

Market Development Advisory Group Intertie Trading: A Focus On Exports

January 21, 2020

Meeting Participation

- Webcast participation (including audio):
 - <https://www.meetview.com/ieso20200121>
 - Use the chat function to ask a question
- Teleconference participation (audio only):
 - Local (+1) 416 764 8640; Toll Free (+1) 888 239 2037
 - Press *1 to alert the operator that you have a question;
 - Press *0 for any other operator assistance
- There will be pauses throughout to ask questions; when asking a question, state your name and who you represent.
- The activities of the MDAG are guided by the IESO [Engagement Principles](#).

Purpose

- To provide insights on export trade
- Add to MDAG's electricity market knowledge and deliver useful information in advance of Transmission Rights Clearing Account discussion that follows
- Review rationale and mechanics of intertie trade
- Discuss market outcomes to illustrate system and economic impacts of exports

Review: Intertie Trading

Why have intertie trading?

- Reliability
 - Ontario is connected to five neighbours
 - Trade enables operational and planning flexibility
- Economic
 - Transparent prices from markets drive efficient trades and leads to better utilization of resources regionally
 - Efficient power flows from a low cost region to a high cost region

Review: Intertie Trade Schedules and Prices

- In Ontario, intertie trades are economically scheduled based on bids and offers
 - Economically evaluated in the hour-ahead predispatch with the resulting constrained schedules used in real-time
 - Settlement is the sum of the real-time market clearing price and the cost of congestion calculated in predispatch (MCP+ICP)
- ICP is positive when export congested and negative when import congested

ICP: Intertie congestion price

MCP: Market clearing price

Review: Navigating Through Other Markets

- A successful intertie transaction between two markets requires to be scheduled in the IESO market and the neighbouring market

Example: A successful export to the New York Independent System Operator (NYISO) market requires a bid that clears in the IESO market and also a corresponding import offer that is economic in the NYISO market

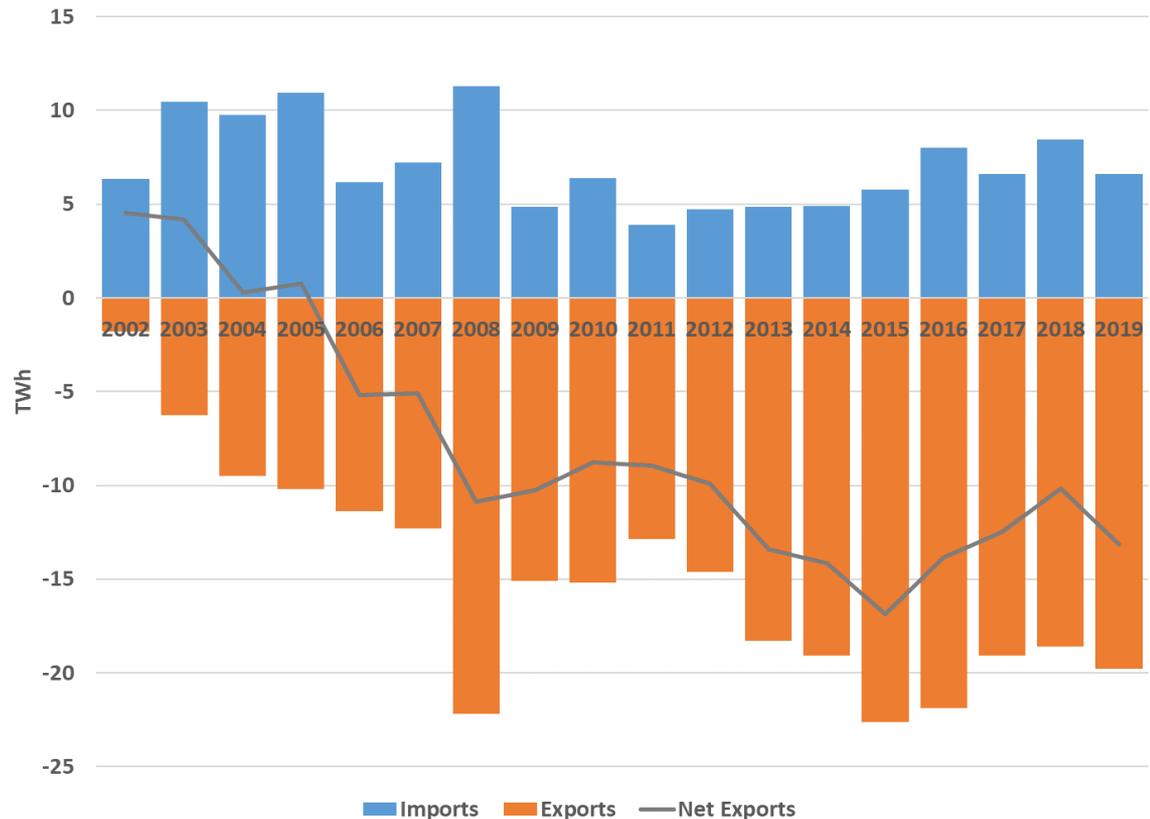
Many Opportunities for Intertie Trade

Intertie trade is an important market function that will persist given the opportunities available to participants

- Bilateral
 - Pre-arranged agreement to move power
 - Trade may be bid and offered as price takers
- Price arbitrage
 - Predict price spreads between markets and at various timeframes
 - Buy low and sell high
- Response to changing system conditions
 - Changes in seasonal patterns, weather conditions, supply mix characteristics, outages and local issues

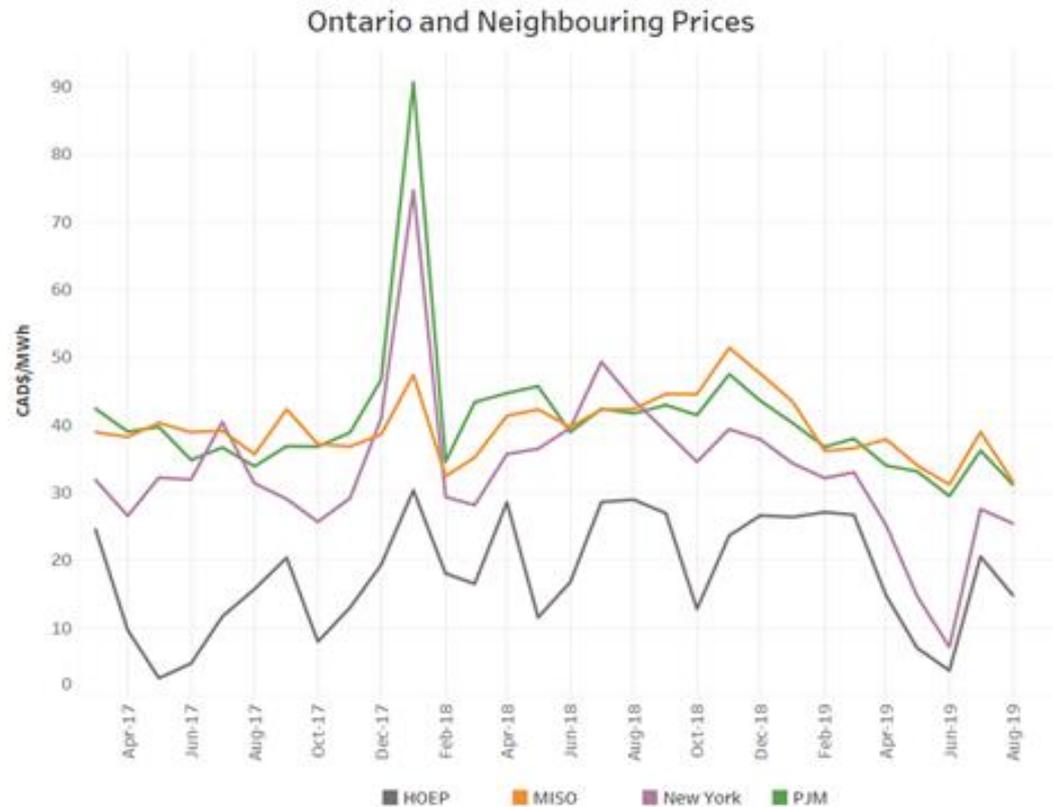
A Focus On Exports

Ontario has been in a net export position since 2006 and expected to remain as such in the coming years

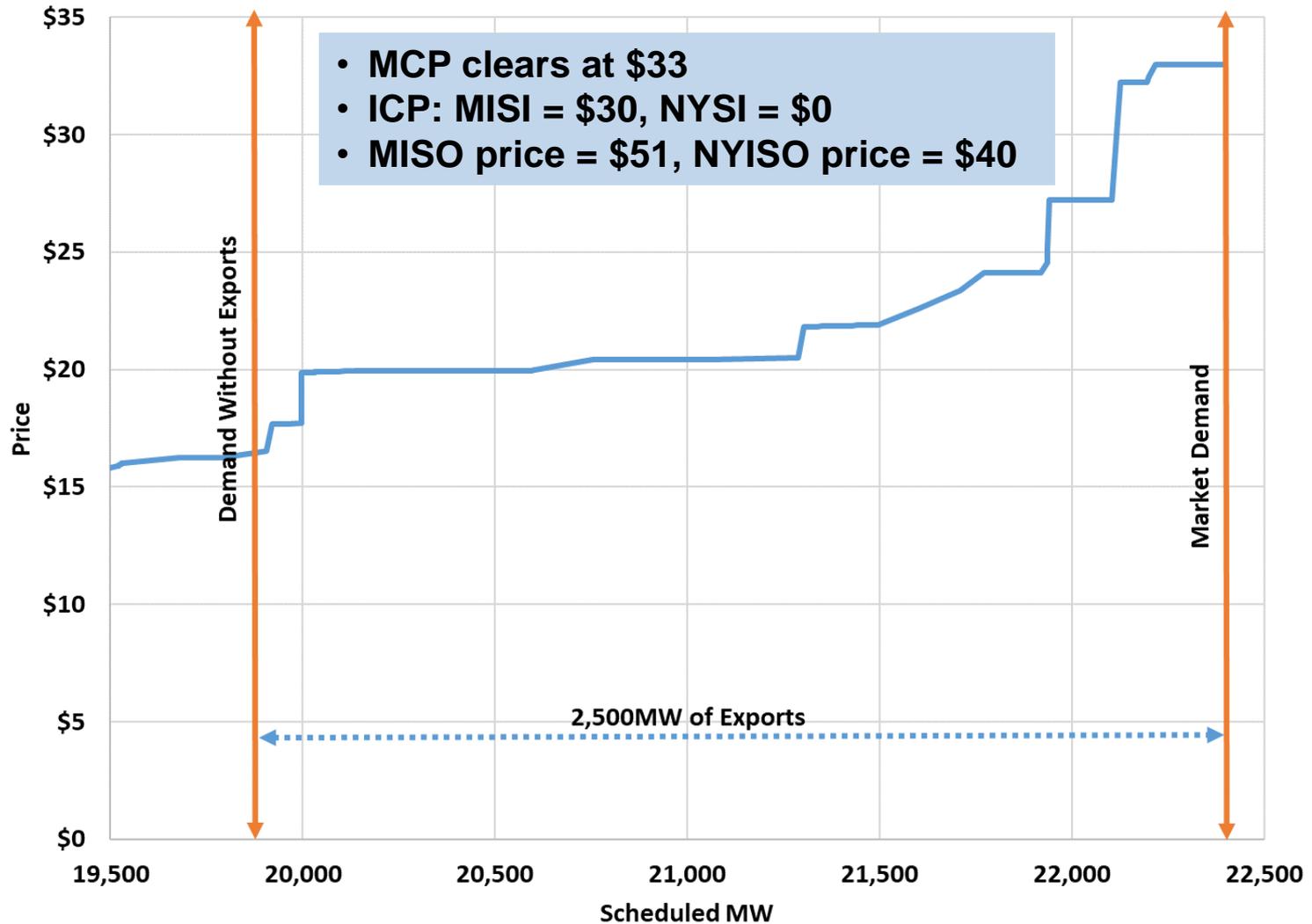


Export Respond to Prices

- Exports do not flow at any price
- Power flows from a low price region to a high price region
- Exports are especially important in electricity markets as they are very price responsive given most of Ontario demand cannot respond in the predispach timeframe to system changes



Example 1: A "Regular" Hour in July 2019



Example 1: Trade Implications

- Trades bid and offered are based on expectations of what the clearing prices will be
- Looking only at the resulting energy clearing prices, exports were economic flowing to MISO and NYISO
- Exports pay the MCP and ICP
 - No congestion at the NYISO tie and traders earned a profit of up to \$7 ($\$40 - \33)
 - Congestion at the MISO tie resulted in a \$30 ICP
 - Exporters to MISO paid \$63 ($\$30 + \33) for 1 MWh of flow, received \$51 from MISO, and incurred at least a \$12 loss ($\$51 - \63)
 - For traders with Transmission Rights (TRs) at the MISO tie, their losses were hedged with a TR the \$30 ICP payout per MWh of scheduled exports

Example 1: Impact of Exports

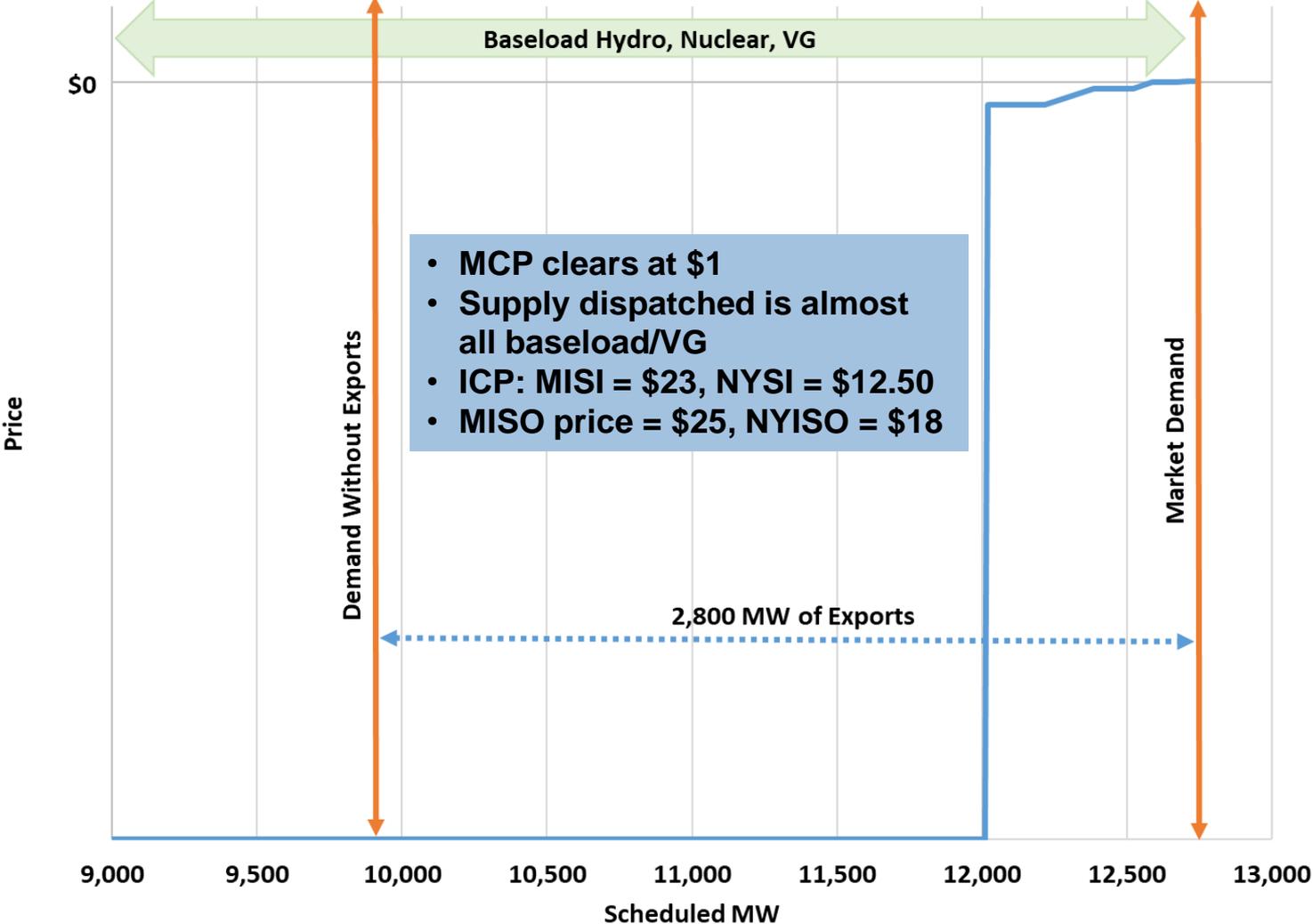
To illustrate the impact of trade, consider the hypothetical where Ontario is an island and exports could not happen

- Additional supply would not be needed to back exports and earn extra margins
- External regions would not benefit from accessing cheaper supply and lowering their system costs
- While the Ontario MCP would have been lower with given less demand, the impact to the ratepayer would be unchanged given the corresponding increase to the Global Adjustment (GA)

The Importance of Correct Intertie Pricing

- When the Ontario clearing price is less than the MISO and NYISO prices, exports are seemingly efficient
- This is not always the case as the uniform clearing price does not include additional costs for congestion within Ontario
- This flaw in intertie pricing will be corrected in MRP
 - The MRP business case indicates the pricing flaw results in \$20M-\$30M of efficiencies annually

Example 2: A SBG Hour in May 2019



SBG: Surplus Baseload Generation

VG: Variable generation

Example 2: Trade Implications

- There is a notion that when prices are low or negative, exports do not pay the full value or are paid for energy flowing out of Ontario
- Exports pay MCP + ICP at all times
- During SBG, interties tend to be export congested driving up ICP
- In example 2, MISO and NYISO ties were export congested
 - Exporters to MISO paid \$24 ($\$23 + \1) for 1 MWh of flow and received \$25 from MISO
 - Exporters to NYISO paid \$13.50 ($\$12.50 + \1) for 1 MWh of flow and received \$18 from NYISO
 - Traders with TRs also received ICPs to hedge against congestion

Example 2: Impact of Exports During SBG

Consider again the hypothetical with Ontario as an island and exports could not be scheduled

- Reliability issues could develop with excess surplus
- VG, hydro curtailed, nuclear maneuvered or shutdown
- Negative market prices would clear with no ICP charged
- Forgone energy would be paid for by the ratepayer through the GA and be worse off

Key Takeaways

1. Export opportunities occur as long as markets are interconnected
 - Bilateral, price arbitrage, changing system conditions continue to occur
2. Scheduled economic exports provide benefits to the system and the market
 - Resources are utilized efficiently among connected markets
 - In times of SBG, the ratepayer is better off
3. Efficient exports require transparent and efficient pricing
 - Export do not flow at any price, power typically flows from a low price region to one with higher prices
 - Wrong prices will lead to inefficient intertie transactions
 - MRP will implement better pricing at the interties and eliminate Congestion Management Settlement Credit payments
 - Market initiatives aim to correct market pricing flaws and remove non-market payments