

# MR-00338: Economic Dispatch of Linked Wheels – Status of Long Term Solution

Inter-Jurisdictional Trading Standing Committee  
March 5, 2008



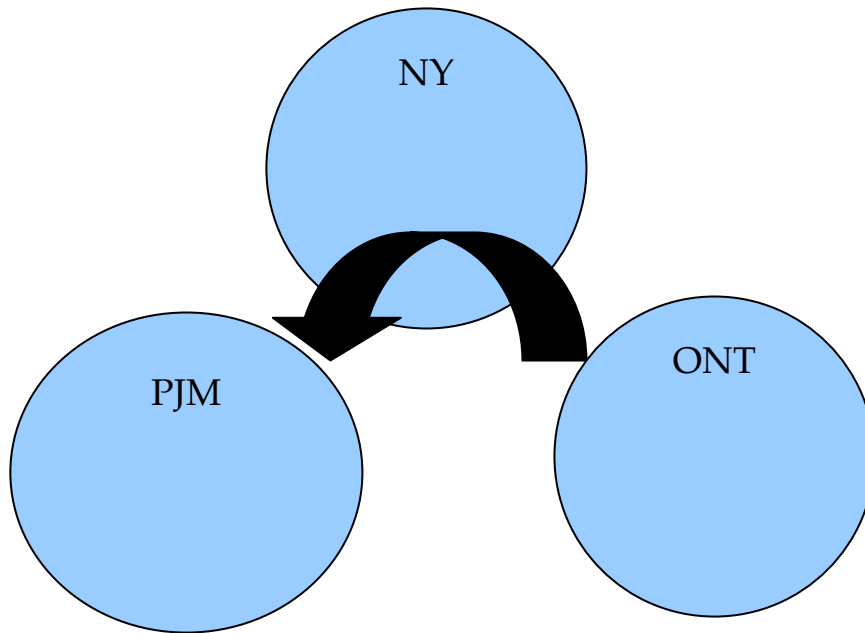
- Background of MR-00338
- Example showing how NYISO evaluates linked wheel transactions
- Linked wheel transactions in Ontario
  - Magnitude and frequency
  - Comparison to NY
- Proposed Next Steps
- Question re: behavioural response

## How the IESO Evaluate Linked Wheels

- A linked wheel allows a market participant to move energy from one jurisdiction through Ontario to another jurisdiction.
- A market participant makes an offer to import energy and a bid to export energy during the same period.
- In order for the import and export to be linked, the market participant is required to:
  - bid the export at +MMCP
  - offer the import at –MMCP, and
  - follow the appropriate e-tag convention.
- If one leg of a linked wheel is not/partially scheduled, curtailed or fails, the other leg will also be cut to match the schedule of the other leg.

- Reliability concerns
  - Displacing imports
  - Stressing line limits
  - The IESO addressed the reliability concerns on November 6, 2007:  
([http://www.ieso.ca/imoweb/amendments/tp\\_meetings.asp](http://www.ieso.ca/imoweb/amendments/tp_meetings.asp))
- Unreasonable risk to market participants (up to \$4,000/MW)
  - Implied wheel-throughs do not solve the problem
  - Proposed congestion pricing, as in New York

# Illustration of How Linked Wheel Transactions Evaluated in NYISO



A trader has a congestion tolerance of \$30 and wants to wheel 100MW from ONT to PJM

He submits a request for a linked wheel of 100MW @ -\$30. This indicates the price difference between Ontario and PJM that the market participant is willing to pay.

NY also has the following import offers from Ontario submitted:

Import A: 500MW @ \$40

Import B: 200MW @ \$60

Import C: 200MW @ \$65

NYISO evaluates the linked wheel and the imports simultaneously to determine the optimal schedule in New York.

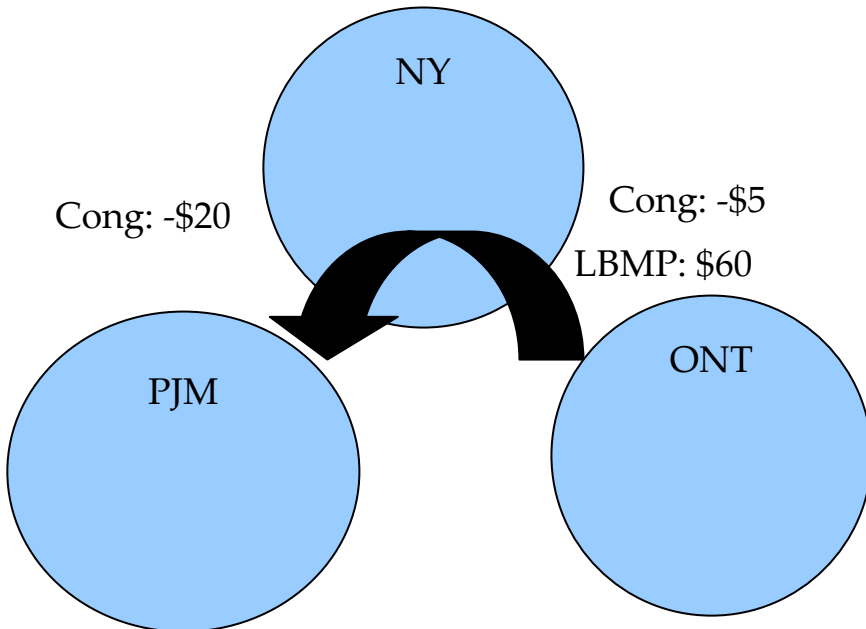
# Illustration of How Linked Wheel Transactions Evaluated in NYISO

Wheel is accepted if:

Offer \$  $\leq$  congestion@sink - congestion@source

Import is accepted if:

Offer \$  $\leq$  LBMP@source



$$\text{LBMP} = \text{Energy} + \text{Losses} - \text{Congestion}$$

Flow is Prioritized based on Benefit to the New York Market:

Import A Offer \$40 Benefit = 60 - 40 = <b>\$20</b>
Linked Wheel Offer-\$30 Benefit = [-20 - (-5)] - ( -\$30) = <b>\$15</b>
Import B Offer \$60 Benefit = 60 - 60 = <b>\$0</b>

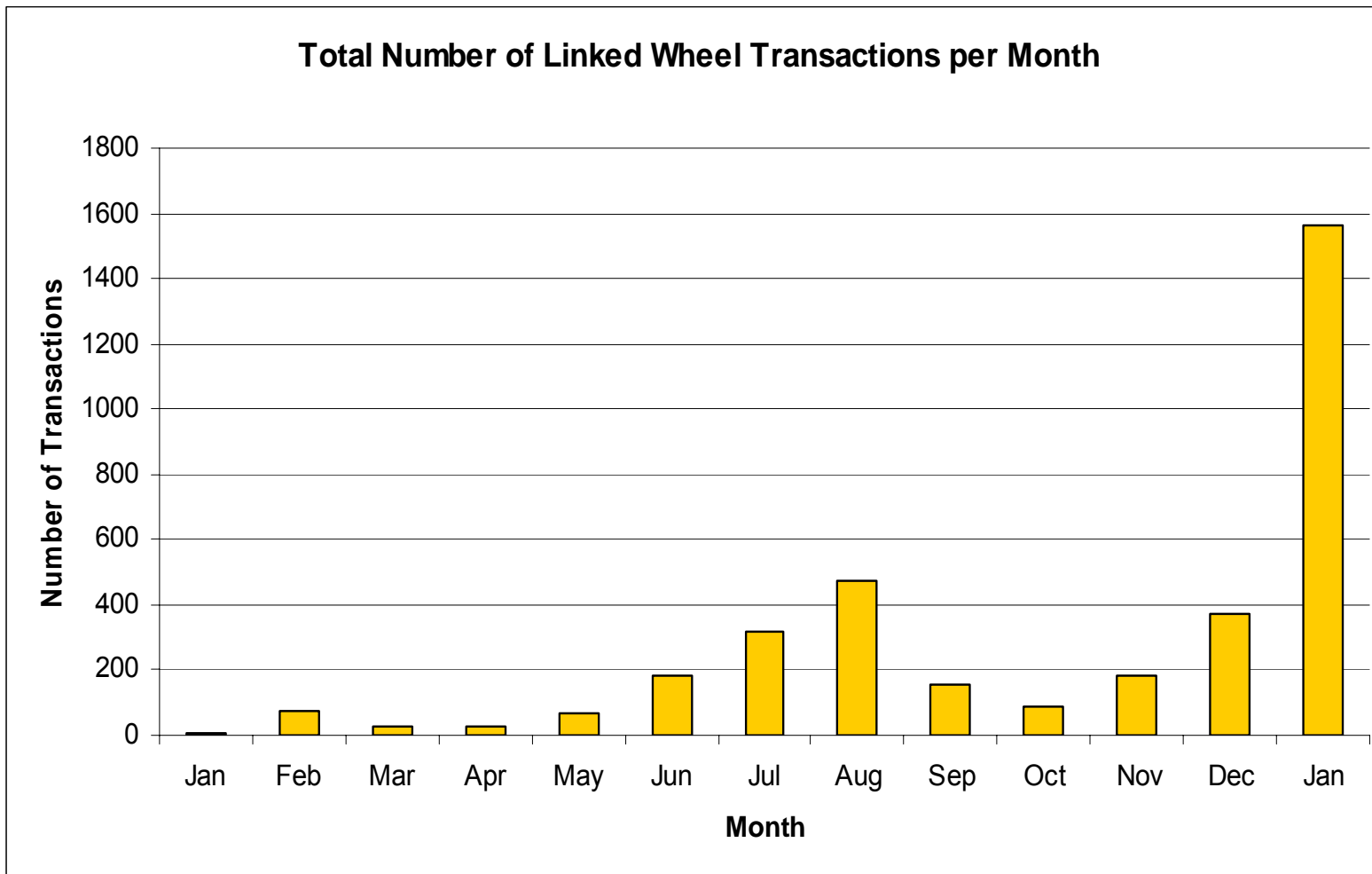
A linked wheel may be partially accepted if it is marginal or if the line limit is reached.

A linked wheel will **always** be accepted if:

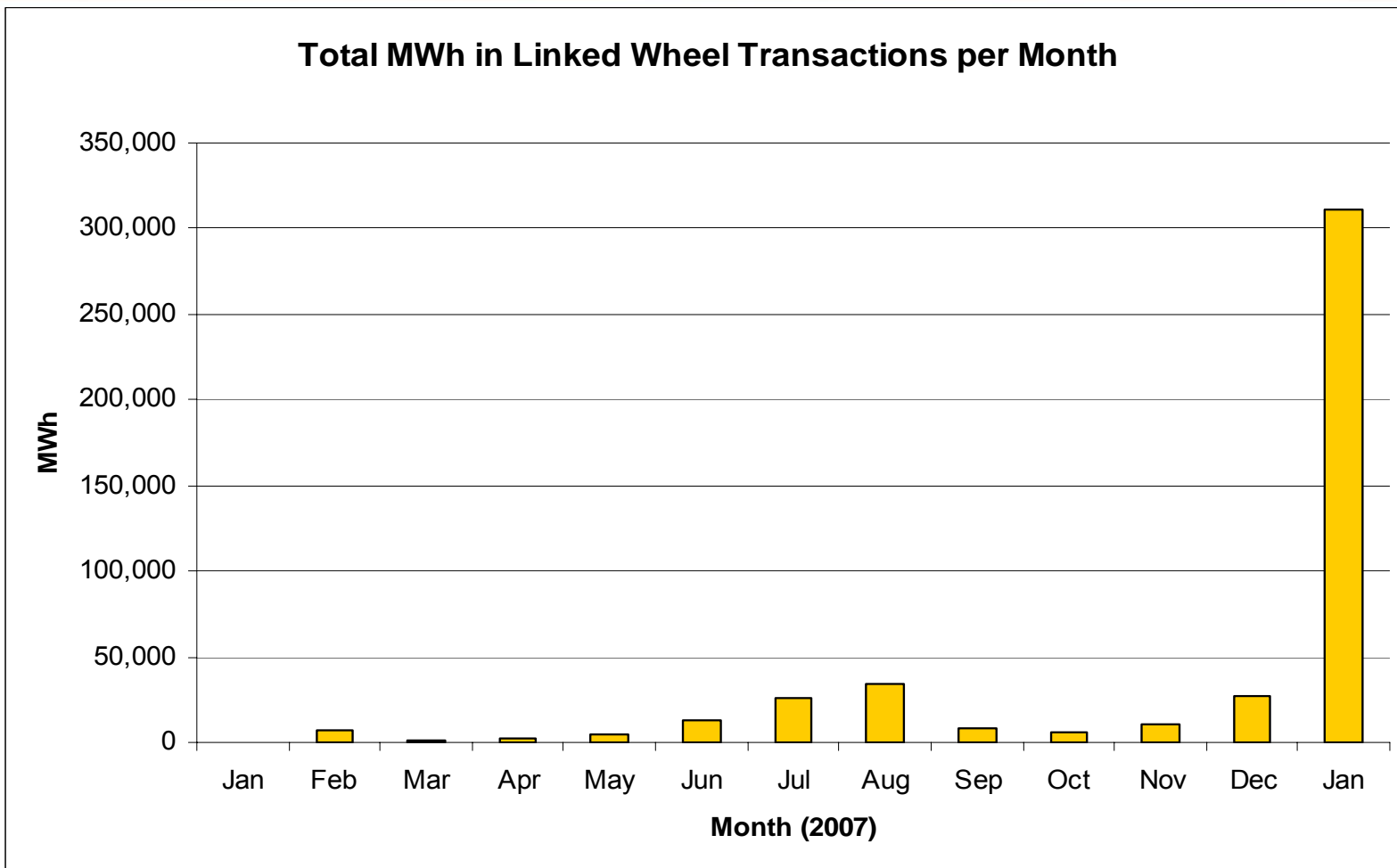
1. Offer \$  $\leq$  cong@sink - cong@source
2. Net Intertie Scheduling Limit is not reached
3. The actual limitation of the tie is not reached

- Linked wheel offer price is measure of the congestion price risk tolerance of the trader: i.e. linked wheel offer price close to zero indicates low tolerance.
- NYISO has advised us that in 2007, 97-99% of linked wheels offered are scheduled and flow.
- We are following up with NYISO on linked wheel offer price profile to determine congestion price risk tolerance profile.

# Linked Wheel Transactions in Ontario



# Linked Wheel Transactions in Ontario



- An average (Jan – Oct 2007)
  - In Ontario: 2.5%
  - In New York: 2.8%

- To change the DSO to include congestion pricing (as in New York) appears to be complex; however we will work on providing an order of magnitude estimate of the cost of such a change.
- The IESO proposes to undertake a limited scenario-type analysis to assess Ontario efficiency impacts (e.g. changes to domestic dispatch and production costs, changes in exports and imports).
- Report back no later than end of Q2 2008

- If Ontario was to introduce congestion pricing for evaluating and scheduling linked wheels, what would be the response of traders?
  - Congestion price risk tolerance?
  - More/less linked wheels offered?
  - Different linked wheels offered?
  - Other responses?
- Indication of behavioural response required to properly evaluate impact of the change so as to justify spending \$ to make the required system changes.