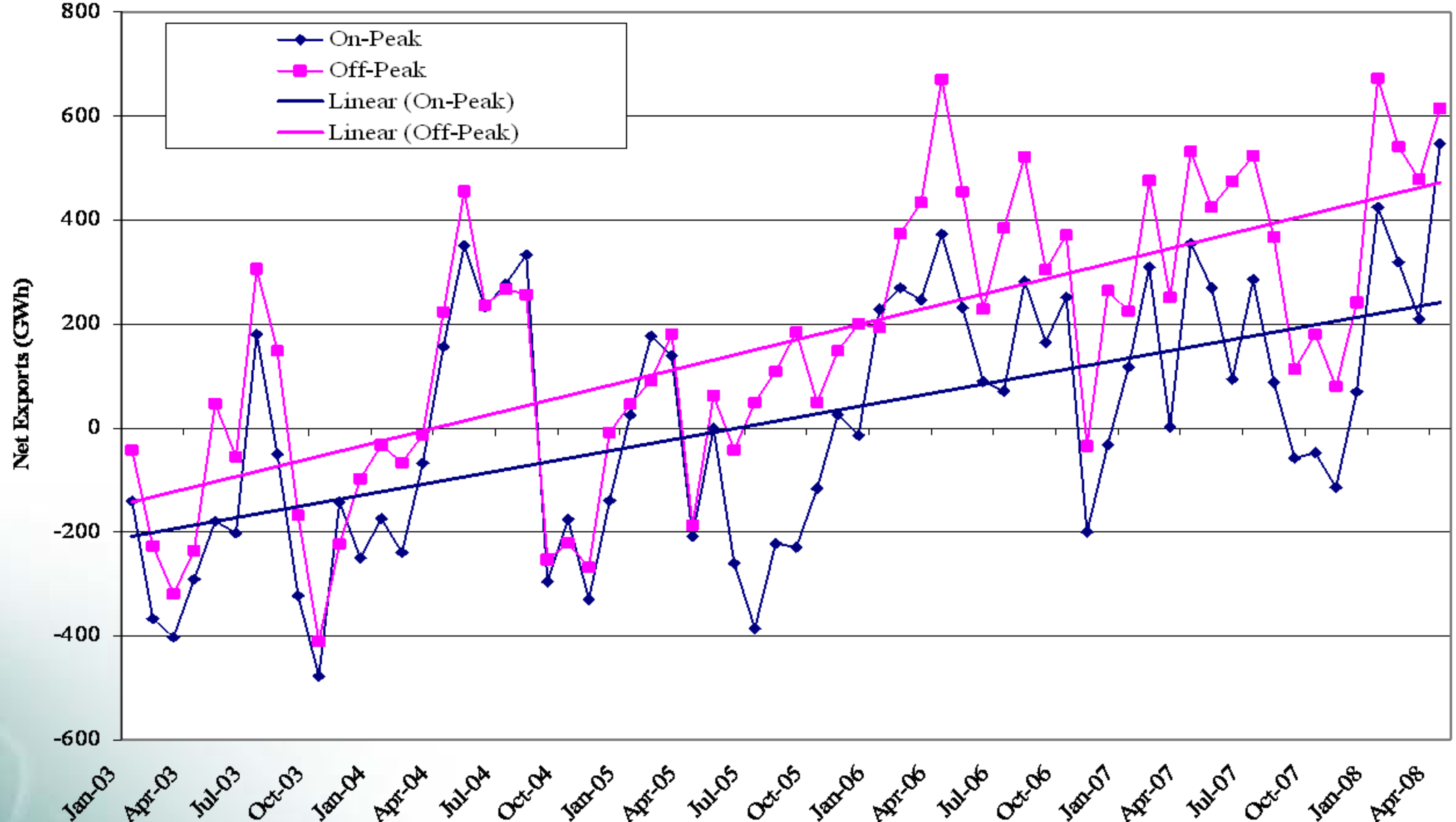
Demand Indicators

- Ontario demand down by 0.2 TWh (0.2%)
  - Wholesale load continues to drop (principally due to wood processing facilities in the northwest)
  - Wholesale load has declined on average 35% (700 GWh) since the 2004 summer months
- Exports increased by 3.3 TWh (62%) over the period
- Ontario was a net exporter in all months
- Linked Wheels through Ontario grew substantially, over 150 times from the previous year
- 84% of the Linked Wheels were from New York to PJM traveling through Ontario

Wholesale Load Declining



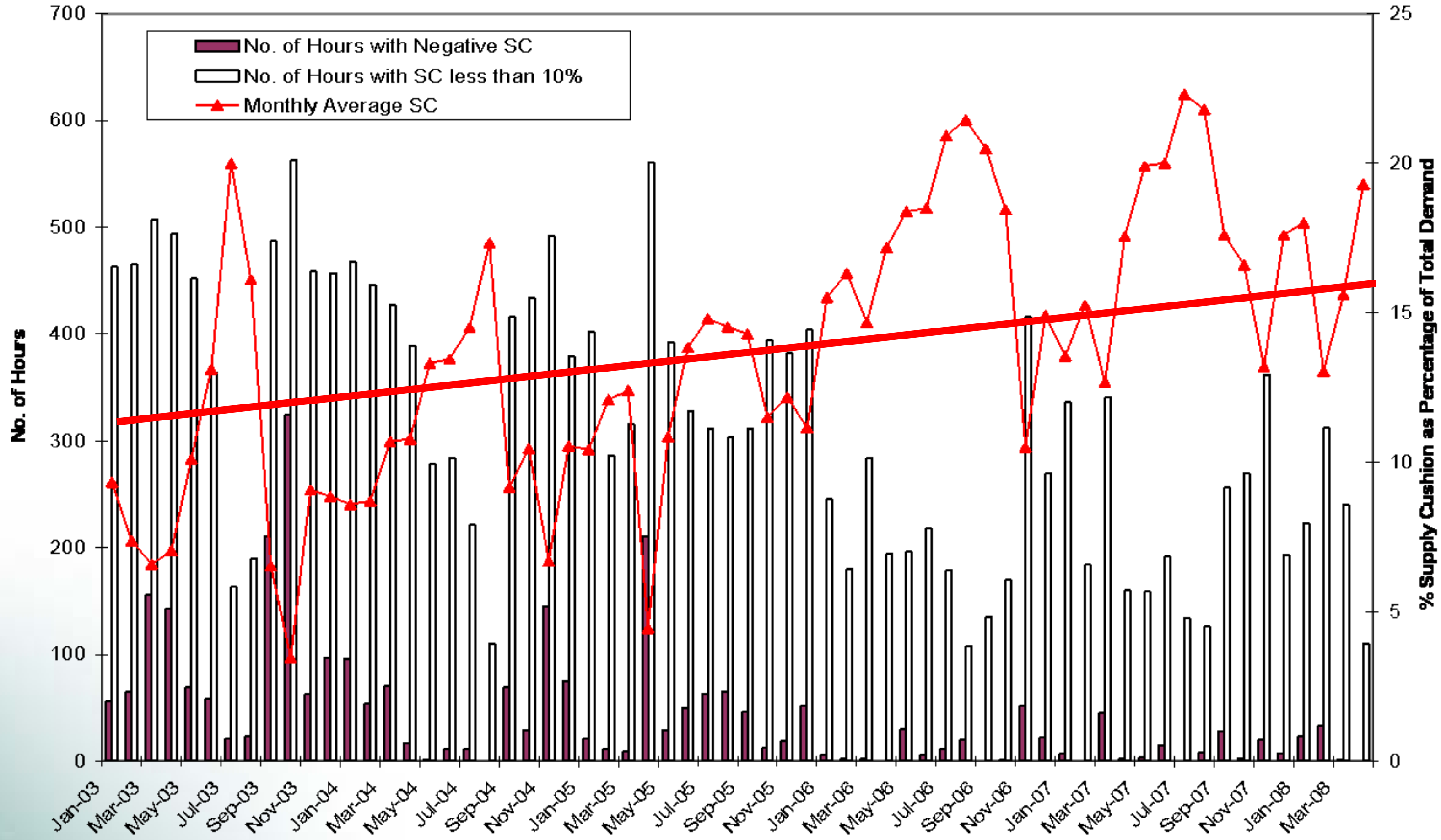
Monthly Net Exports Increasing



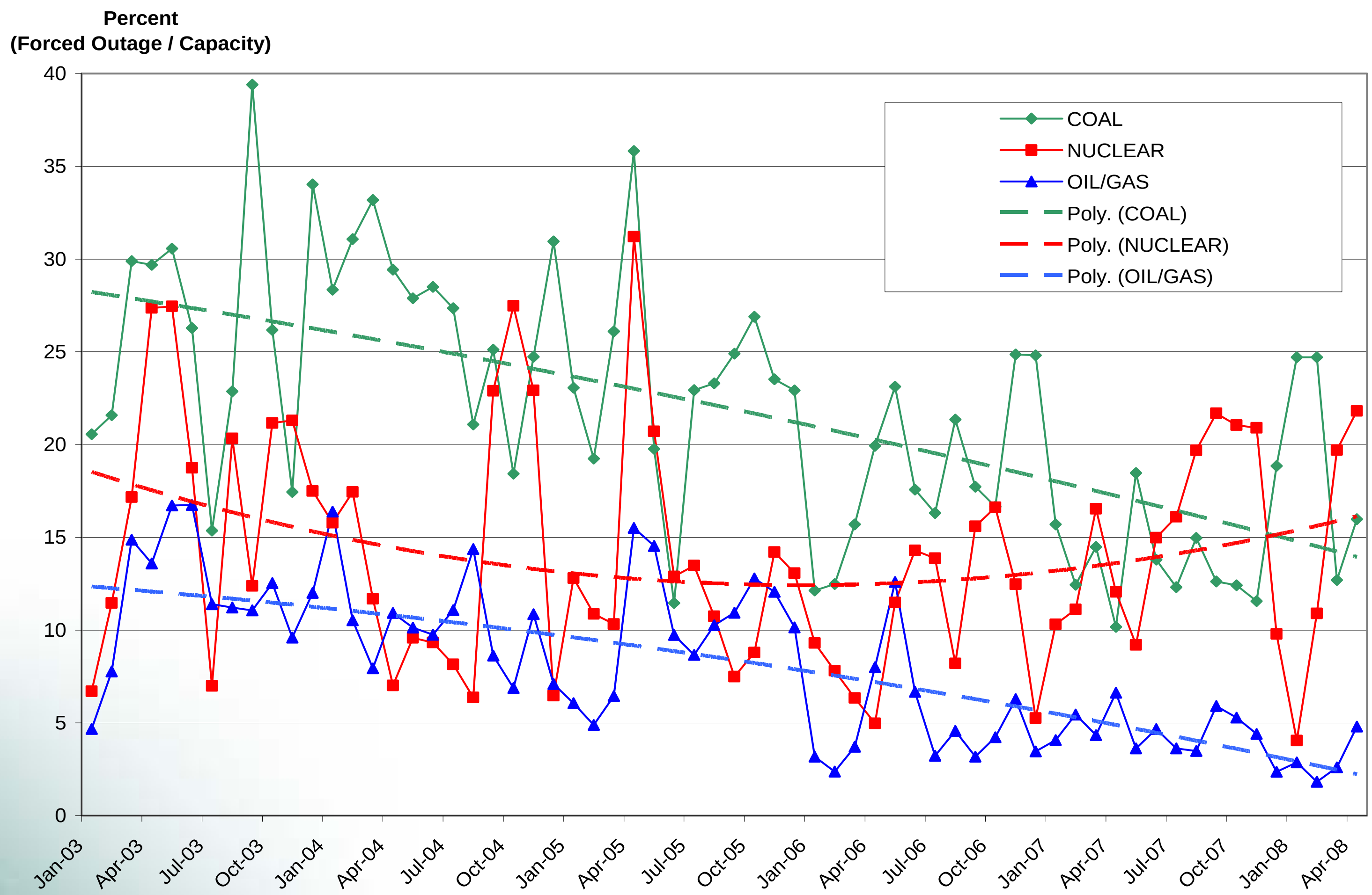
Supply Indicators

- Supply cushion has been progressively increasing since 2003 with both new generation and declining consumption
- Coal forced outage rates have declined continuously since 2003
- Nuclear forced outage rates have increased recently due to forced outages at Pickering generators
- Baseload supply accounted for 73% of Ontario Demand over the winter period

Improved Supply Cushion Conditions



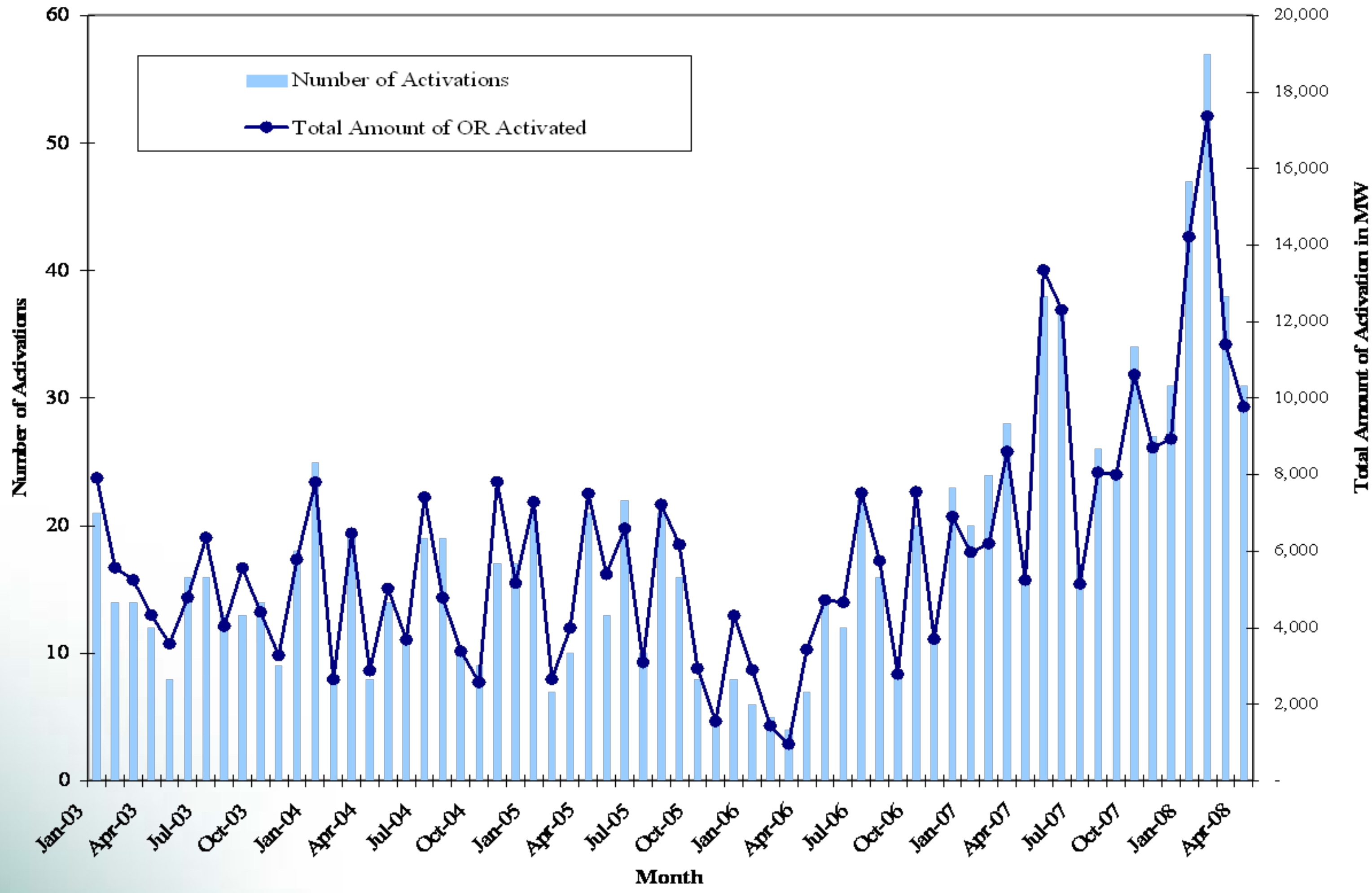
Forced Outages Relative to Total Capacity by Fuel Type



Supply Indicators (cont'd) – Operating Reserve

- Operating reserve activations have been progressively increasing since the beginning of 2007.
- MSP has made recommendations to the IESO on the issue.

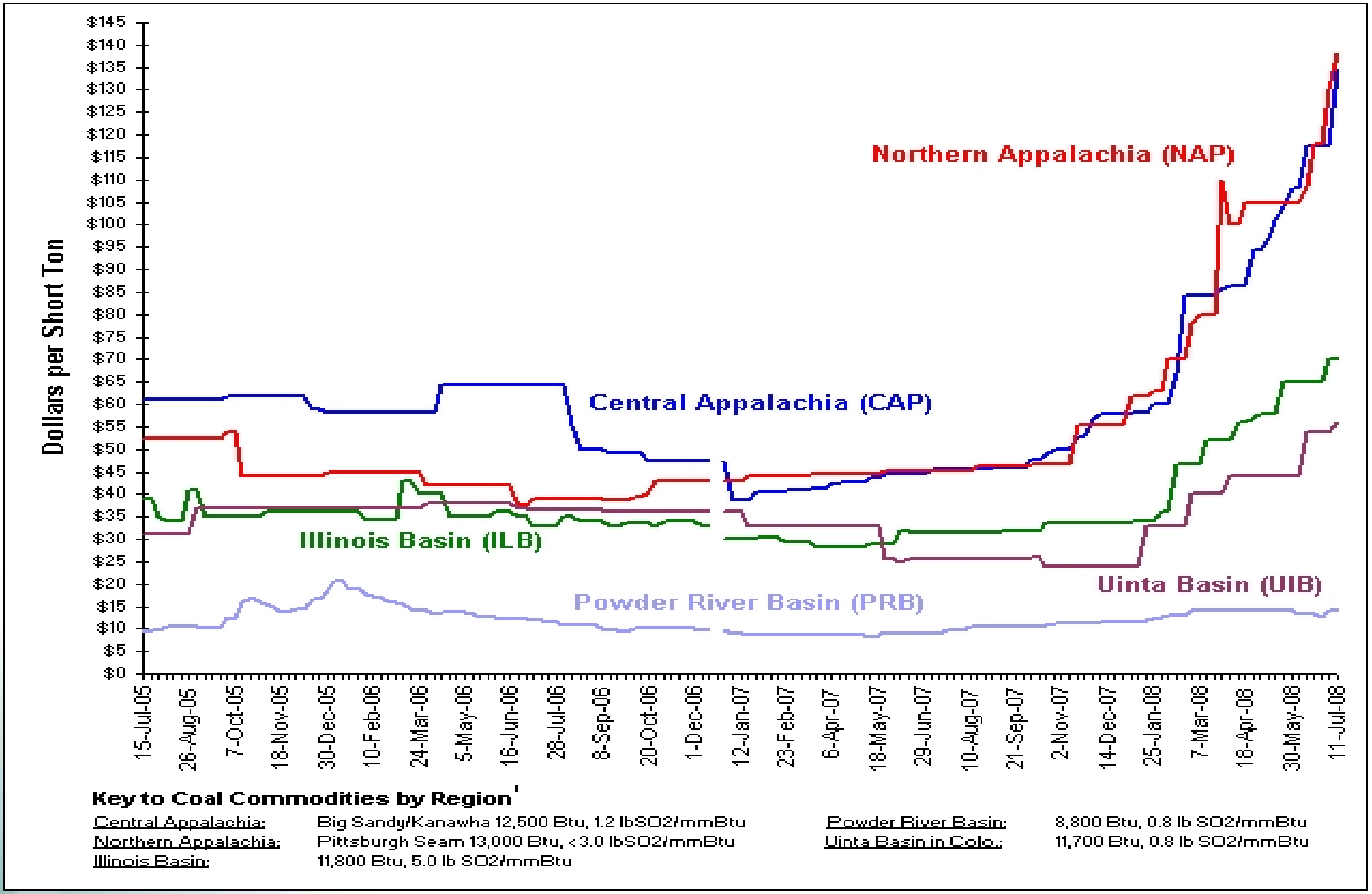
Operating Reserve Activations



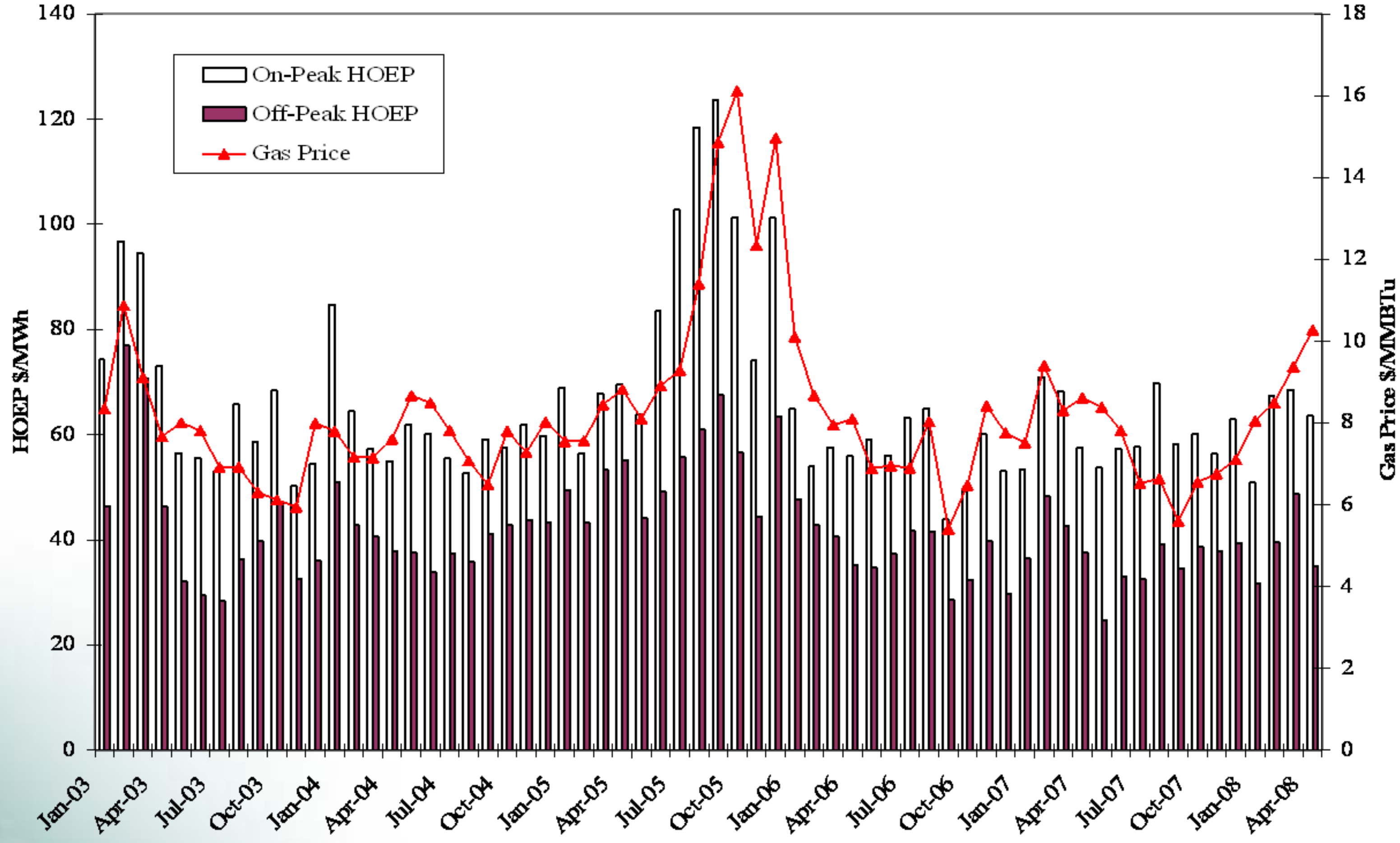
Supply Indicators (cont'd) – Underlying Fuel Prices

- Both coal and natural gas prices have increased from winter 2007
- Ontario coal-fired generators use both Eastern Coal (+83%) and Powder River Basin Coal (+35%)
- Natural gas prices at Dawn have risen 50%

Weekly Coal Prices Since July 2005



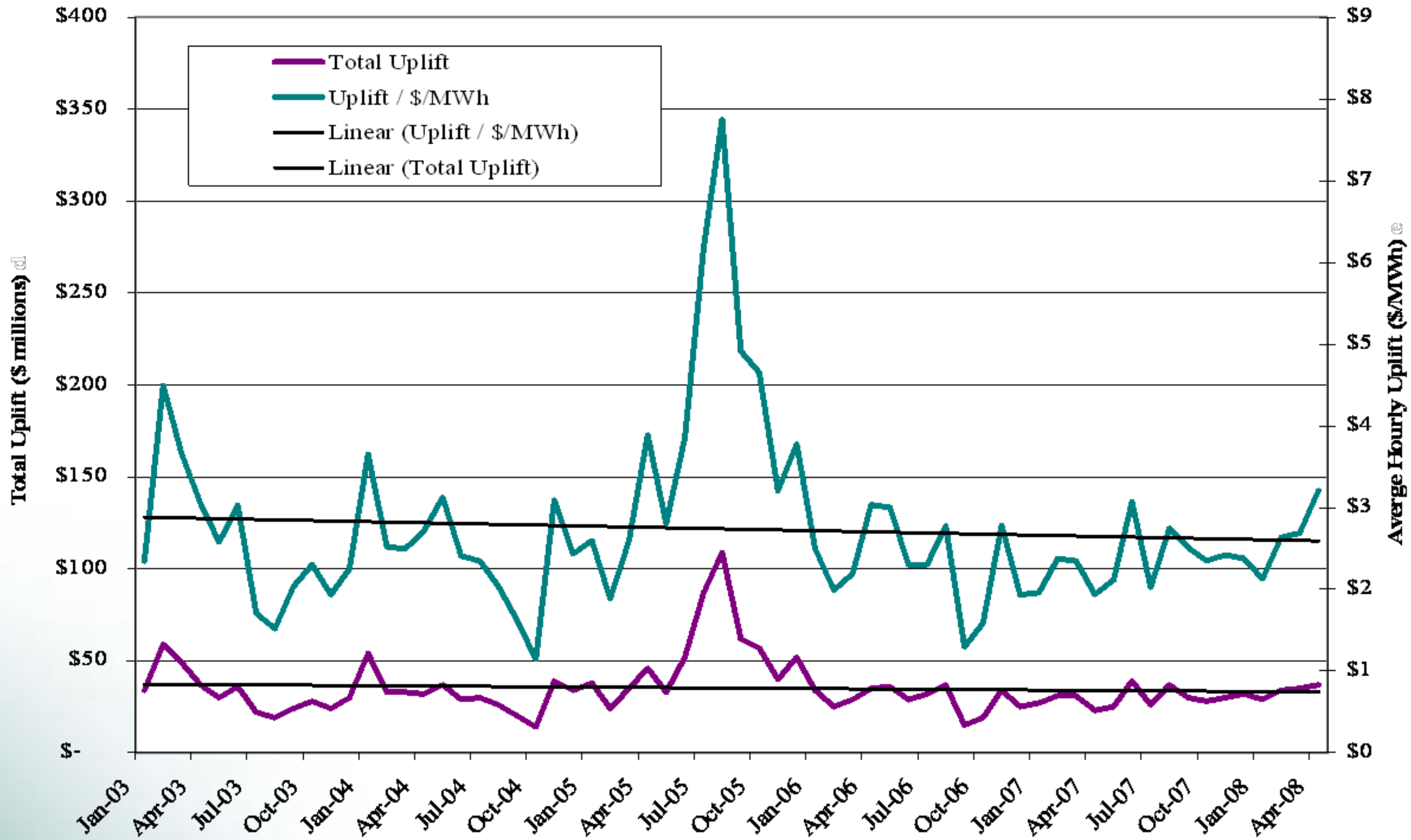
Monthly Natural Gas Prices Since June 2003



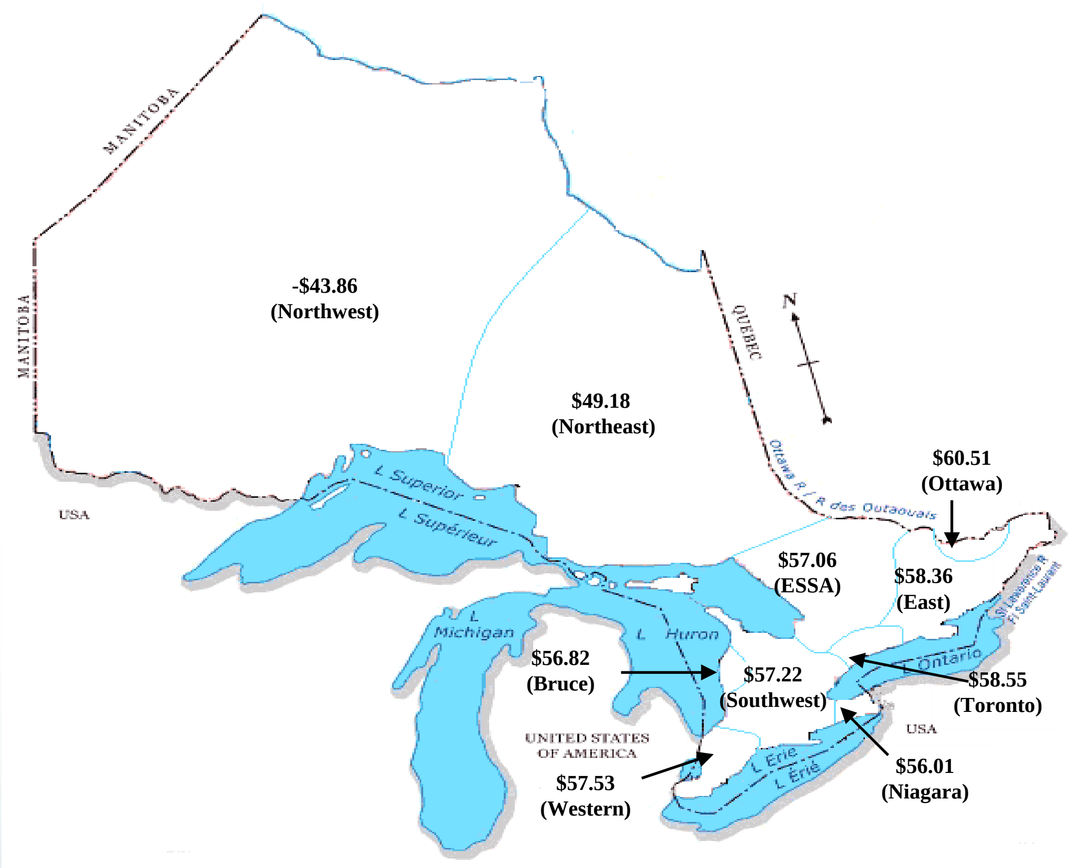
Hourly Market Uplifts

- Hourly uplift increased from $170 million in 2006/2007 to $201 million in 2007/2008 (18%).
  - Mostly the result of a $20 million increase in (CMSC) payments (43%)
  - Constrained off import payments in the North-West account for most of the increase in CMSC
  - Also a $5 million increase in losses.
  - 4M$ more in Operating reserve payments
- But over the longer run market uplifts have remained relatively stable (CMSC, IOG, OR, Losses)
- Shadow prices in the Northwest averaged -$43/MWh due to abundant hydroelectric energy and low Northwest demand.
  - Generators receive payment equivalent to HOEP when constrained off

Hourly Market Uplifts



Shadow Prices



High Price Hours

- 2 hours with HOEP > $200/MWh
- Factors previously identified by Panel continue to explain price spikes
  - Real-time demand higher than pre-dispatch forecast
  - Generating units available in pre-dispatch fail to deliver in real-time
  - Imports fail real-time delivery

Low Price Hours

- 261 low price hours where HOEP < $20/MWh
  - A reduction of 70 hours from winter 2007
- 5 hours with negative prices
- Factors previously identified by Panel continue to explain low prices
  - Low market demand
  - Abundant base-load supply
  - Demand forecast errors
  - Failed exports

THE END