ieso
Power to Ontario.
On Demand.

Market Demand Forecast Error: Intertie Transaction Failures

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Intertie Trading Sub-Committee - February 11, 2005

Market Demand Issues

MSP continues to discuss within it's reports the issues of:

Failed Transactions

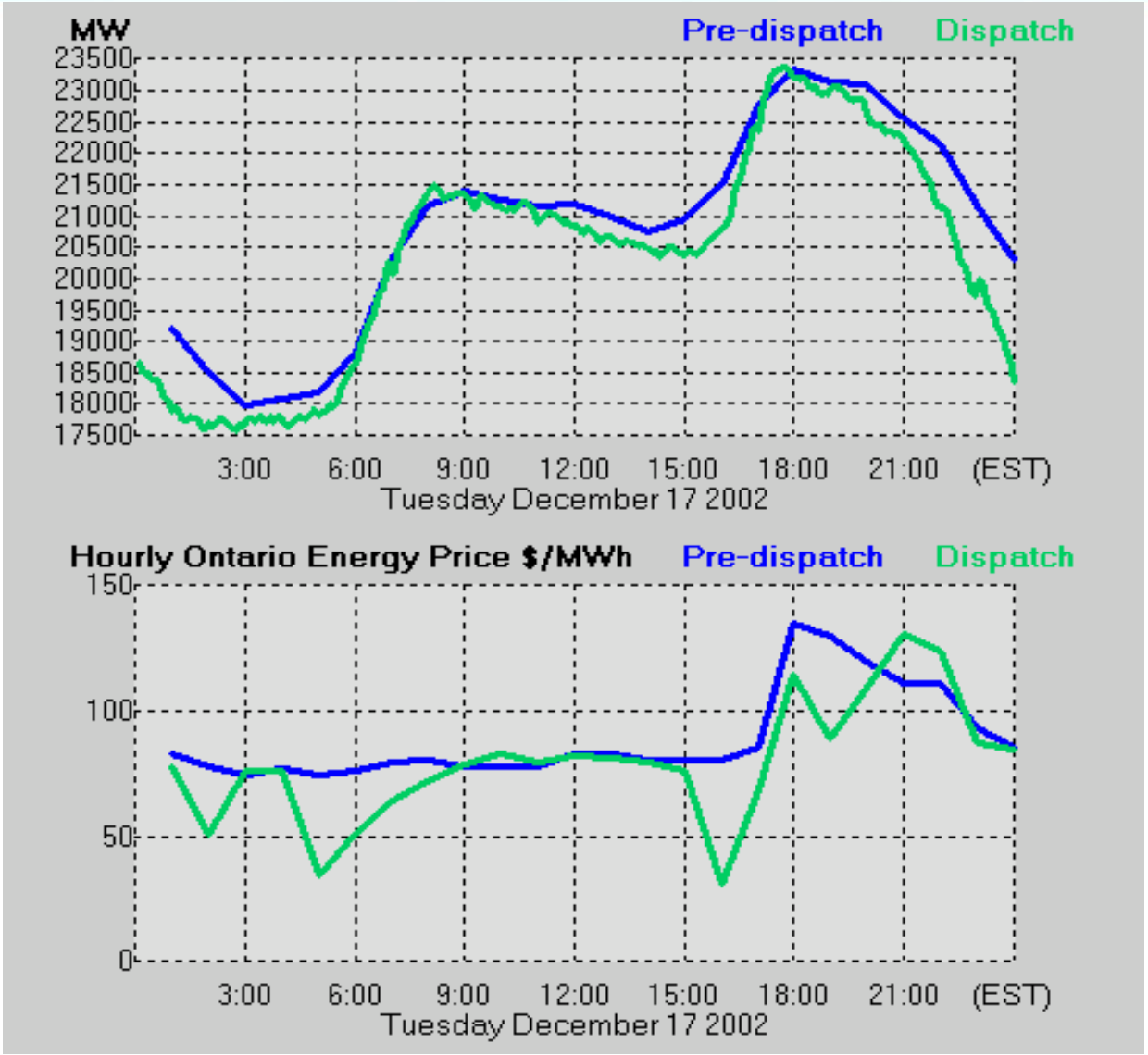
Demand Forecast Error

The outcome of one or more of these issues tends to lead to "non-intuitive " prices. Those non-intuitive prices may mean lower prices in real-time and resultant IOG payments.

There is also an impact on:

- Efficiency
- Reliability and
- Performance of the Market

Pre-Dispatch to Real Time Demand & Price Differences



Market Demand

What is portrayed on the IESO web is Market Demand. Market Demand is composed of 3 components

- Ontario Non-Dispatchable Load
- Ontario Dispatchable load
- Exports from the Ontario market

Differences in any of these three components between Pre-Dispatch and real-time leads to not only a difference in Demand but a **resultant price difference**.

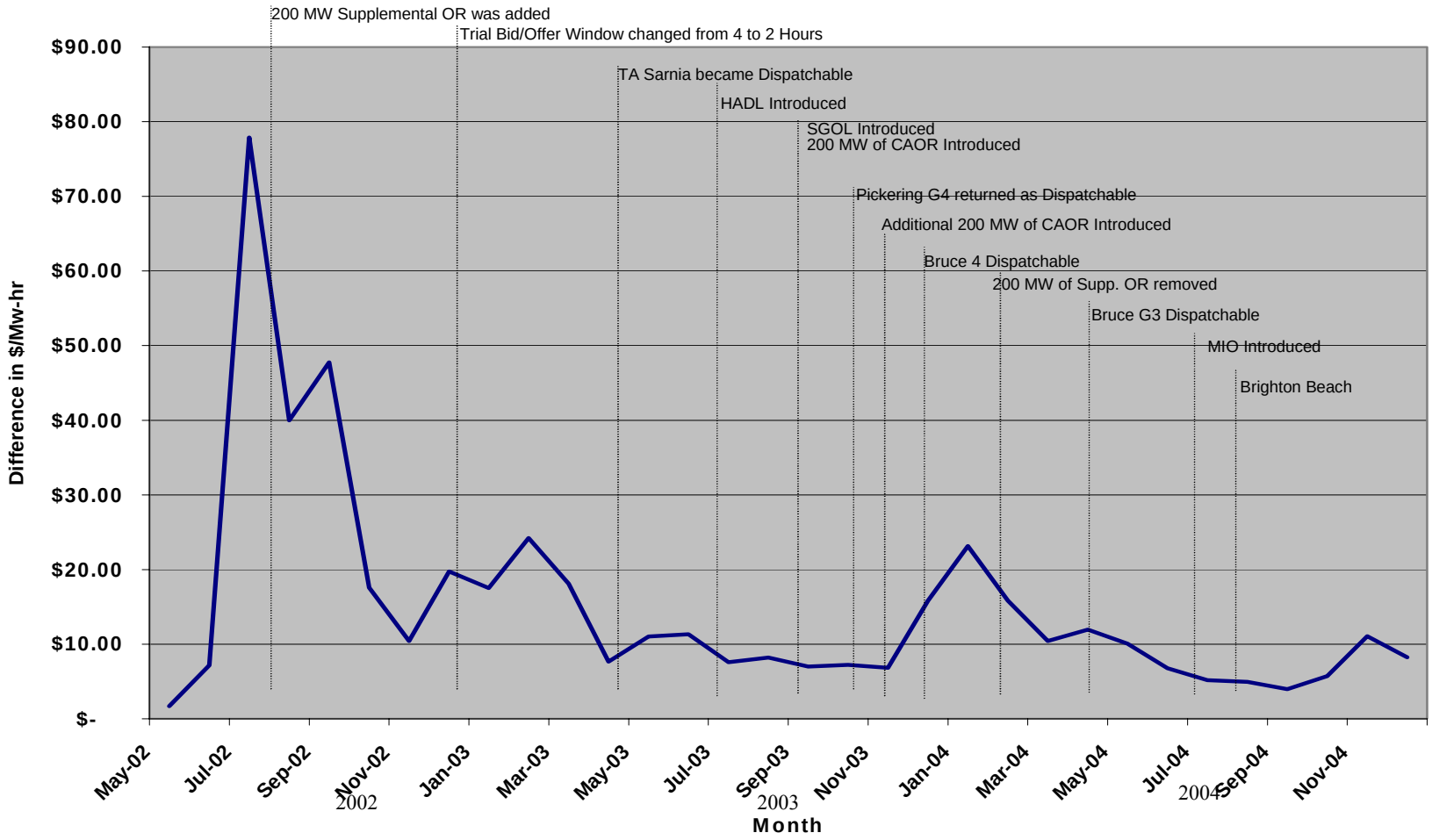
Price

On the price side are we seeing a lowering of the difference between PD and R/T

The simple answer is yes, but we still have a ways to go.

And we believe one of those ways is to reduce our market Demand forecast error between PD and R/T

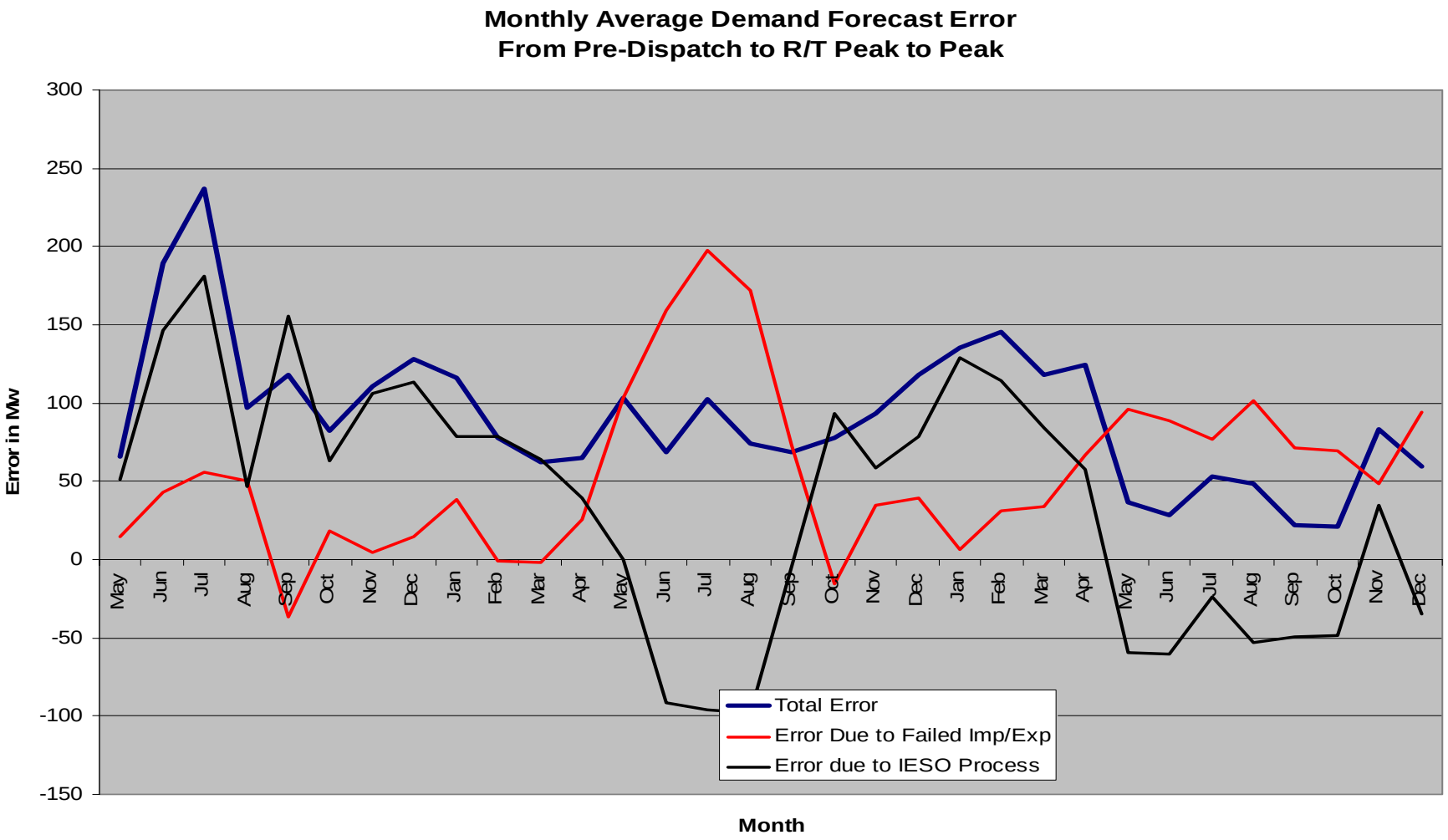
Difference Between Pre-Dispatch & Real-time Prices



Where Does the Market Demand Forecast Error Come From?

- We need to work on several fronts to reduce this error,
  - the Forecast of Ontario Non-dispatchable load
  - a better understanding of Dispatchable Load
    - Note: when we review the differences between PD and R/T on a monthly average basis it is 1 or 2 MW. So while monitored it is presently discounted as a large impact in market demand between pre-dispatch and R/T, but in any one hour it can have an impact.
  - a reduction in Transaction failures, in this particular case export failures

Market Demand Forecast Error Components



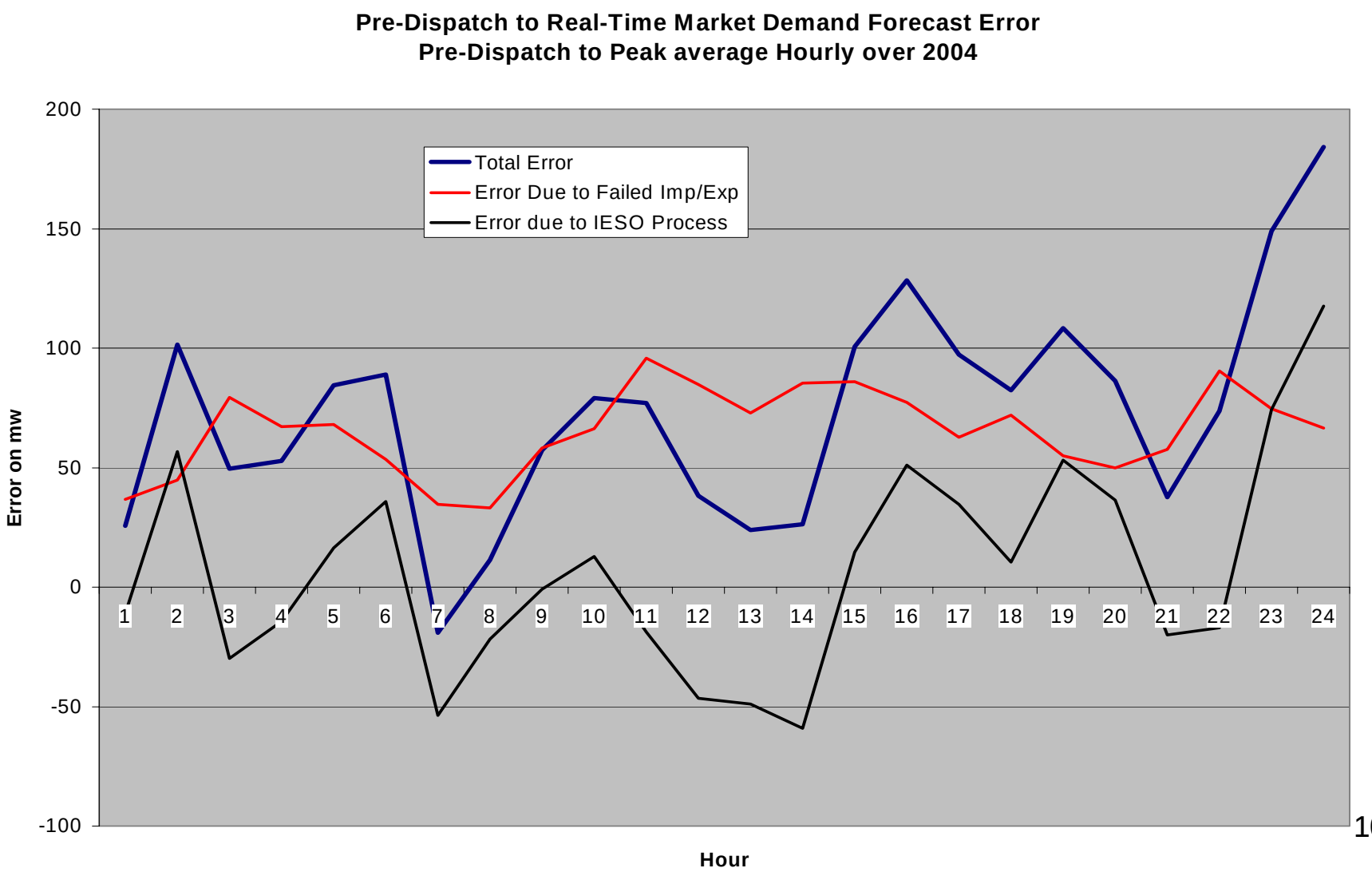
Monthly Market Demand Error cont'd

When we examine the average demand forecast error caused by export failures and IESO processes we see that in the recent past that

- export failures have risen slightly
- but IESO on average is now under Forecasting demand.

The combination of which has begun to lead to a lowering of the Forecast error!

Hourly Market Demand Error in 2004



Hourly Market Demand Error Cont'd

When we look on an hourly basis across 2004 we see that in certain hours there appears to be in some hours an offsetting effect (hour 7) and in other hours (hour 19) a compounding effect.

Are there things that can be done to reduce demand forecast error?

Simple answer is yes.

But there always is a consequence and how much further can we go.

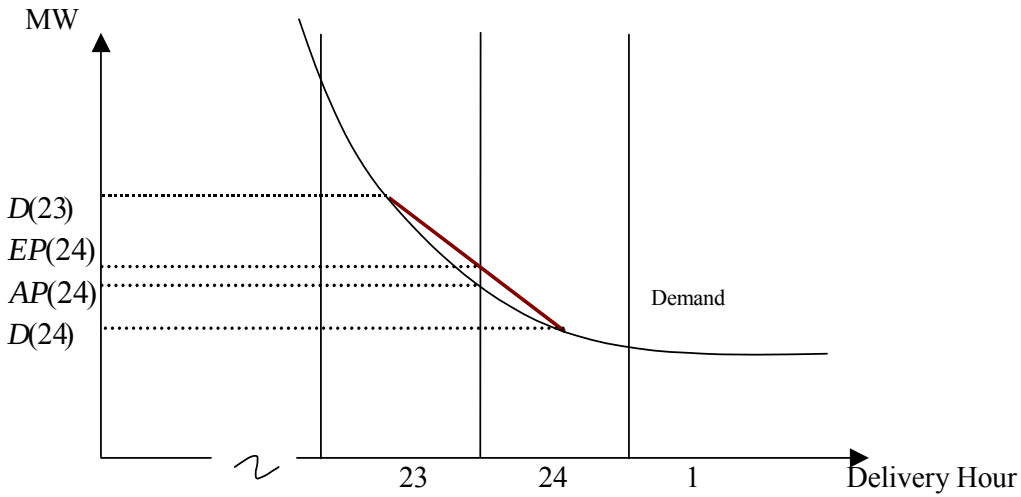
We are working and continue to work on IESO processes that cause demand forecast error but we need to also heighten our efforts on failed exports

IESO Forecast Hours 23 and 24

Not going to get into the whole issue but it was recognized that there was a persistent issue with hours 23 and 24 and a change was made to the IESO algorithm.

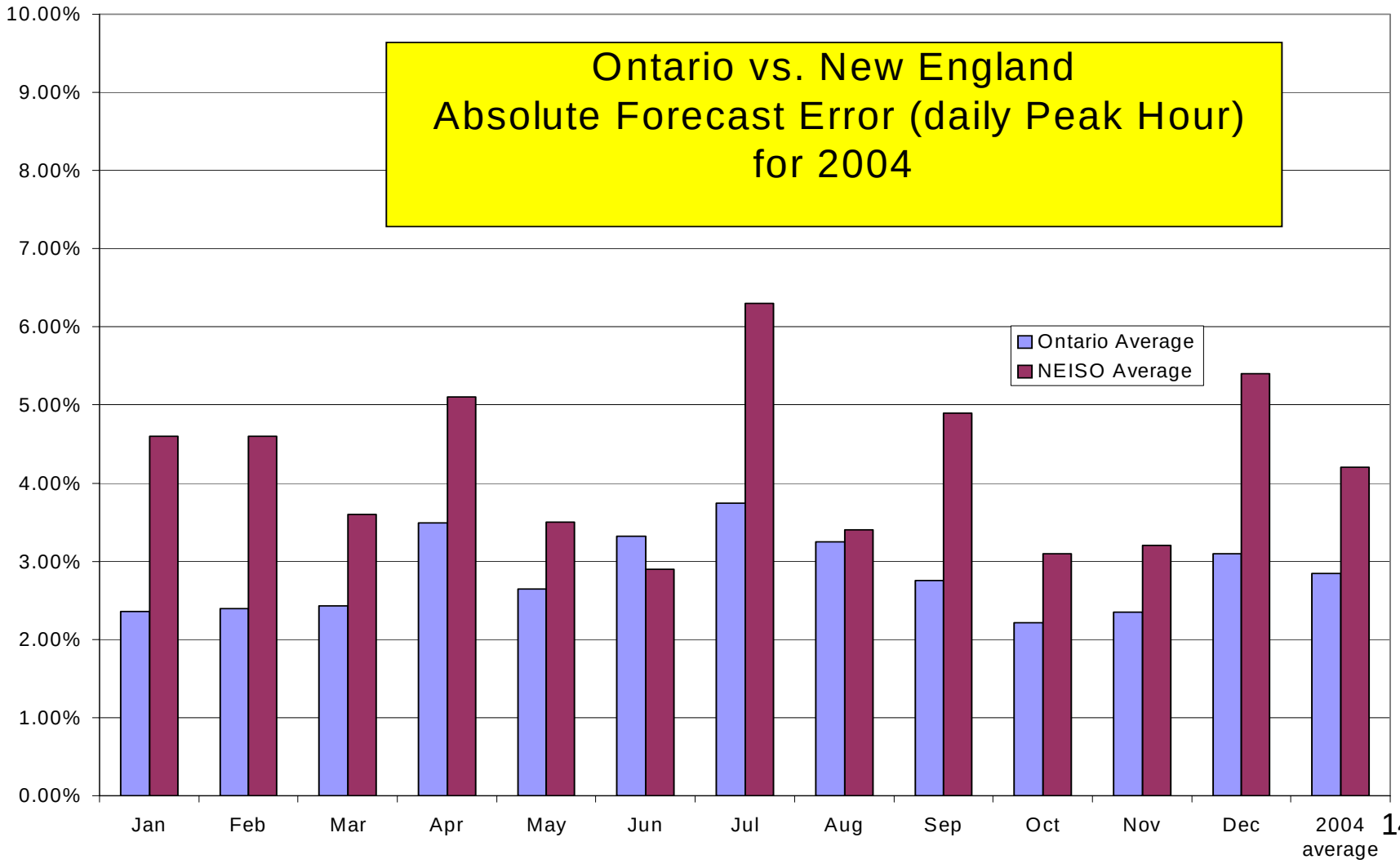
Ongoing work with the MAU to review IESO process error in other hours

Rate of Change of Demand



This is an advertisement to go read the MSP report

Comparison of IESO to New England



Peak To Peak (just for info)

To make it clear when we are talking about Market Demand forecast error we are comparing statistics on the Pre-dispatch Market Demand compared to the peak demand within the hour.

Method

- The highest demand in an hour is determined by establishing an average of the forecast hour plus the higher demand hour either proceeding or following the forecast hour (for hours where the load is increasing the following hour would be used, for hours where the load is decreasing the previous hour would be used). This average value is used to reflect the highest demand in the hour. The Market Surveillance Panel noted that there were hours where this methodology created inefficiencies in demand forecasting. In response to those concerns the IMO implemented a trial to forecast the highest demand in hour 23 and 24 as the MSP noted these two hours demonstrated unusually high forecast errors. The revised method changed the weighting of the hours (i.e. use 38% of the previous hour forecast and 62% of the forecast hour when averaging) that are used when determining the highest demand. Evidence to date would indicate this change has successfully reduced the forecast error.

Failed Exports

As shown failed exports also have a significant impact upon:

- market demand,
- pre-dispatch to real-time price differences and in turn on
- IOG payments

Export Failures

When we look at Exports versus failures across the past two years we see :

Total Delivered in GWh

	Imports	Exports
2003	10300	6300
2004	9800	9500

Failures in GWh

	Imports	Exports
2003	321	847
2004	404	914

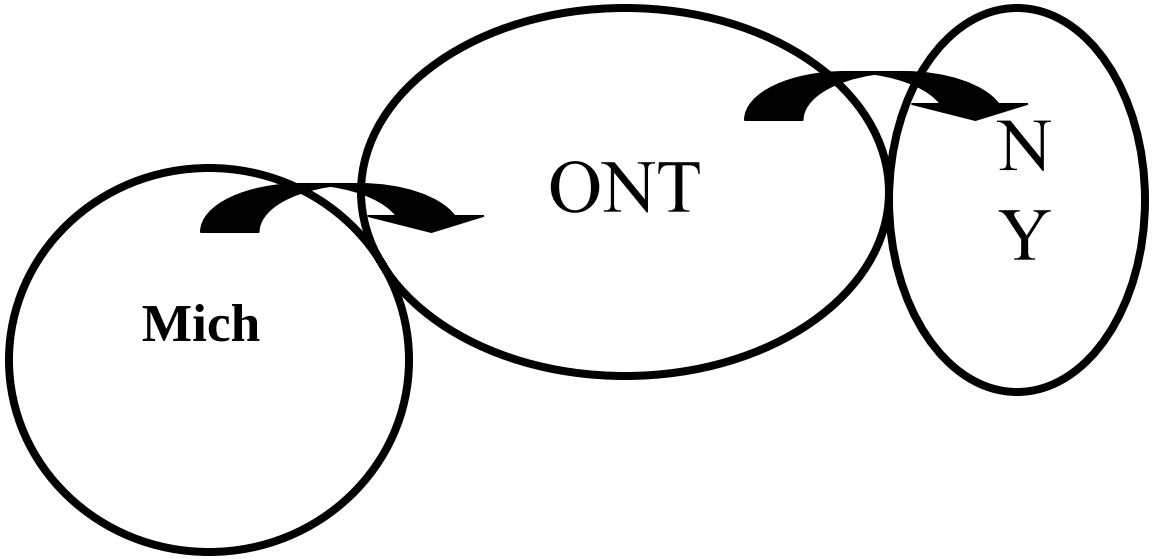
A Component of Export Failures is Implied Wheels

In 2002 the MSP recommended to the IMO Board that market Rules be altered to take IOG payments away from Implied Wheels.

An implied wheel is simply a participant selling energy into Ontario and in the same hour buying energy out of Ontario at the same or other interface.

If an export leg of an implied wheel fails, the Market Demand and as a result the MCP falls in real-time relative to the pre-dispatch price because less energy is required in real-Time

Implied Wheels



Single Entity

1. Offers in a winning transaction

2. Bids out another winning Transaction

The implied wheel is the common amount between the two transactions

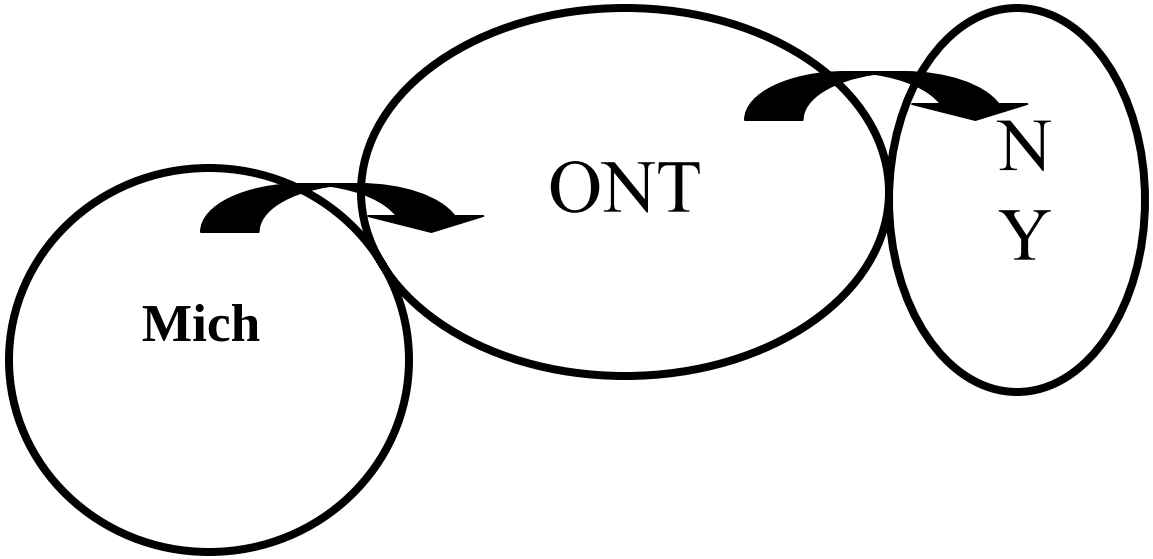
Each Transaction is Evaluated Separately, if one leg fails the other may remain

Implied Wheel Failures

In 2004 there were 730,000 MWh of export failures from Ontario to the NYISO.

Of those failures, almost one-third, 232,000 MWh were implied wheel transactions

Linked Wheels



Each Transaction is Evaluated Separately, if one leg fails the other fails

Single Entity

1. Offers in a winning transaction at $-2000

2. Bids out another winning Transaction at $2000

The linked wheel has a common amount of Mw between the two transactions.

The linked wheel has a "common" NERC tag, such that if one leg fails the other fails

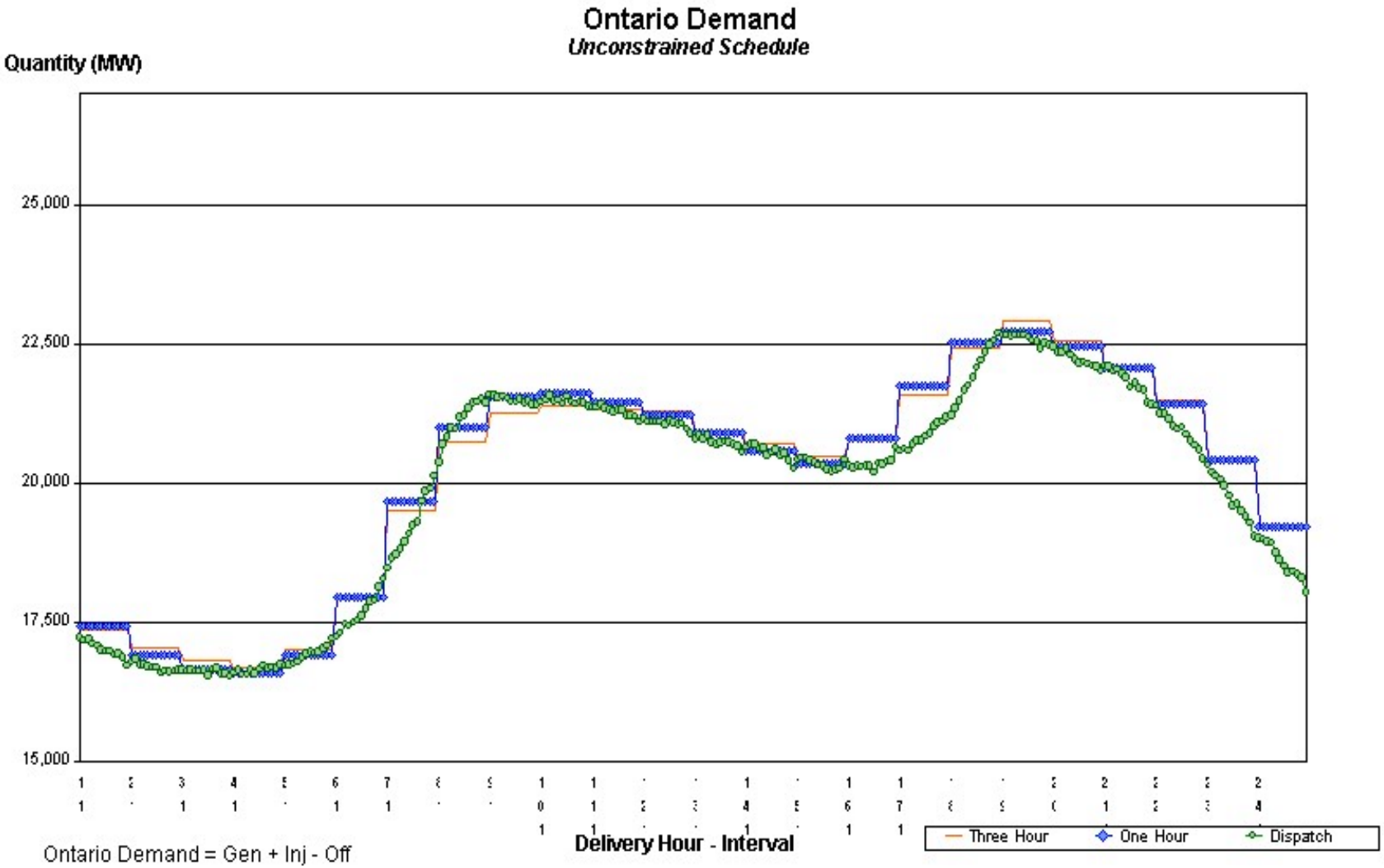
Suggested Remedies

- Eliminate IOG Payments for implied wheel transactions that fail
  - A potential small impact as $2 M out of $50M of IOG payments in 2004. It may make the importer/exporter "sharpen" its pencil when making such decisions.
- Eliminate the defense of 'TLR' or 'Security' where an external leg of an implied wheel transaction fails
  - Application of Chapter 7, section 7.5.8A would apply as usual to non-linked transactions
  - Participants would have a hedge against a 7.5.8A penalty by using a linked wheel to move through the Ontario market

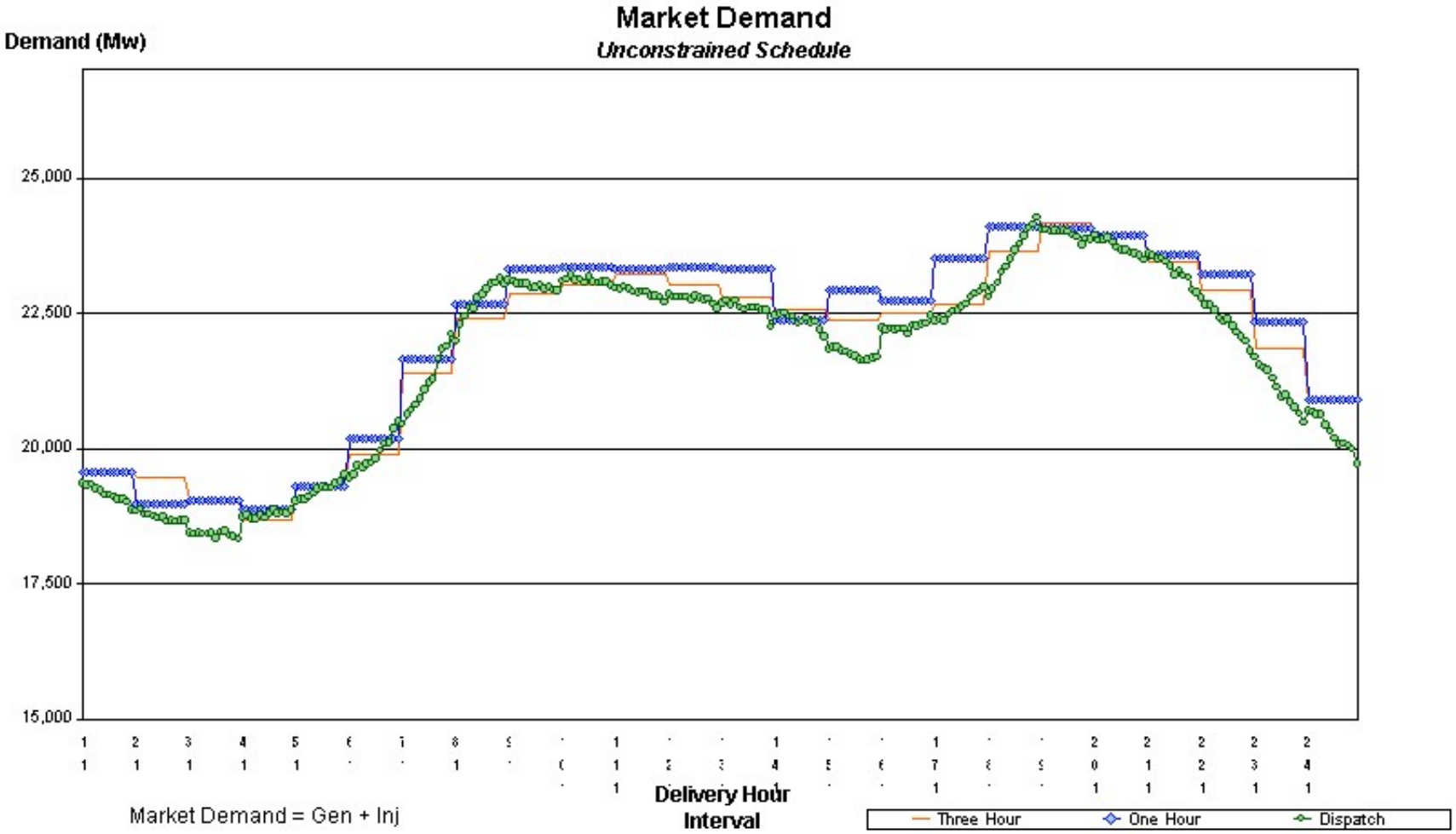
Discussion

- Do you agree that export failures contribute to demand forecast error?
- Do you agree that persistent demand forecast error makes the Ontario market less attractive?
- How would the proposed remedies address export transaction failures?
- How should this issue be considered in the context of other initiatives to address transaction failures?
- Other suggestions?

Ontario Demand

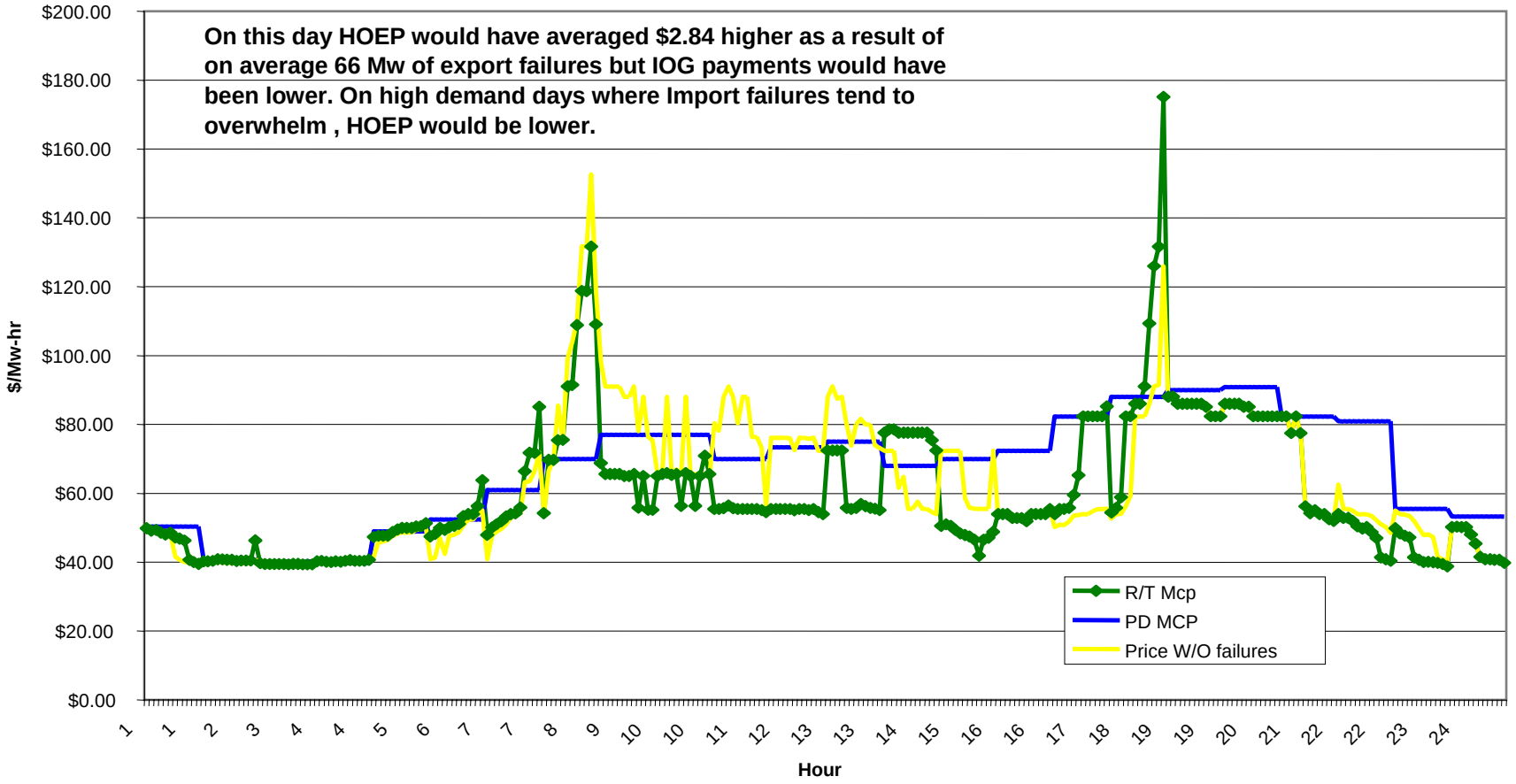


Market Demand Forecast

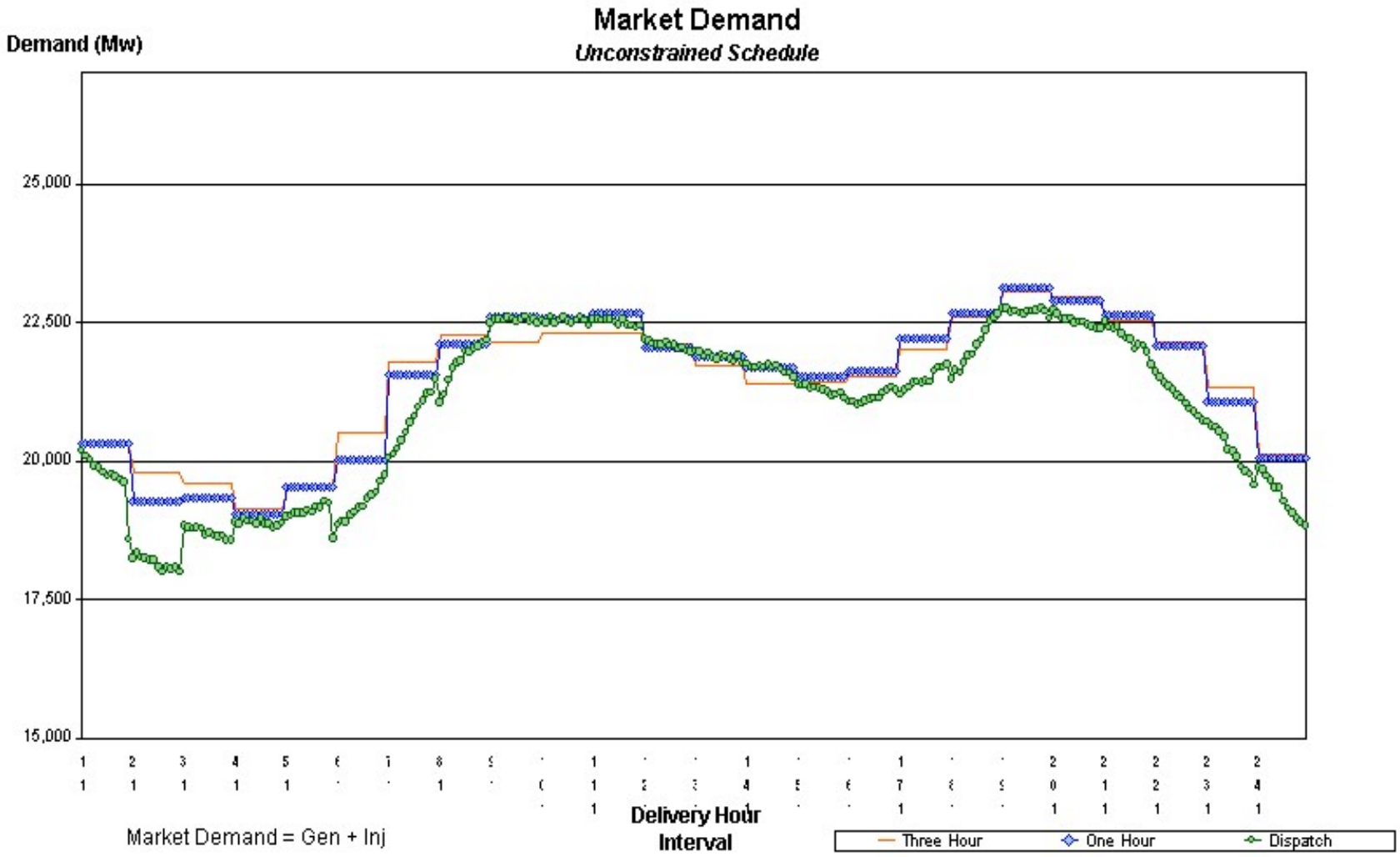


Price Effect

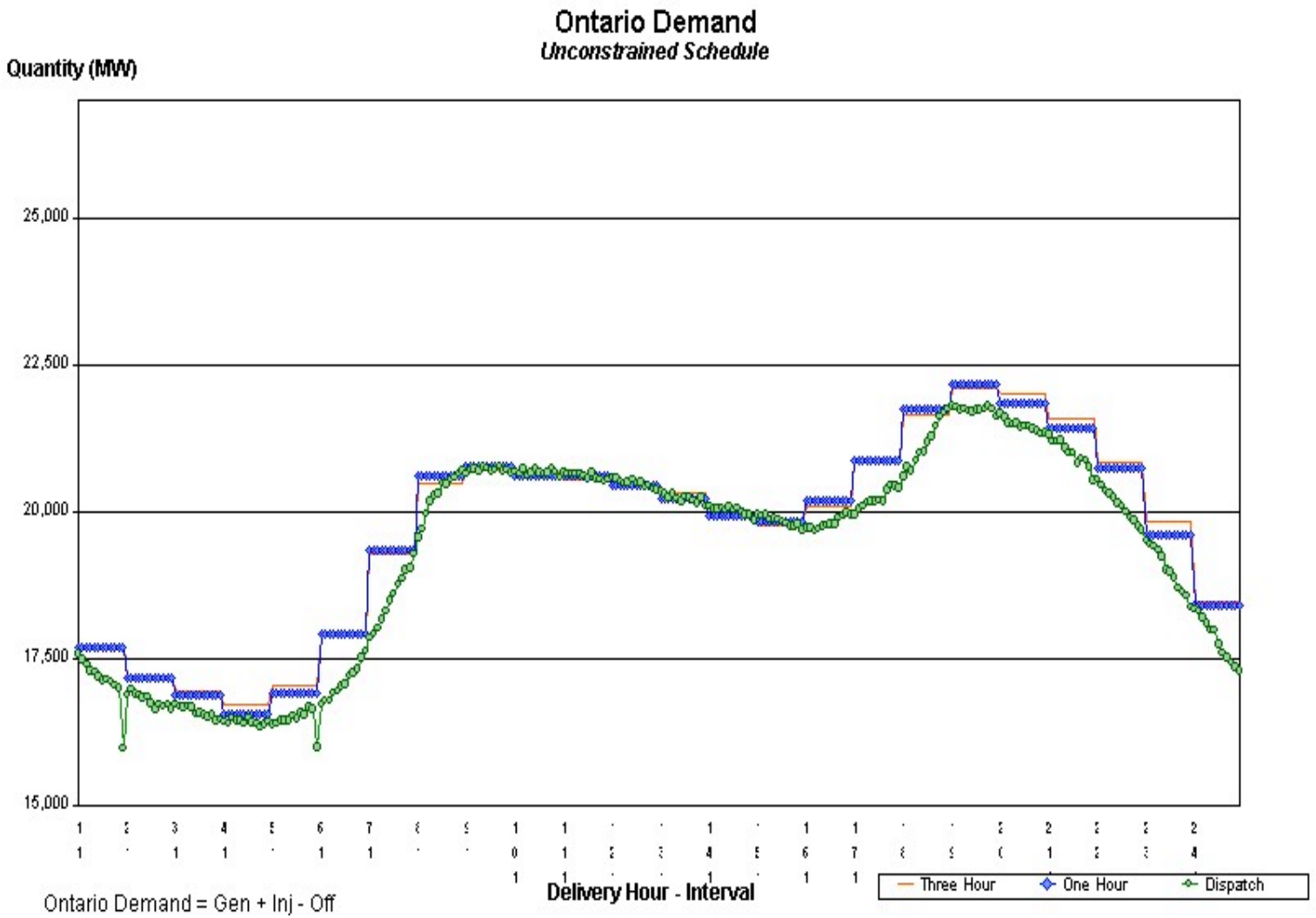
Prices with and Without Failed Transactions



Market Demand



Ontario Demand



Ontario Demand = Gen + Inj - Off