

Twelve Times Ramp Rate

Presentation to the Market Pricing Working Group, August 23, 2006 and
to the Stakeholder Advisory Committee, September 5, 2006



- **Background**
 - Stakeholder process and feedback
- **Options**
 - Status Quo
 - 1X MIO
 - 1X Myopic
 - Ramp Supplement Payment
 - 3X Myopic

- **This current twelve times review was initiated in response to an IESO Board direction in December, 2005**
- **In addition to deliberating on the 12x issue, the IESO has also been directed to advance the thinking on the role of intertie transactions in setting Ontario energy price, and on the design of a potential day-ahead market for Ontario**
- **Recently, the Advisory Committee unanimously resolved that the IESO should analyse the impacts of potential locational pricing options**
- **Both the eventual design of a day-ahead market and the resolution of how transmission congestion should impact Ontario energy pricing could cause the basis of the real-time price calculation to be reviewed in the near future**

- **The alternative chosen at this time should be seen as a transitional step, and hence should be simple in concept, easily implemented, and pragmatic.**
- **Extensive stakeholder initiative during 2006 through the Market Pricing Working Group**
- **Several options explored**
- **Advisory Committee package includes:**
 - **an IESO report on the 12-times ramp rate issue, which includes IESO Management's recommendation,**
 - **copies of the written stakeholder feedback provided to the IESO, and**
 - **a table that summarizes the key points in the stakeholder feedback and IESO staff response to the feedback**

- **Combination of unconstrained and twelve times in pricing algorithm leads to generators being frequently under compensated in the real-time energy market relative to reasonable expectations.**
- **Constraint payments compensate to bid/offer prices only, which are reflective of incremental costs but do not necessarily include costs of changing output from one level to another**
- **Constraint payments are recovered through uplift which is difficult for consumers to hedge and is not transparent**

- **Ignoring constraints and using twelve times has dampened price volatility for 4 years**
- **MSP has identified market inefficiencies resulting from our pricing methodology**
- **LMP would address many of the inefficiencies – a study has just been started with MPWG which will examine the impact of constraints, but implementation of any change is unlikely for at least 2 years**
- **Ignoring twelve times at this point misses out on opportunities to address inefficiencies and inequalities**

Options Considered – One times MIO

- **Original market design was for the pricing and dispatch algorithm to use the same basic engine, but for pricing to ignore transmission constraints for at least the first 18 months**
- **Original market design was a myopic algorithm, no consideration of upcoming demand changes when setting price and dispatching generation**
- **Dispatch algorithm now uses multi interval optimization (MIO) to find the most efficient dispatch, anticipating demand changes in upcoming intervals**
- **The option of implementing MIO in the unconstrained pricing algorithm has been looked at by MPWG ever since it was implemented in the constrained dispatch algorithm.**

- **Simulation results showed a range of price changes from -0.5% to +2.6% depending on the details chosen for the MIO implementation**
- **Simulations did not demonstrate significant changes in price patterns relative to status quo; hence, there was unlikely to be substantial increased efficiency from moving to an unconstrained MIO pricing methodology**
- **Generators expressed concern that MIO lacked transparency and that prices were greatly influenced by the IESO load prediction**

- **Generators also expressed concern over the appropriate MIO approach for pricing, reinforcing the fact that implementation of MIO would be complex with many issues to resolve.**
- **Consumers expressed concerns over the potential price impacts of MIO and while willing to study MIO further, failed to endorse its implementation at this time**
- **Given the strong desire of the IESO and many stakeholders to address the DAM design, the opportunity cost of investing resources in MIO pricing in the unconstrained algorithm at this time is too high**



- **Original market design was one time myopic pricing and dispatch**
- **Supply community advocates a return to one times myopic pricing**
- **IESO believes one times myopic pricing overstates the value of ramp.**
 - **1x Myopic could signal ramp shortage when none exists, with MIO being used to dispatch resources to avoid ramp shortage for anticipated demand increases**



- **Simulations suggest up to a 12% price increase compared to 12X myopic pricing.**
- **Price increase would be significantly mitigated by:**
 - **Changed participant behaviour such as demand response, fewer exports, increased supply**
 - **Global adjustment and OPG rebate**
- **Given that the dispatch algorithm no longer uses 1X myopic, and the potential overstatement of the value of ramp associated with it, IESO management does not recommend 1X myopic pricing**



- **As a compromise, a supplementary payment to generators that change their output in response to IESO dispatch was proposed**
- **Generator community states ramp costs are significant, and unpredictable. 12X price plus congestion payments do not adequately compensate generators for the service provided or the costs incurred**
- **Based on 2005 data, upper limit is \$78 million per year. Likely lower, estimate \$50 million**
 - Not all dispatch instructions can be met
 - Reduced need to change output due to efforts of dispatch issues team



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Options Considered – Ramp Supplement

- **IESO would only consider Ramp Supplement for a temporary period:**
 - IESO management is concerned about side payments, funded via uplift, that understate the value of energy, removing price volatility
- **IESO management does not believe a supplement payment will improve market efficiency or reliability**
- **Implementation of a ramp supplement payment will require about 6 months**
- **Consumers do not support the APPrO proposed supplement payment**

Options Considered – Ramping Cost Guarantee

- **IESO management feels that with 5-minute dispatch and pricing, ramp costs should be recoverable in the market**
 - **Infra-marginal generators should be recovering these costs through market clearing price**
 - **If generators are concerned that these costs will not be covered, then they have the option to include them in their offers, and hence potentially not being chosen by the market to operate**
- **IESO management agrees that marginal generators are less likely to recover ramp costs with a 12x ramp rate multiplier, and that it would be difficult to accurately include ramp costs in their offers**
 - **Possible creation of a guarantee payment to ensure marginal units can recover the cost of ramping**

Options Considered – Ramping Cost Guarantee

- **Ramping Cost Guarantee would only pay the ramping costs in any hour if the generator was unable to recover those costs from the market**
- **Payments under the guarantee would reduce relative to the ramp payment option from about \$50 million to about \$20 to \$25 million**
- **Implementation would be complex and time consuming – too high a cost (both actual cost and opportunity cost)**
- **IESO abandoned the idea of a guarantee program due to complexity and cost**

- **IESO management originally thought this compromise solution was unlikely**
- **IESO management agrees that unconstrained pricing with 12X ramp rates has generally under compensated the generation community**
- **With little convergence of opinions on other solutions, 3X brings some benefits quickly, without the opportunity costs associated with other alternatives**

- **Replace the 12X myopic with a 3X myopic multiplier**
 - 1X is not appropriate as it overstates the value of ramp relative to the MIO dispatch
- **Pays suppliers more appropriately**
- **Improves the quality of the price signal**
- **Expect a reduction in exports that are currently near the margin**
- **Helps market efficiency**

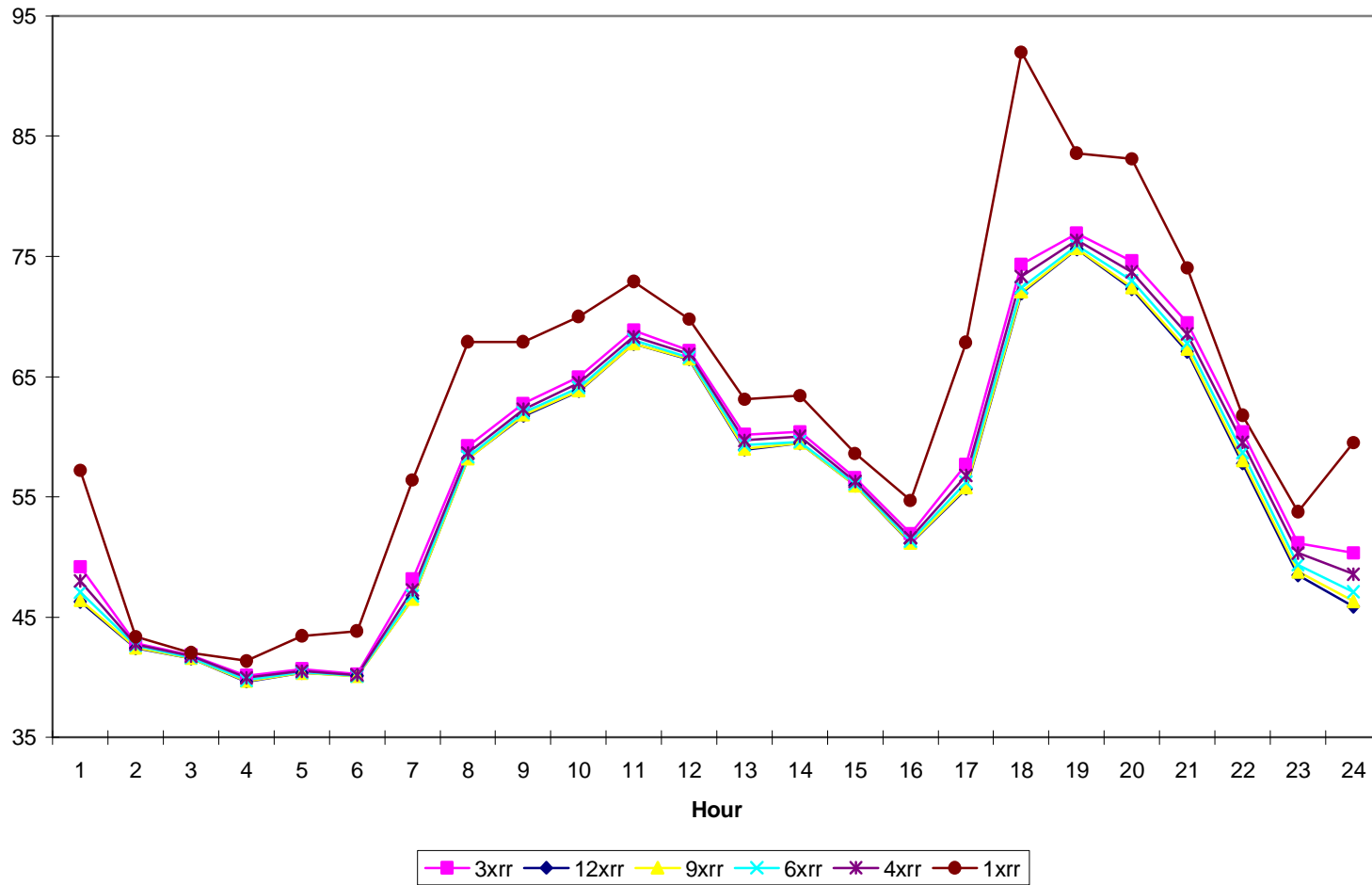
- **Simulations suggest energy price increase of about \$1.50/MWh (\$225 million per year)**
- **After Global Adjustment and OPG rebate this would be about \$56 million net**
- **Behaviour changes and arbitrage would reduce this number further – perhaps significantly**
- **Increased HOEP would lead to lower CMSC and IOG payments – estimated to be about \$16 million reduction per year**

Options Considered – 3X Myopic

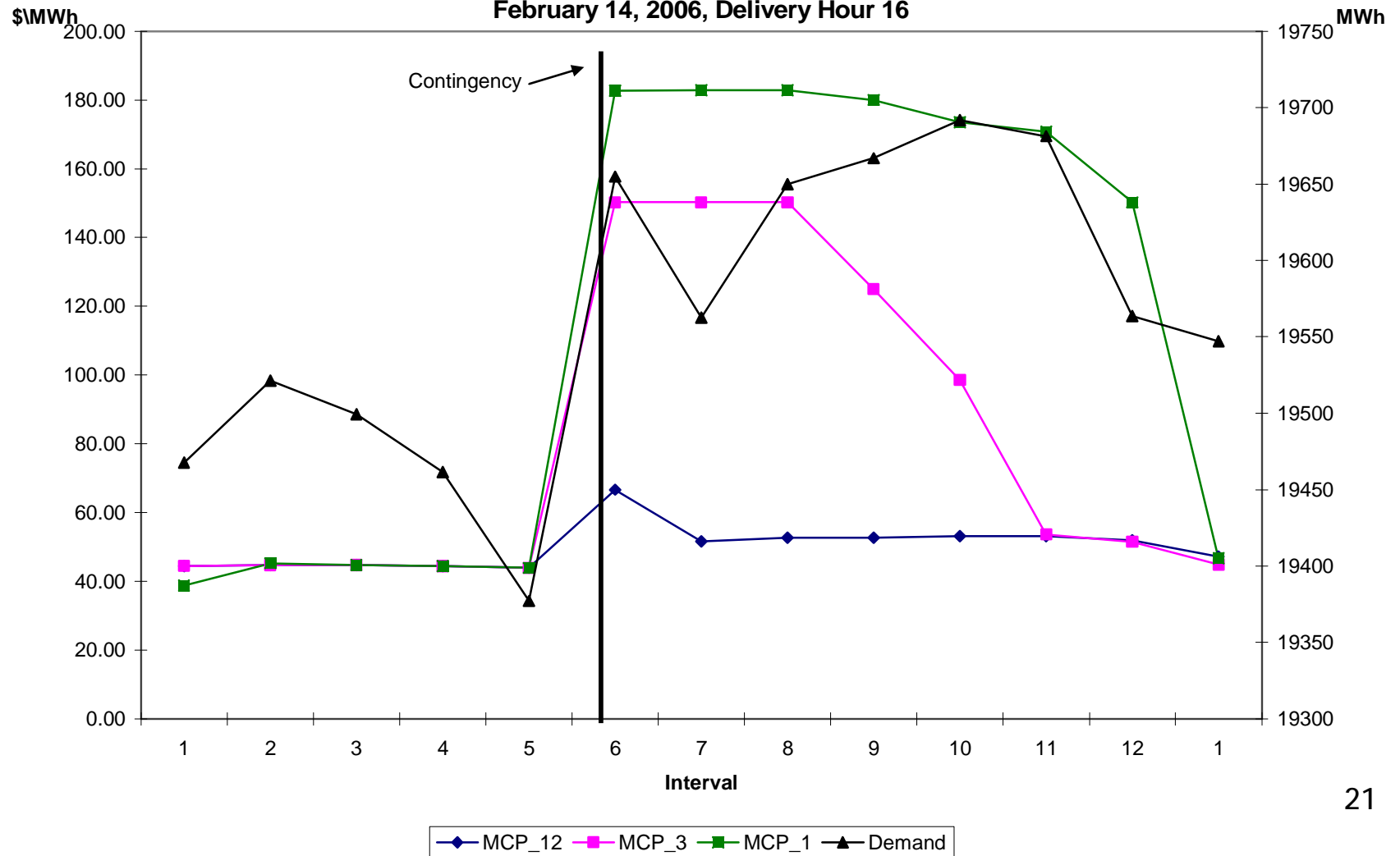
- **3x would result in a similar net payout by consumers as would occur under a ramping cost guarantee however the impact would be transparent, leading to behaviour changes and improving market efficiency**
- **Can be implemented easily and quickly**

Figure 1: Average Daily Price Differences
Simulations for November 01, 2005 to April 30, 2006

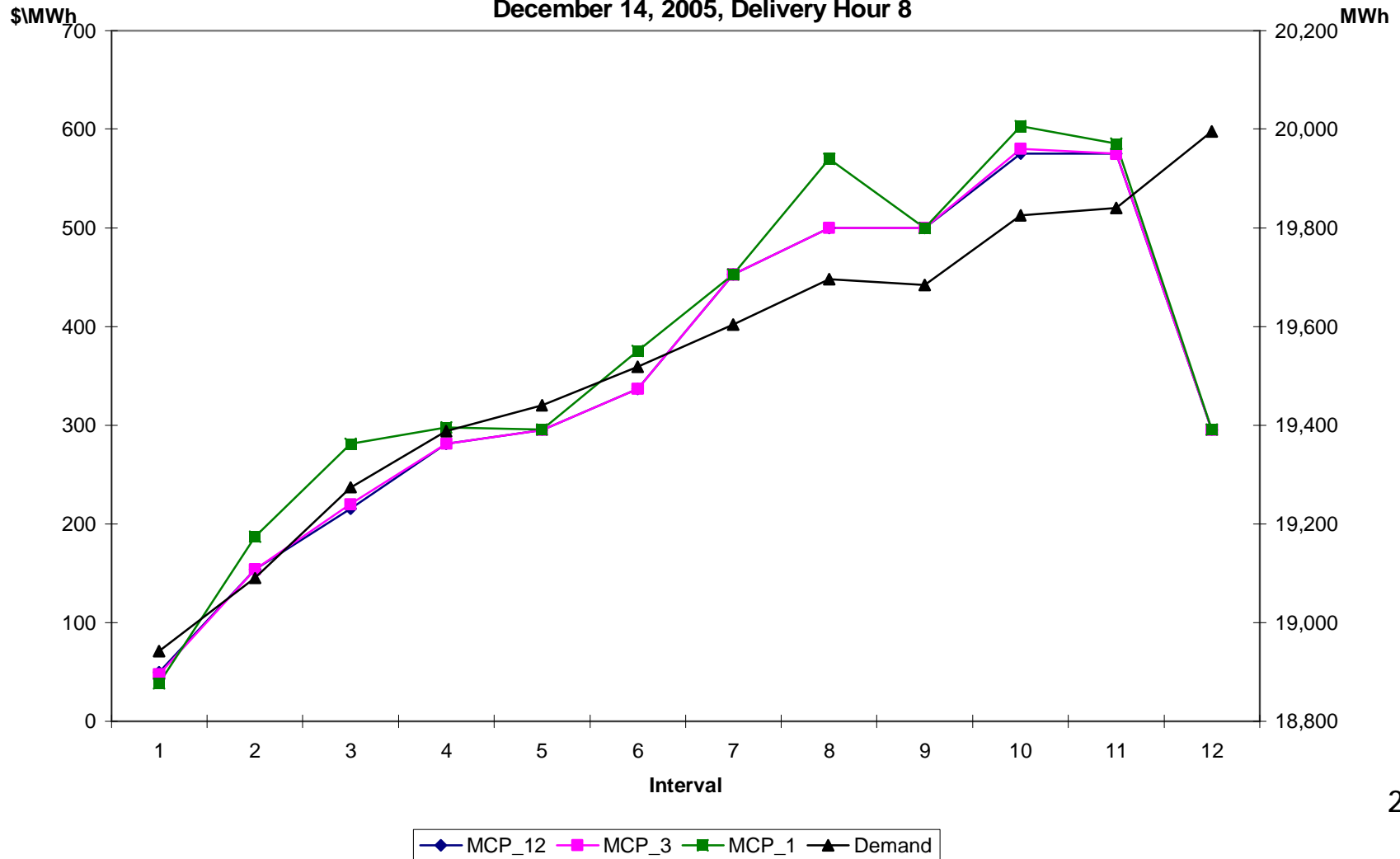
\$/MWh



Large Contingency with Spare Fossil Generation On Line
Loss of 501 MW and Demand Increase of 277 MW for Net Ramp Need of 778 MW
February 14, 2006, Delivery Hour 16



**Large Contingency with No Spare Fossil Generation On Line
 Loss of 216 MW of Imports and 480 MW Derating of Gas-Unit
 December 14, 2005, Delivery Hour 8**



- **Current pricing method (12x/unconstrained) leads to depressed, non volatile prices, reduced efficiency**
- **With LMP study and DAM project on the horizon, a change to the unconstrained real-time price is a transition**
- **Ideal situation is to have price reflect cost of dispatch**

- **One times MIO provides only marginal improvements and is difficult to implement – high opportunity cost**
- **One times myopic overstates value of ramp**
- **Ramp payment does not improve efficiency and continues to dampen price fidelity**
- **Ramp guarantee is difficult to implement, and also does not improve market efficiency**
- **Three times myopic is a reasonable compromise**
 - **Increases net supplier revenue by similar amount to ramp guarantee**
 - **Transparent, market based**
 - **Can be hedged**
 - **Improved efficiency**

End of Slides