

Update of Analysis of Impact due to Change to 3X Ramp Rate

Presentation to MPWG
October 29, 2008
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- Review of analysis conducted before policy change
- Review of analysis presented to the MPWG in June
- New simulations with no export demand response
- Role and effect of export response
- Analysis of export efficiency
- Next steps

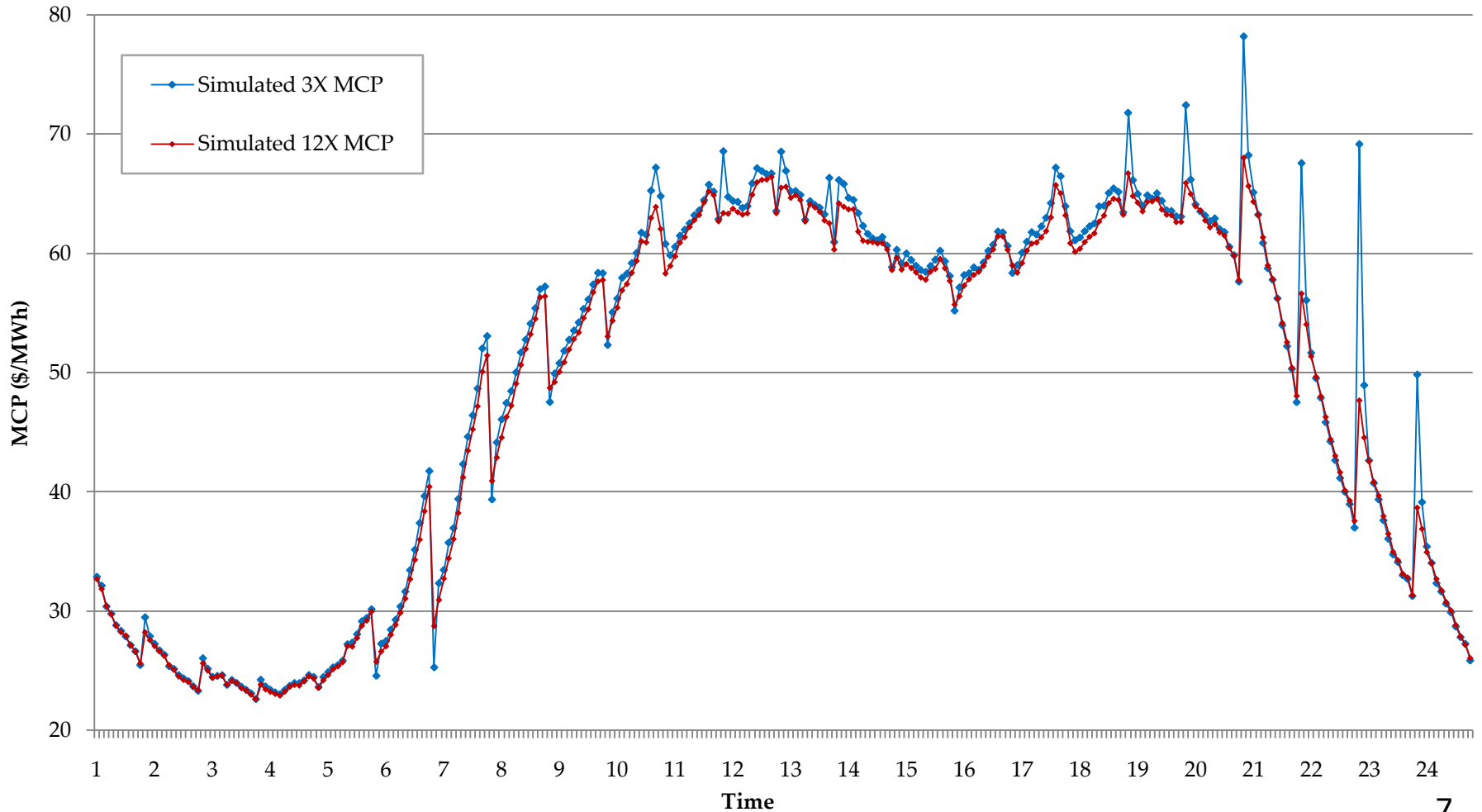
- Analysis conducted before policy change
 - Period: November 1, 2005 to May 31, 2006
 - Average price effect was simulated to be \$1.50 with no export response
 - Impact: higher HOEPs would result in fewer exports
 - Reduction of inefficient exports: exports from Ontario during times when the incremental cost (shadow price) was greater than the delivered price to New York
 - Export response would mitigate approximately half of the price impact of the policy change: realized price effect less than \$0.75
 - Better alignment between constrained and unconstrained schedules should reduce IOG and CMSC payments

- June 2008 analysis
 - Period: September 12, 2007 to May 31, 2008
 - Price impact due to policy change before accounting for export demand response was simulated to be \$0.68
 - Simulations showed that HOEP was higher in each hour
 - Largest effects occurred in the first and second intervals
 - 3x MCP lower than 12x MCP in hours when demand is ramping up; and
 - 3x MCP higher than 12x MCP in hours when demand is ramping down
 - Effects larger in major up-ramping and down-ramping hours
 - Price impact after accounting for export response was \$0.38

- Period: October 1, 2007 to September 30, 2008
- Simulations conducted do not account for effect of export demand response
- Results:
 - Average impact on HOEP was \$0.74
 - 3X HOEP higher in each hour than 12X HOEP
 - Largest differences between 3X MCP and 12X MCP are in the first interval
 - In up-ramping hours, first interval 3X MCP is lower than 12X MCP
 - In down-ramping hours, first interval 3X MCP is higher than 12X MCP
 - Reason: scheduling of imports/exports and changing bids on the hour

Hour	Effect	Hour	Effect
1	\$0.98	13	\$0.92
2	\$0.15	14	\$0.85
3	\$0.05	15	\$0.58
4	\$0.13	16	\$0.34
5	\$0.18	17	\$0.80
6	\$0.60	18	\$0.81
7	\$0.85	19	\$0.90
8	\$0.77	20	\$0.78
9	\$0.55	21	\$0.94
10	\$1.12	22	\$0.85
11	\$0.60	23	\$1.98
12	\$1.05	24	\$1.03

Comparison of Simulated 3X & 12X MCP



- There is strong empirical evidence that demand for exports is highly elastic
- Upward pressure on HOEP will raise the cost of exports, resulting in fewer of them being scheduled
- This mitigates the simulated price increase
- There is a demand for exports:

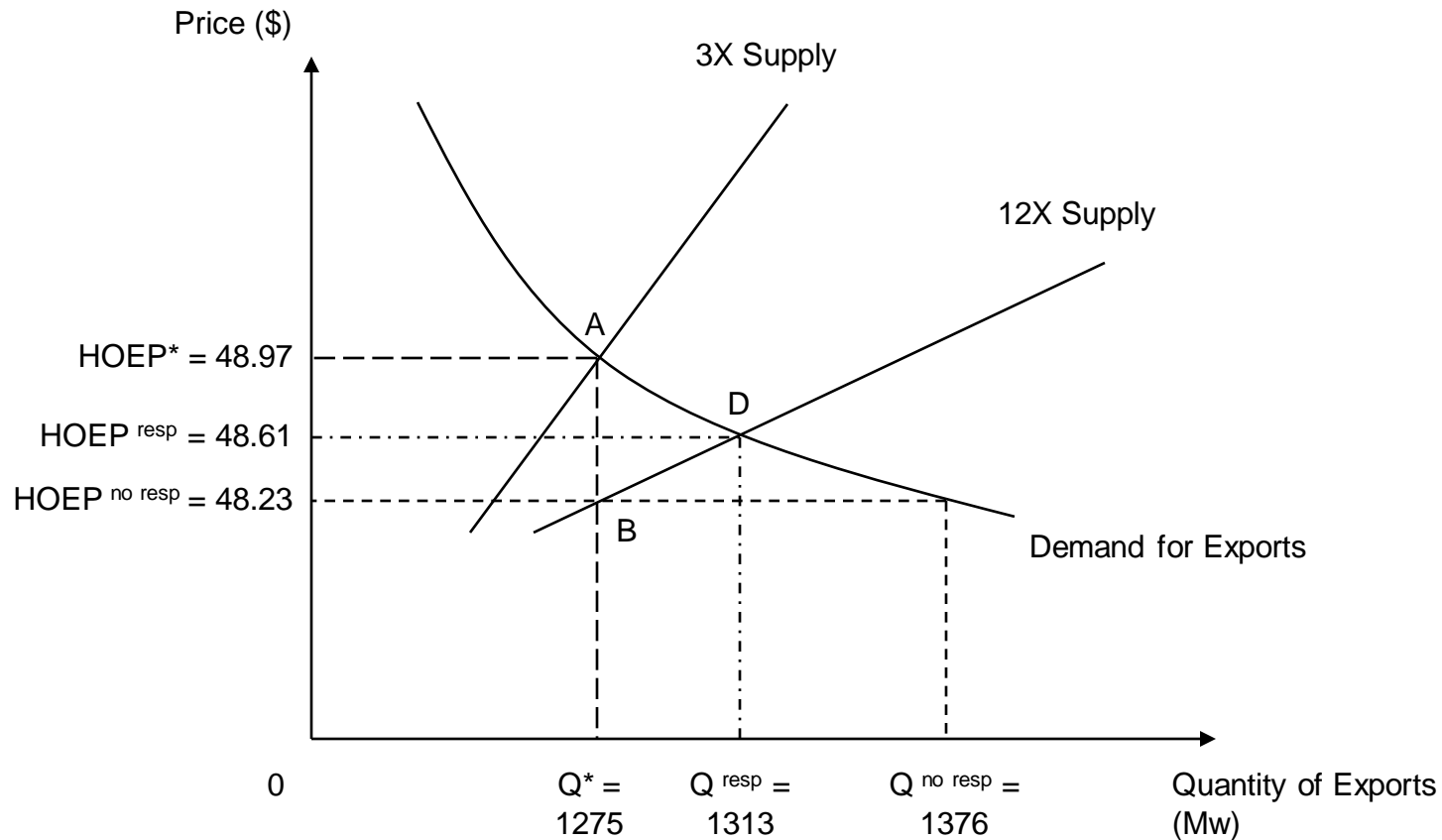
$$\ln(\text{Exports}) = C - e * \ln(\text{HOEP})$$

where C is a constant and e is the elasticity of demand

- We use $e = 4$
 - Consistent with previous analyses
 - Empirical evidence

- The simulated price increase of \$0.74 is an overstatement of the price impact of the ramp rate change
- What is the effect of export response?
 - Analysis is similar to what was presented in June
- Export demand response adjusted impact:
 - HOEP: increased by \$0.36 (3X relative to 12X)
 - Exports: decreased by 38 MW
- Illustration:
 - Point A: observed outcome in the market during the study period
 - Point B: simulated outcome with 12X ramp rate without export response
 - Point D: outcome under the use of a 12X ramp rate with export response, *i.e.*, equilibrium under 12X ramp rate

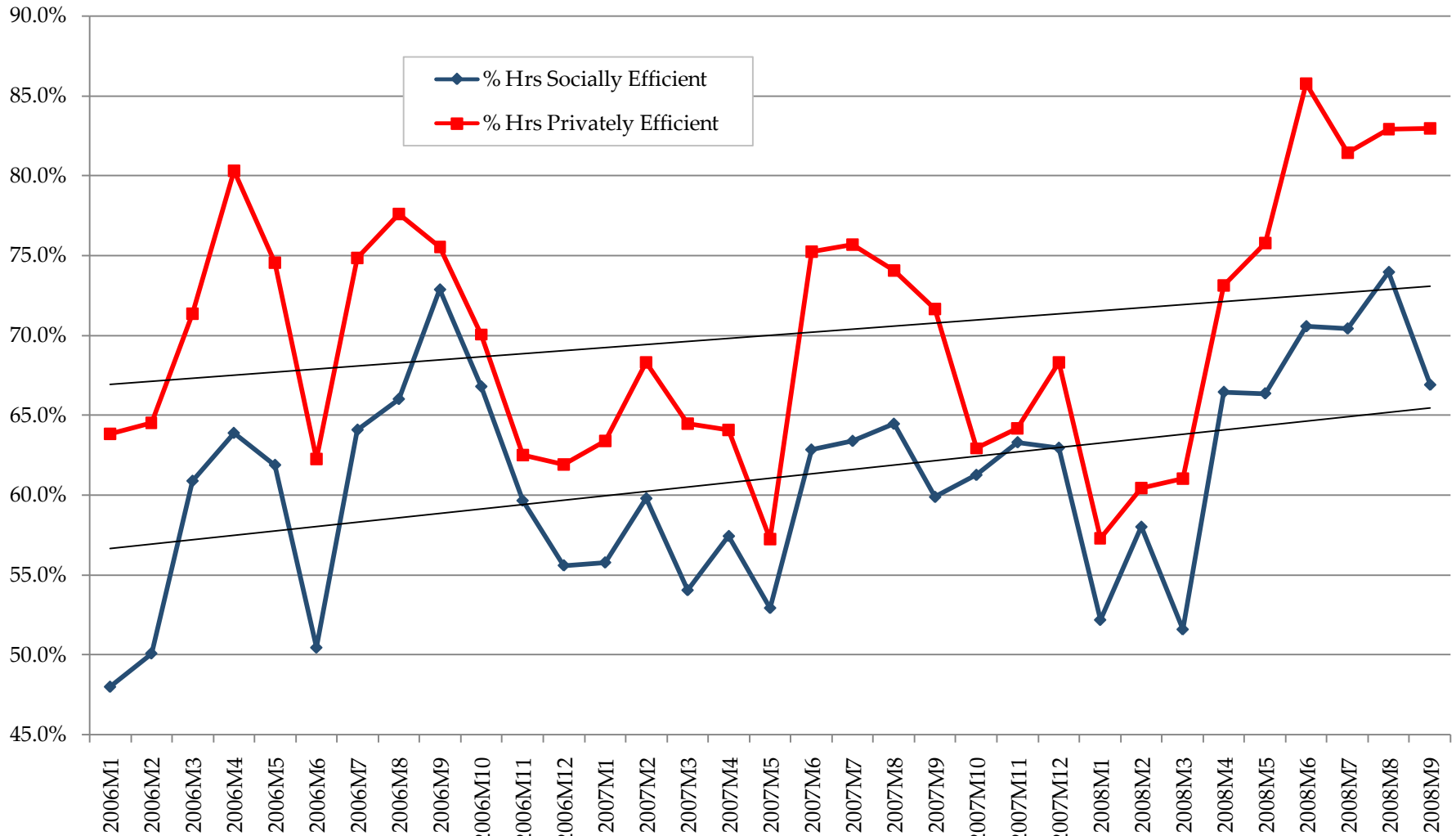
Illustration of Impact of Export Demand



- An export is said to be inefficient if its incremental cost is greater than its delivered price
 - Private efficiency
 - Profitability
 - HOEP + Transactions costs < NY delivered price
 - Inefficiency caused by forecast errors, incomplete information,...
 - Social efficiency
 - Beck shadow price (incremental cost) < RT NY delivered price
 - Inefficiency caused by private inefficiency and market design issues
 - For hours in which Ontario is a net exporter

- Uniform pricing may lead to inefficient exports
 - Costs that prevail near interties (social cost of exports) not reflected in cost paid by exporters (HOEP)
 - Export too much
- Price increase due to ramp rate change is partly offset by a reduction of exports
 - These exports may be inefficient
 - Consider the trend in export efficiency
- Period: January 2006 to September 2008
- Similar analyses have been conducted by the MSP
- Results

Privately & Socially Efficient Exports to New York



- Both private and social efficiency trends increasing
 - Increase of social efficiency trend is statistically significant
 - Increase of private efficiency trend is not statistically significant
- We cannot attribute the continuation of these trends to the ramp rate policy change
 - Certainly the effect was not noticeably negative

- Econometric analysis will be prepared for the MPWG meeting in March 2009, approximately 18 months after the policy change
 - Already underway
- Consideration of impact on IOG and CMSC, Michigan, variation over time, *e.g.*, peak vs. off-peak