

JULY 22, 2020

Transmission Rights Market Review – Stakeholder Engagement Webinar

Meeting Participation

- [Webcast participation \(including audio\) link](#)
 - Click “Ask a Question” in the bottom right corner of the screen 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
- When asking a question, state your name and who you represent
- This stakeholder engagement is guided by the [IESO Engagement Principles](#)

Purpose

- Provide stakeholders with an update on work performed since the webinar on May 21
- Present key findings of Stage 1 – Value Assessment
- Outline options to explore during Stage 2 – Near-Term Improvements

Agenda

- Transmission Rights (TR) Market Review Update
- Stage 1 – Value Assessment
 - Additional analysis
 - Summary of stakeholder feedback
 - Key findings of Stage 1
- Stage 2 – Near-Term Improvements
 - Options to explore
 - Proposed evaluation criteria, process and timeline
- Next Steps

TR Market Review Update

Since the May 21st TR Market Review webinar, the IESO has:

- Conducted individual conference calls (to respect commercial sensitivities) to solicit feedback on the questions posed during the May 21st webinar
- In addition to written feedback submissions, this feedback has helped inform both Stage 1 and Stage 2

TR Market Review Update, continued

- Completed additional analysis:
 - Reviewing all interties
 - Reviewing all auctions
 - Assessing how efficient trade translates into benefits for Ontario consumers

Additional Market Review Update

With stakeholder feedback and the additional analysis, the IESO is in a position to:

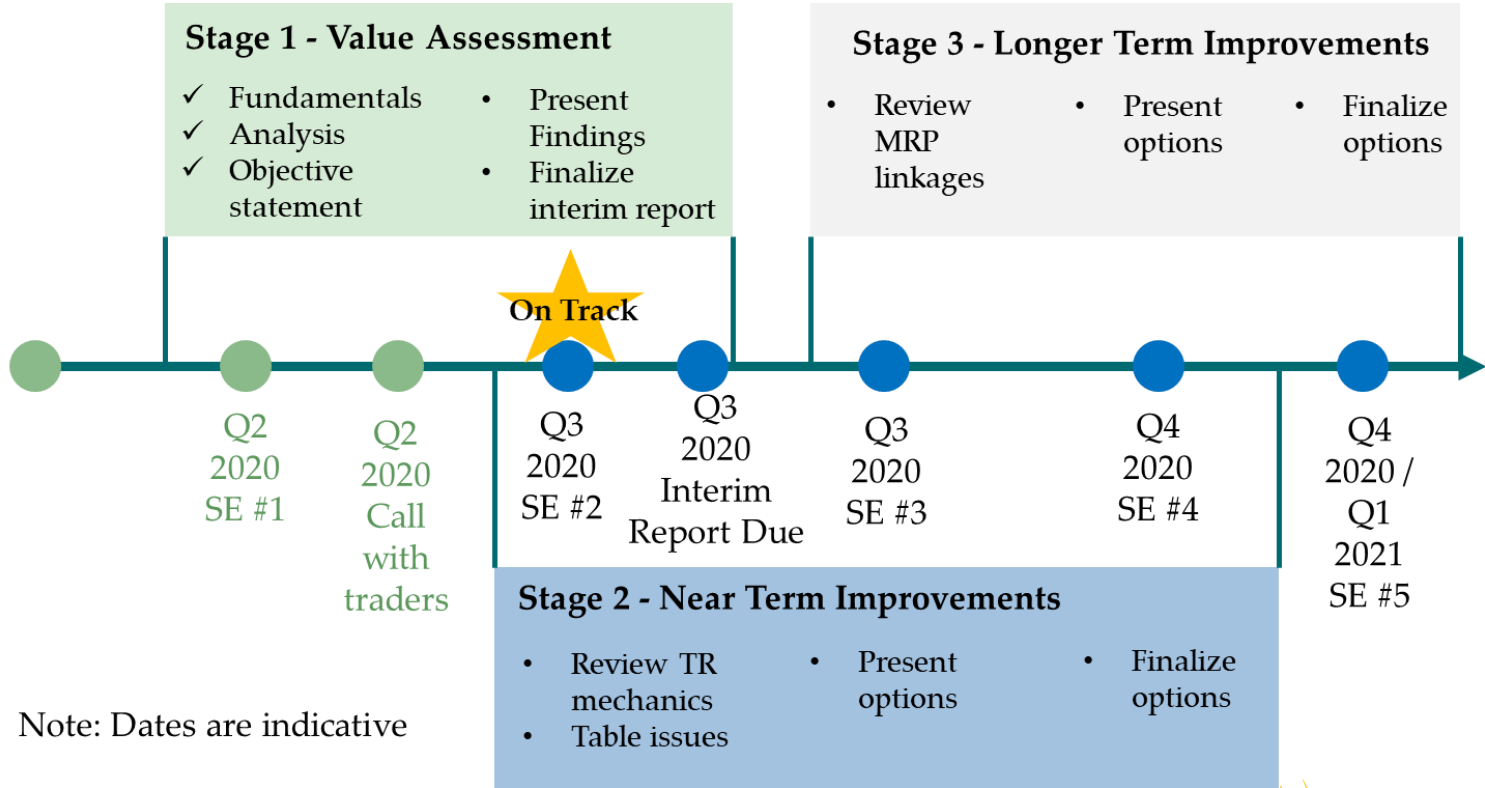
- Finalize Stage 1
- Develop the interim report by Q3 2020

Additional Market Review Update – Interim Report

The interim report will highlight:

- The critical role that TRs play in facilitating efficient intertie trading
- Potential areas of improvement

TR Review - Timeline



Note: Dates are indicative



STAGE 1 – ADDITIONAL ANALYSIS, STAKEHOLDER FEEDBACK AND KEY FINDINGS

Value Assessment - Purpose

1. To assess the historical performance of the TR market
2. To determine the objectives of the TR market
3. To determine if the TR market is achieving its intended purpose

Value Assessment - Deliverable

An interim report to:

- Highlight the critical role that TRs play in facilitating efficient intertie trading
- Highlight potential areas of improvement

Work Performed to Date

Data Analysis Prior to May 21	<ul style="list-style-type: none">✓ Overall market✓ One competitive intertie✓ One competitive auction
Data Analysis After May 21	<ul style="list-style-type: none">✓ All interties✓ Competitive, Semi-competitive and Non-competitive auctions✓ Simulation (reliability, efficiency and consumer benefits)
Solicit Stakeholder Feedback	<ul style="list-style-type: none">✓ Posed questions to stakeholders during May 21 webinar✓ Reached out to 6 traders via one-on-one conference calls✓ Received written feedback in response to questions
Interim report	<ul style="list-style-type: none">□ To be developed



Additional Analysis

Overview

The IESO has extended its initial analysis to:

- Fill known information gaps
- Explore additional areas based on feedback received

Background

The additional analysis conducted since the May 21st webinar investigated:

1. Hedged flow and physical trader participation in more detail on all interties where TRs are sold
2. The competitiveness of auctions on all interties, identifying a range of auctions:
 - highly competitive
 - moderately competitive
 - less competitive
3. Through simulation, the high-level reliability, efficiency and broader market benefits provided by the TR Market

All Intertie Analysis

Prior to May 21st, the IESO focused its analysis primarily on the most congested interties

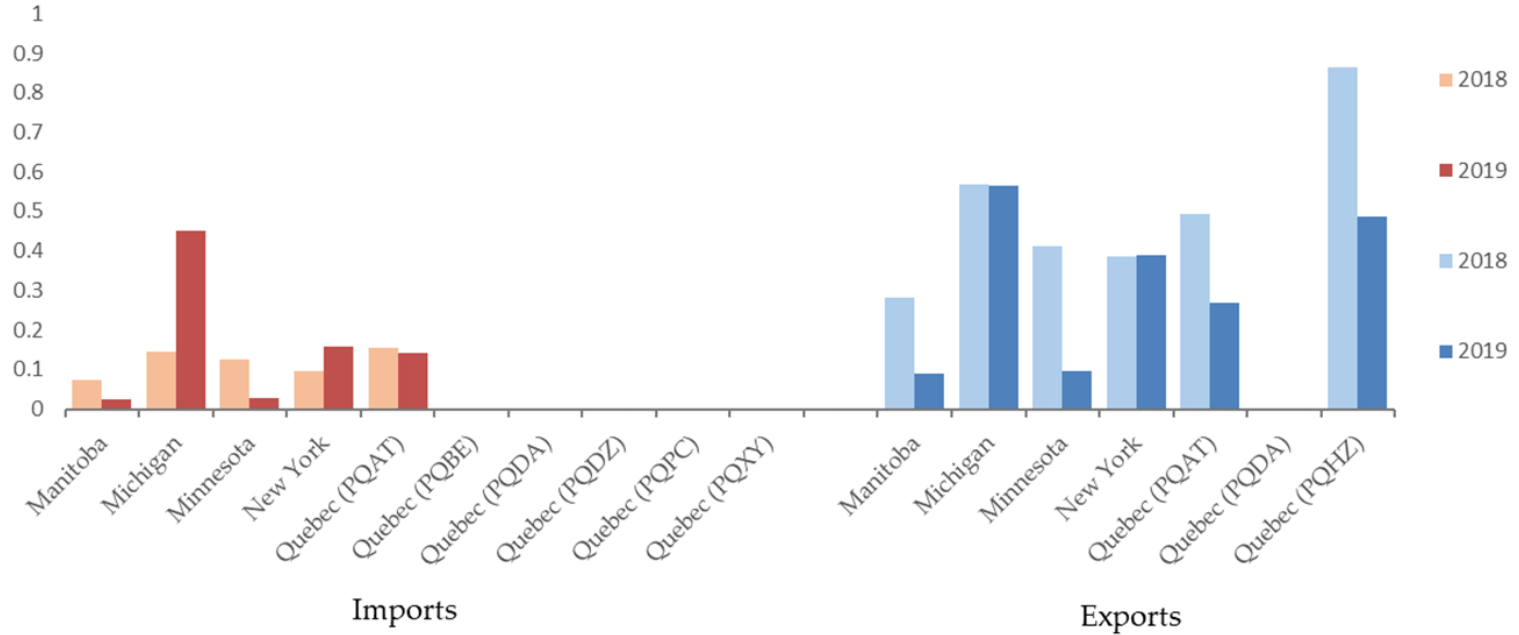
- These account for a disproportionate amount of congestion rent collected, TR payouts, and auction revenue, as well as the highest participation in TR auctions

All Inertie Analysis, continued

- While the focused analysis on a limited number of inerties was critical, the IESO wants to present the complete picture of the value of the TR market to stakeholders through this engagement
- To bridge this gap, the IESO expanded its analysis to look at:
 - all inerties with a primary focus on hedged transactions, as well as
 - the number of physical traders purchasing TRs on each inertia

Hedged Transactions on all Ties

Percent of Energy Flow with TR Ownership

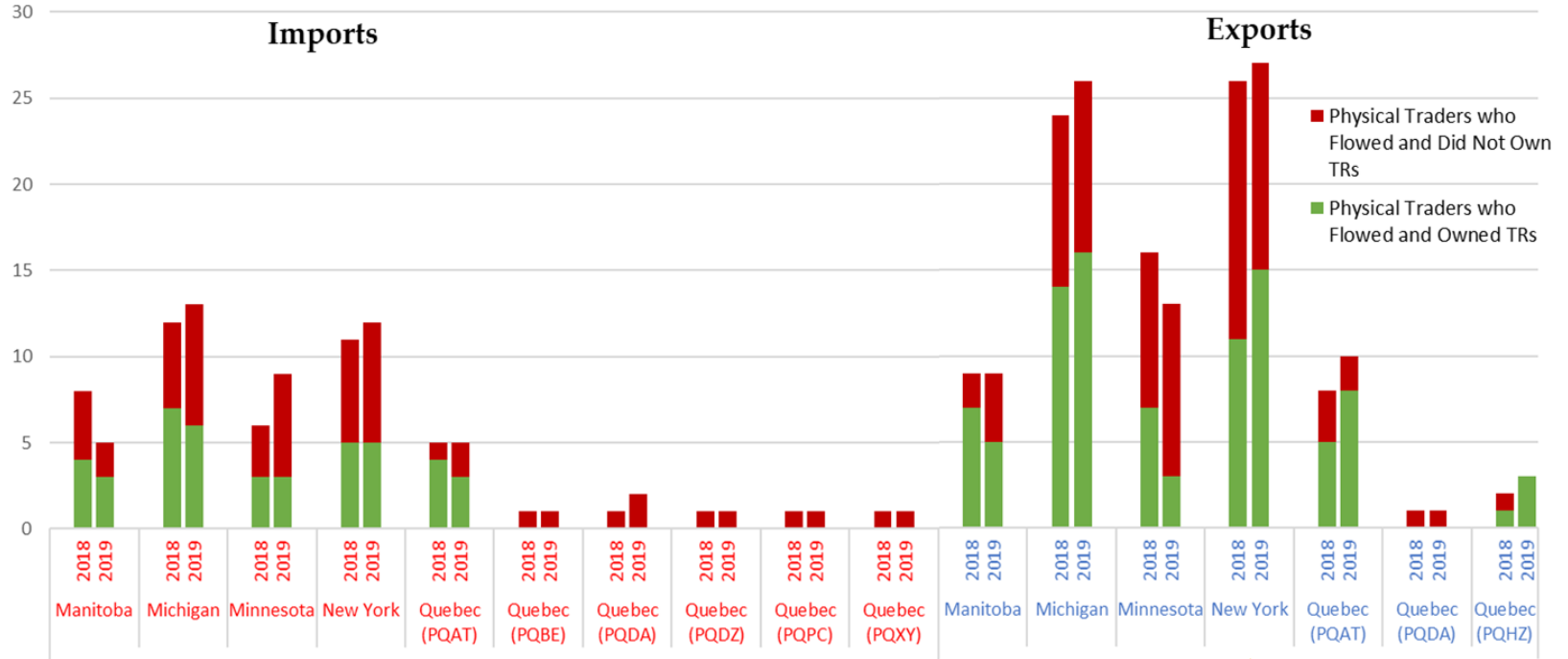


Hedged Transactions on all Ties, continued

- The utilization of TRs as a hedge for physical flow varies significantly by intertie
- On some interties, TRs are being heavily used by traders
- On other interties TRs, are not being used to hedge physical flow

TR Utilization by Physical Traders

of Physical Traders who Owned/Didn't Own TRs by Year and Tie



TR Utilization by Physical Traders, continued

- On some ties, physical traders actively purchase TRs to hedge physical flow
- On other ties they flow power without purchasing any TRs
- Auctions without participation by physical traders raise questions on the value of selling TRs on these paths

The Competitiveness of Auctions

- For the May 21st webinar, the IESO developed an illustrative bid curve for a short-term (ST) auction on a highly competitive intertie
- This was used to:
 - better understand how auction participants might be valuing TRs and
 - the potential role that financial traders play in price formation in these auctions

The Competitiveness of Auctions, continued

- However, the IESO was aware, at a high level, that many auctions:
 - are not as competitive as others
 - have a relatively low clearing price, and
 - have little participation by physical traders
- To better understand the outcomes of less competitive auctions, the IESO looked at a variety of short-term auctions on interties where:
 - congestion was infrequent, and
 - auction clearing prices were typically low

The Competitiveness of ST Auctions in 2019

	# of ST Auction Participants	Average Auction Clearing Price	Out of 179 ST Auctions in 2019
Highly Competitive	≥8	\$1763/MW	53% were highly competitive (95 of 179)
Competitive	6-7	\$621/MW	35% were competitive (63 of 179)
Less competitive	4-5	\$3/MW	12% were less competitive (21 of 179)

The relative competitiveness of auctions was determined by the number of auction participants

The Competitiveness of ST Auctions in 2019, continued

- Overall in 2019 most ST auctions were highly competitive or competitive
- Often TRs sold in less competitive ST auctions are not used to hedge intertie transactions (see illustrative bid curves in the appendix).

Reliability, Efficiency and Consumer Benefits

- Prior to the May 21st webinar, the IESO had not yet completed a high-level assessment of the potential reliability, efficiency, and broader market benefits of the TR market
- However, quantifying these benefits is an important part of:
 - understanding the baseline value of the TR market, and
 - supporting a business case for potentially significant changes

Reliability, Efficiency and Consumer Benefits, continued

To better understand these benefits, the IESO ran several simulations to:

- Understand the extent that intertie transactions with TRs fail compared to transactions without TRs
- Understand the impact on export volumes and price if 25%, 50%, or 100% of TR-backed intertie bids/offers were removed from the bid/offer stack (holding all else constant)

Reliability Benefits

Export Failure Rates by Volume							
2016		2017		2018		2019	
Without TRs	With TRs	Without TRs	With TRs	Without TRs	With TRs	Without TRs	With TRs
4.4%	2.7%	3.8%	1.8%	3.7%	1.5%	4.1%	0.9%

- Export transactions with TRs tend to fail at a lower rate than export transactions without TRs
- This contributes to fewer out-of-market actions that the IESO has to undertake to make-up for failed transactions, and helps maintain price integrity

Market Efficiency and Consumer Benefits

- The IESO conducted a simulation to determine the impact of TRs on intertie trade and the corresponding cost to Ontario consumers
- Based on 2019 data, the IESO simulated the removal of 25%, 50%, and 100% of intertie offers/bids backed by TRs within models of Ontario's energy market to get new simulated pre-dispatch intertie schedules and real-time prices
- The wide range in the simulation scenarios reflects uncertainty in how TRs are being used by physical traders

Market Efficiency and Consumer Benefits, continued

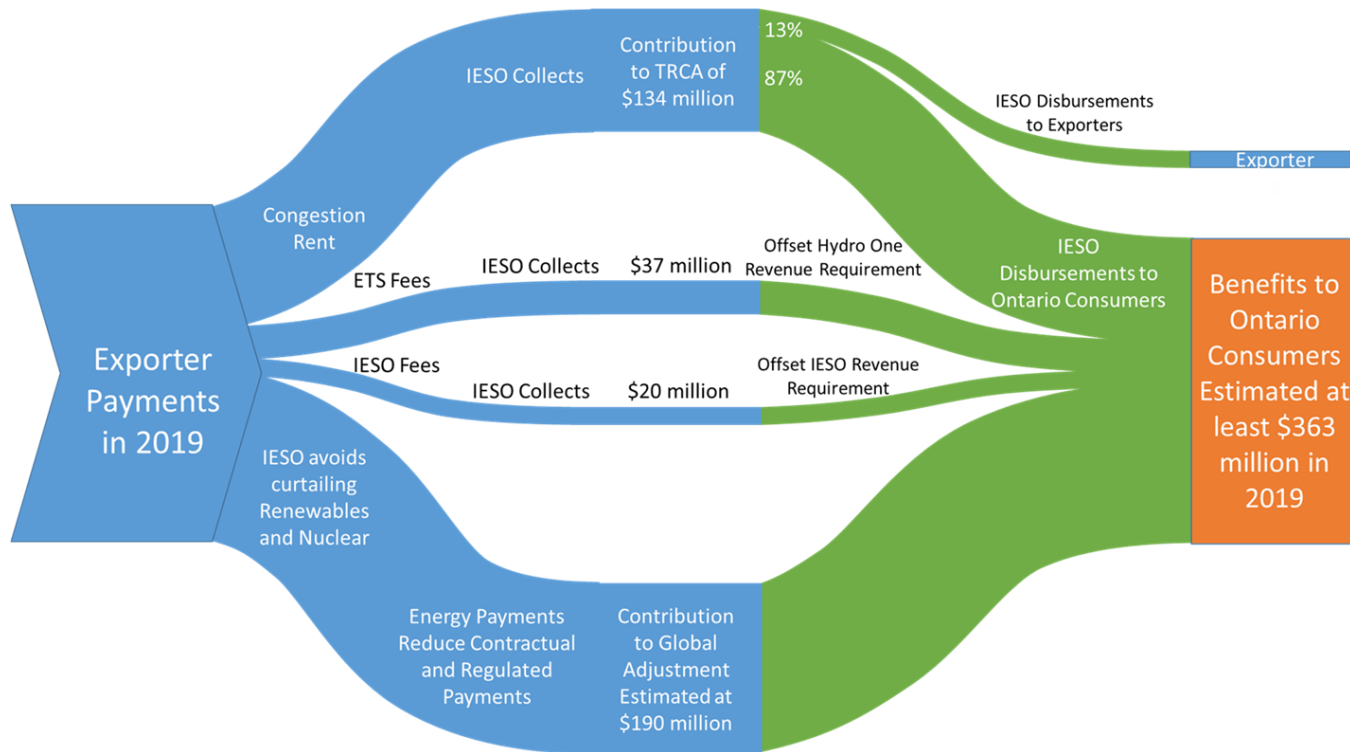
- By comparing the simulated results, the IESO was able to estimate potential impact on market efficiency and consumer costs caused by changes in congestion rent, exporter fees, and other system costs
- Without the TR Market, reduced export volumes would have resulted in losses to Ontario consumers estimated at \$50-135 million per year
- The total economic benefits of exports in 2019 has been estimated previously by the IESO at approximately \$363 million (see Economic Benefits of Competitive Exports - 2019)

Market Efficiency and Consumer Benefits, data

	25% of TR Backed Bids/Offers Removed	50% of TR Backed Bids/Offers Removed	100% of TR Backed Bids/Offers Removed
Reduced congestion rent	\$37 million	\$70 million	\$86 million
Reduced contributions to GA	\$16 million	\$31 million	\$42 million
Reduced export transmission service (ETS) rates and IESO fees	\$1 million	\$3 million	\$7 million
Market efficiency losses*	\$5 million	\$13 million	\$38 million
Total Ontario Consumer Benefits (except efficiency losses)	\$54 million	\$104 million	\$135 million

*Market efficiency losses is calculated as ((external LMP-HOEP) * net export reduction in \$), and results from reductions in efficient exports from a low priced region to a high priced region

Economic Benefits of Competitive Exports – 2019



Notes:

- All values to scale
- TRCA is the Transmission Rights Clearing Account
- Estimates do not include exporter contributions to all uplift costs, which would further increase benefits to consumers (likely similar in size to the ETS fee)



Stakeholder Feedback for Stage 1

Overview of Stakeholder Feedback for Stage 1

During the May 21st webinar, the IESO requested stakeholder feedback on the following items:

- How are TRs used in practice by stakeholders?
- Do TRs provide an appropriate or optimal hedge against congestion?
- How do stakeholders manage the risk associated with TRs?

Overview, continued

- After the webinar, the IESO organized conference calls with 6 traders representing a broad spectrum of the trading community.
- The one-on-one conference calls resulted in open and meaningful discussions.
- The IESO also received written feedback submissions from 5 stakeholders

Stage 1 Questions 1 and 2 for Stakeholders

1. How are TRs used in practice by stakeholders?
2. Do TRs provide an appropriate or optimal hedge against congestion?

Stakeholder Feedback for Questions 1 and 2

- Traders confirmed that TRs are a key enabler for intertie trading by providing a congestion price hedge
- Traders use many different strategies, but TRs are universally used in some capacity as a backstop to physically flowing energy into and out of Ontario
- With TRs, traders are more confident to pursue higher trade volumes and bid more aggressively in the energy market

Stakeholder Feedback for Questions 1 to 2, continued

- Individual traders aim to hedge different percentages of their flow depending on their specific trading strategy and willingness to take on market risk
- The value of TRs to traders is limited by the current auction design as well as the types of TRs offered
 - TRs incent and provide greatest value to longer term trades
 - Limited value to shorter term trades that provide important operational benefits to the IESO / system

Stage 1 Question 3 for Stakeholders

3. How do stakeholders manage the risk associated with TRs?

Stakeholder Feedback for Question 3

- TRs are currently offered on a “one size fits all” basis that can:
 - make them expensive to purchase, and
 - present barriers to smaller traders.
- These types of issues and the challenge of forecasting congestion accurately make TRs risky and expensive
- Traders discount these costs and risks in their TR bids

Stage 1 Question 4 for Stakeholders

4. Proposed TR Market Objective Statement

- Enhance the efficiency of intertie trades by providing a congestion hedge to physical intertie traders
- Provide net benefits to Ontario ratepayers in the long term

Stakeholder Feedback for Question 4

There is a general consensus with the proposed objective statement.

One stakeholder observed that:

- The objective of the TR Market is inconsistent with the Electricity Act and Market Renewal Program (MRP) principle of efficiency.
- The objective should be to increase aggregate welfare for entire market including consumers, producers and traders.
- In turn, this would provide long-term benefits to consumers and improve the efficiency of the market.

IESO Response to Question 4

The IESO revised the proposed objective statement in response to stakeholder comment received

Stage 1 Question 5 for Stakeholders

5. Relationship to Market Renewal Program

Stakeholder Feedback and IESO Response to Question 5

- Stakeholder Feedback:
 - One stakeholder asked if the IESO would consider exploring the creation of internal TRs between nodes
- IESO Response:
 - During the May 21st webinar, the IESO pointed out that this was discussed in the MRP engagement and decided no internal TRs would be offered

Stakeholder Feedback and IESO Response to Question 5, continued

- Stakeholder Feedback:
 - Stakeholders requested that the decisions and timing of the TR Market Review engagement be coordinated with the MRP engagement
- IESO Response:
 - The IESO will consider this feedback as we move towards Stage 3 of this engagement when we will discuss long-term changes to ensure alignment and compatibility of the TR market with the MRP



Summary for Stage 1

Summary of Data Analysis and Feedback Since May 21st

- Limitations

1. On some paths, TRs are rarely used for their intended purpose, and auctions are non-competitive
2. The simplistic TR product design may prevent more efficient use of TRs in supporting Ontario's electricity market
3. Inflexibilities in TR auction design may prevent buyers from purchasing TRs that would enhance trade

Summary of Data Analysis and Feedback Since May 21st

- Positives

1. Many TRs are being used for their intended purpose, to hedge against congestion
2. The majority of TR auctions are competitive and result in high clearing prices
3. There are significant reliability and consumer benefits of the TR Market

Revisions to the TR Market Objective Statement

The IESO revised the objective statement proposed on May 21st

- In response to stakeholder feedback, added “aim to maximize the gains from electricity trade”.
- The IESO believes that the gains from trade accrue to the Ontario market as a whole, including traders, generators, consumers, etc.
- Changed “ratepayers” to “consumers” to add more clarity

Revised TR Market Objective Statement

The revised TR market objective statement:

1. Enhance the efficiency of intertie trades by providing a congestion hedge to physical intertie traders
2. Maximize the gains from electricity trade and provide net benefits for Ontario consumers in the long run

Note: The revised objective statement may be subject to further changes based on stakeholder feedback and IESO internal review

Stage 1 – Overall Key Finding #1

TRs Necessary for Efficient Trade

- Analysis and stakeholder consultation confirms that TRs play a critical role in facilitating intertie trades by providing a valuable price hedge to traders

Stage 1 – Overall Key Finding #2

TR Value Not Maximized Today

- Although TRs are proven to be valuable, the value of TRs to market participants, IESO and Ontario consumers is limited by the current auction design and the types of TRs offered

Stage 1 – Overall Key Finding #3

Opportunities to Increase TR Value

- There are opportunities to increase the value of TRs to the IESO, market participants and Ontario consumers



Stage 2 Near-Term Improvements

Stage 2 Purpose

To identify and explore a prioritized set of near-term changes that:

- are consistent with the objectives and
- will improve the overall efficiency, value, and function of the TR Market

Goals

Stakeholders and the IESO have identified a number of opportunities to explore in Stage 2.

The IESO will work with stakeholders to map out the evaluation criteria, process and timeline for assessing these options

Next Steps

At the conclusion of Stage 2, the IESO and stakeholders will finalize the proposed set of near-term changes with estimated costs and benefits

All potential projects need to go through the IESO project prioritization process to be reviewed against competing projects for future consideration before being approved

Stakeholder Feedback for Stage 2 – IESO's request

During the May 21st webinar, the IESO requested stakeholder feedback on the following items :

- What improvements to the current design would you suggest to help maximize the value of TRs and encourage greater participation in the TR market?
- To support the TR review, are there lessons learned from other jurisdictions that you could provide from your experience in trading elsewhere?

Stakeholder Feedback for Stage 2 – Suggestion 1

Through feedback provided via conference calls and written submissions, stakeholders suggested options to explore in Stage 2 based on their experience in the Ontario TR market and other jurisdictions.

Based on stakeholder feedback and IESO assessment, these are the options proposed for exploration in Stage 2:

1. TCR Auction Tool
 - Enable multiple bid laminations

Stakeholder Feedback for Stage 2 – Suggestion 2

2. TR Auction Process

- Review methodology the IESO applies to determine number of TRs to sell in future auctions (e.g. Financial Upper Limit, TRs offered on ties with little to no physical trader participation)
- Make more and better information available to TR holders (e.g. historical TR auction bids, historical TR payment per MW by tie)
- TR auction timeline (e.g. run TR auctions closer to the start of the month)

Stakeholder Feedback for Stage 2 – Suggestion 3

3. TR Products

- Offer more granular TR products (e.g. on-peak, off-peak, seasonal and weekly TRs)
- Reconfiguration of TR products (e.g. allow TRs to be reconfigured and sold in subsequent auctions, secondary market, reconfiguration auctions, etc.)

Proposed Criteria #1 for Evaluating Stage 2 Options

The IESO proposes to use the following criteria to evaluate the options to explore in Stage 2:

1. Benefits:

- What are the benefits to Ontario consumers, IESO and market participants?
- Overall, how would the change better achieve the objectives of the TR Market?

Proposed Criteria #2 for Evaluating Stage 2 Options

2. Costs:

- What costs would be incurred to implement the option?

Proposed Criteria #3 for Evaluating Stage 2 Options

3. Implementability:

- How feasible and practical is it to implement the option within the project timelines?

Process to Evaluate Options – Step 1

- The IESO proposes to work with stakeholders through focused meetings to explore and evaluate the proposed options
- Stakeholders to indicate interest in participating in focused meetings with the IESO (stakeholder involvement may include reviewing materials, consultation via conference calls, etc.)

Process to Evaluate Options – Step 2

- The IESO and interested stakeholders will evaluate the proposed options and develop a draft set of near-term changes
- The IESO will present the details of the evaluation results and a draft set of near-term changes at future stakeholder engagement sessions for broader stakeholder comments

Process to Evaluate Options – Step 3

- The IESO and stakeholders will finalize the proposed set of near-term changes with estimated costs and benefits for future consideration

Stage 2 Timeline – By August 13th

- Stakeholder feedback due for today's presentation
- Stakeholders indicate interest in participating in focused meetings for Stage 2

Stage 2 Timeline – Q4 to Q4 2020

- Explore details of each option
- Evaluate options against evaluation criteria
- Develop a draft set of near-term changes

Stage 2 Timeline – Q4 2020

- Present evaluation details, the draft set of near-term changes for broader stakeholder feedback
- Finalize proposed near-term changes for future considerations

Questions for Stakeholders 1 to 3

1. Are there any critical components missing from the Stage 1 assessment and key findings?
2. Are there additional comments on the revised objective statement?
3. Are there other options that should be explored in Stage 2?

Questions for Stakeholders 4 to 5

4. Are there other considerations that should be included for the proposed evaluation criteria, process and timeline for Stage 2?
5. Are there any concerns with the IESO proposal to conduct focused discussions with interested stakeholders to explore Stage 2 options in detail?

Stage 2 Next Steps

1. Written feedback and interest in participating in focused discussions with the IESO to explore Stage 2 options can be provided to engagement@ieso.ca using the feedback form on the engagement web page by August 13th
2. Based on stakeholder feedback and discussions with interested stakeholders, the IESO will report the progress on Stage 2 in a subsequent stakeholder engagement session expected to take place in Q3 2020
3. The TR Review Interim Report will be published by end of Q3 2020 for stakeholder comment

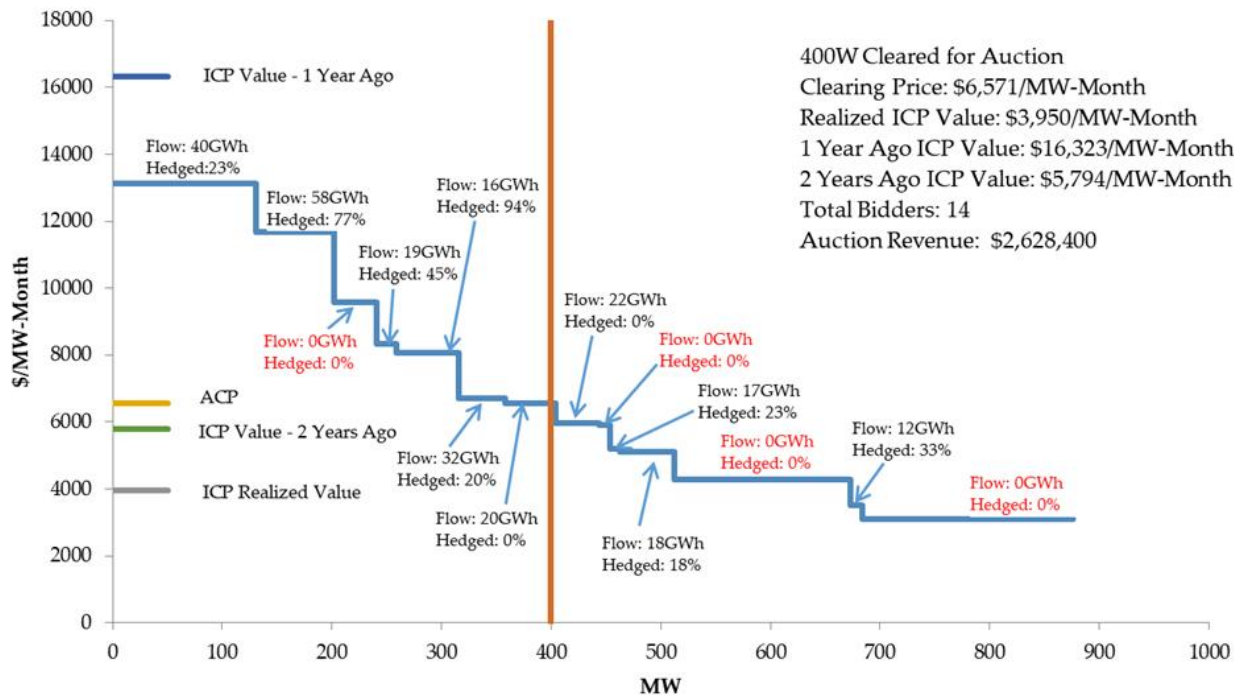


Questions?



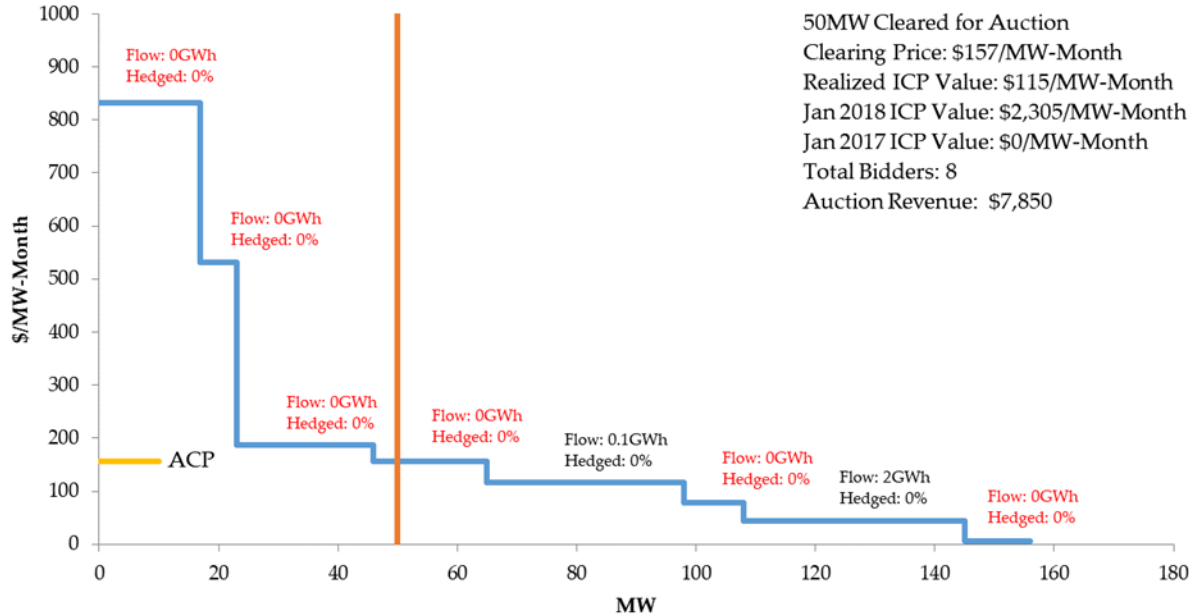
Appendix

Highly Competitive Auction Illustrative Bid Curve



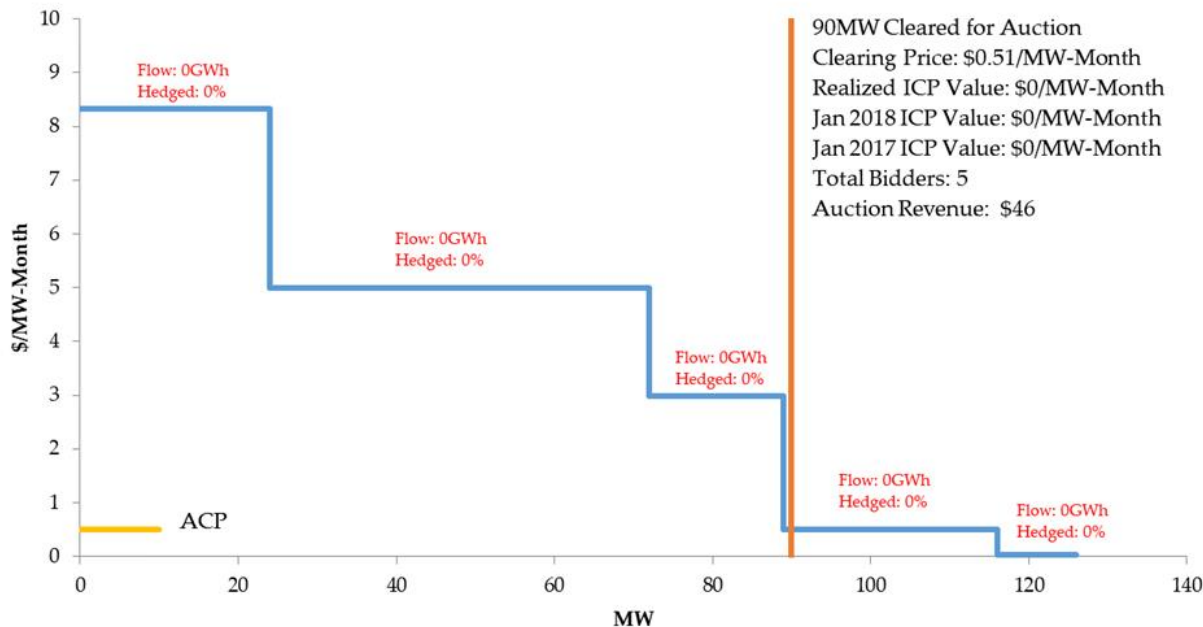
Note: A large number of physical and financial traders compete to purchase TRs, many TRs purchased hedge physical flow, and financial traders facilitate efficient price formation

Competitive Auction Illustrative Bid Curve



Note: On some interties fewer physical traders participate but still some hedging occurring on intertie transactions

Less Competitive Auction Illustrative Bid Curve



Note: On some paths only financial traders participate and none of the TRs sold are used to hedge intertie transactions