# Market Development Advisory Group (MDAG)

April 16, 2019

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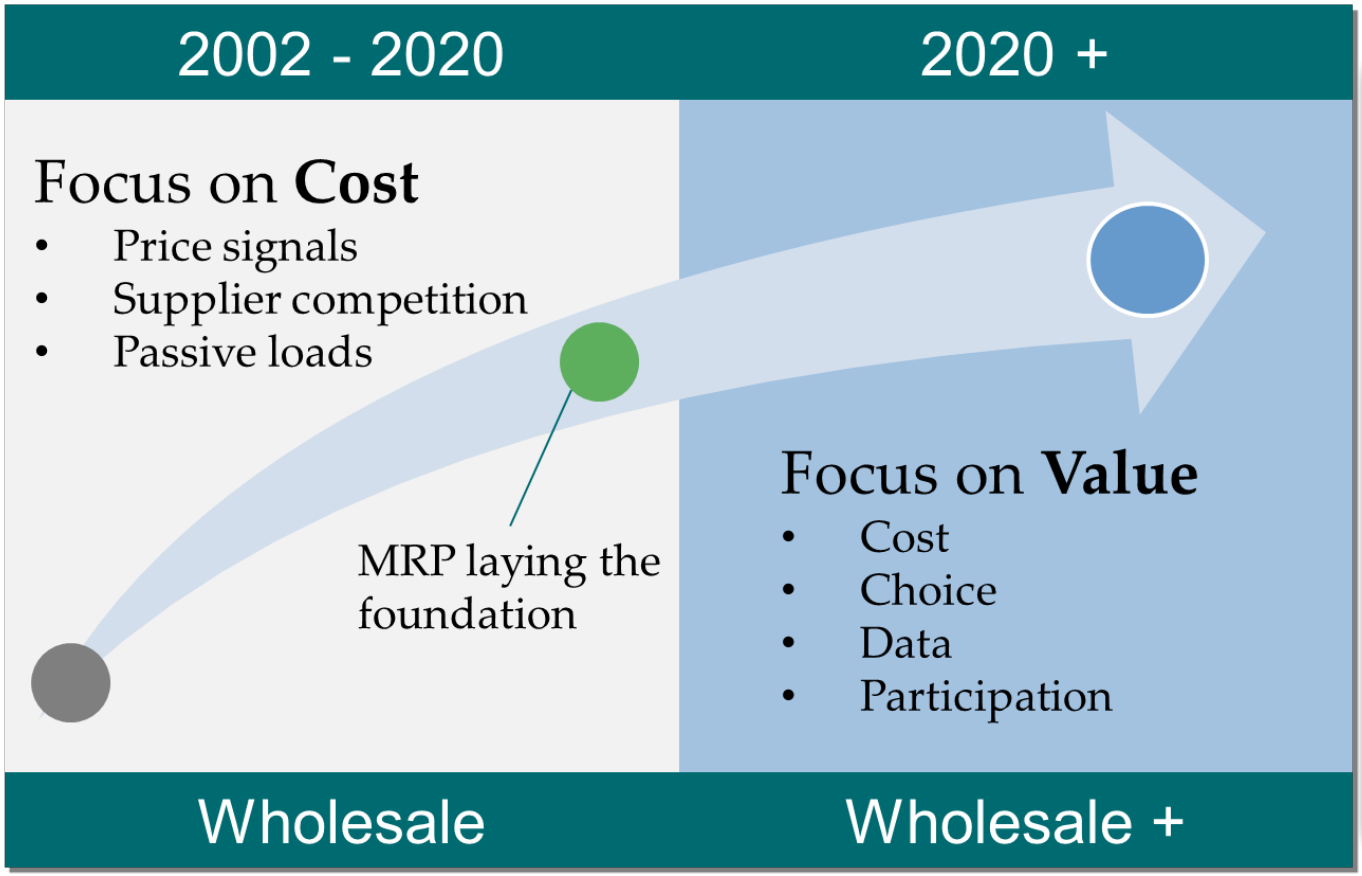
# Purpose of Markets

A wholesale electricity market today facilitates efficient transactions between suppliers and consumers, using competition to deliver an optimal allocation of resources and lowest possible system costs.

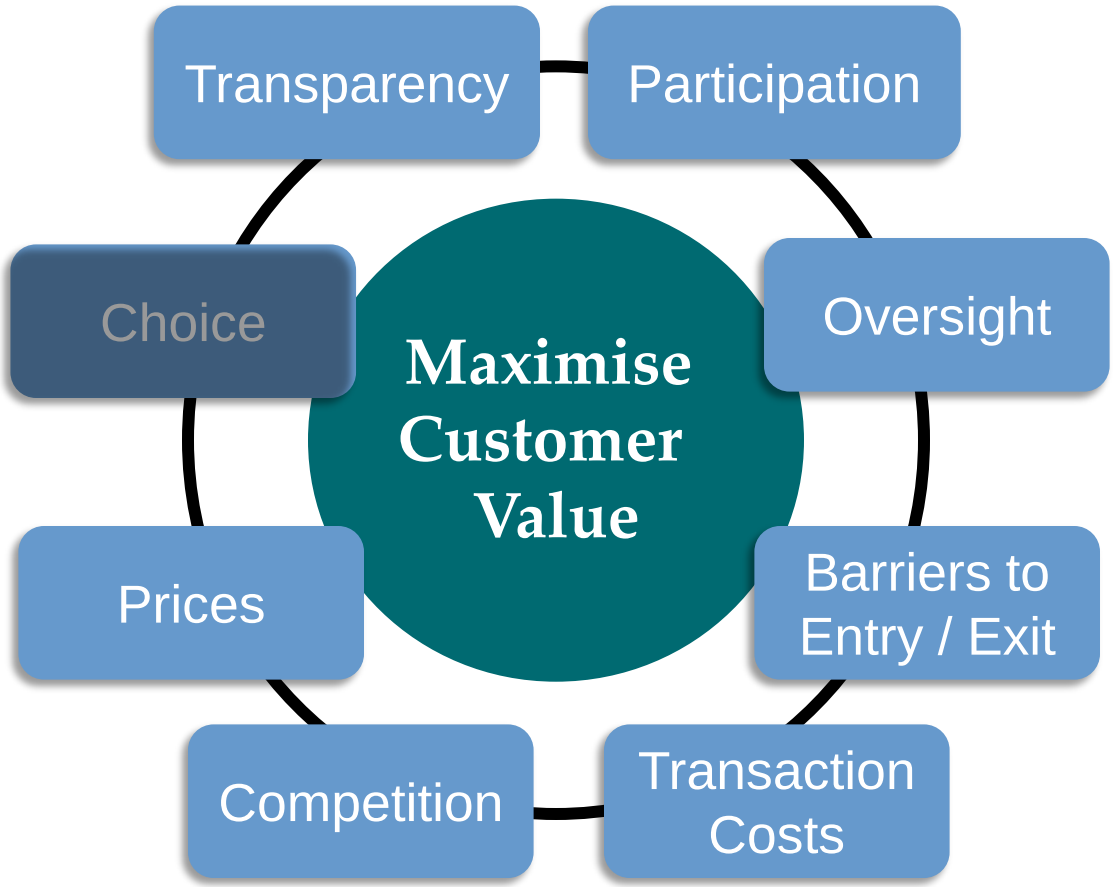
*If a market initiative doesn't directionally lead to this goal then we have a problem*

# Vision for Future Markets




***Key role of MDAG is to help guide and shape the evolution of the marketplace***

# Characteristics of Efficient Markets




When reviewing projects and ideas, ask yourself, "How will it impact each of these important market characteristics?"

Anything else we should consider?

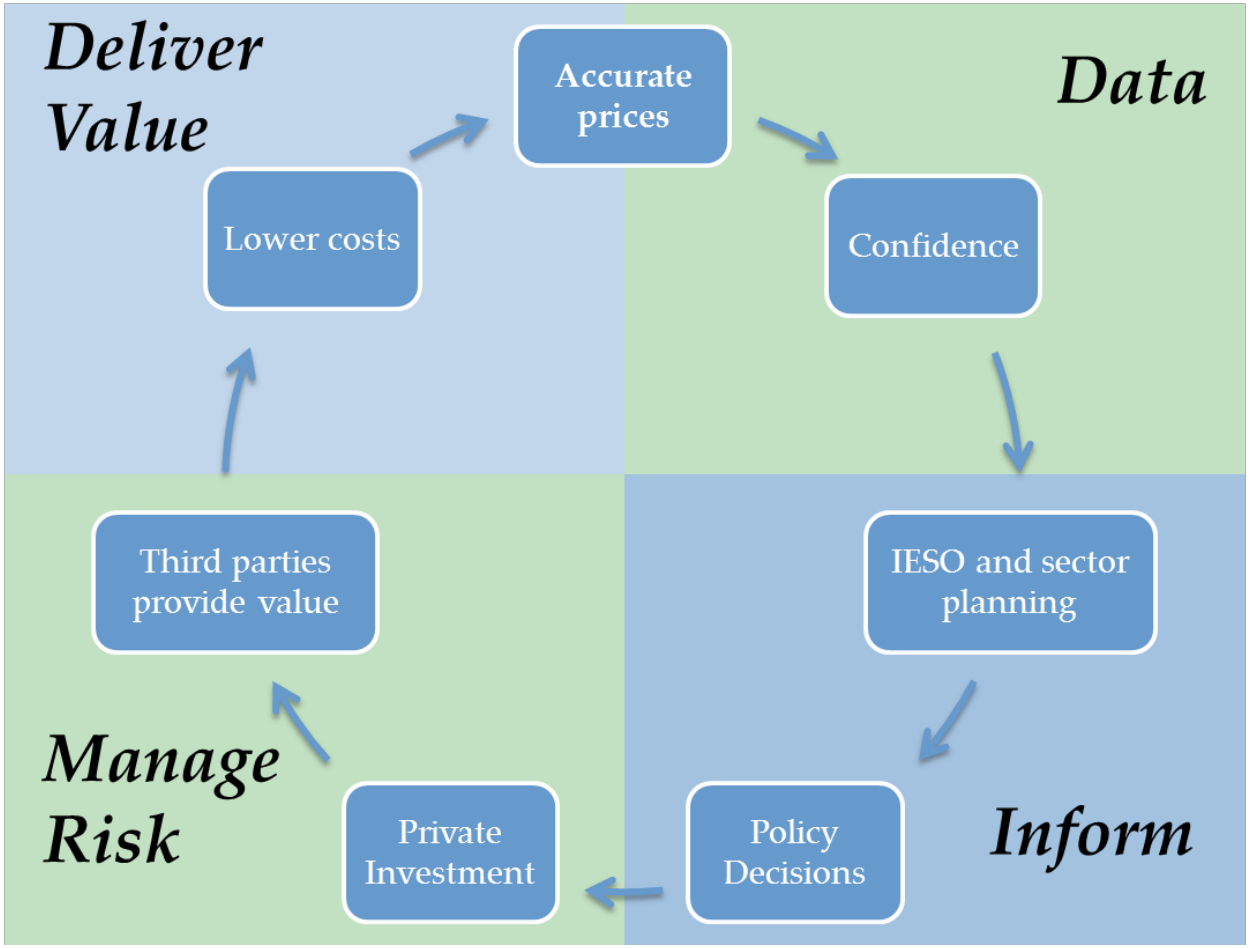
# Importance of Price Signals

- The single most important feature of a well-functioning market to achieve its goals is transparent prices that accurately signal the value of a good or service.
- When price signals are transparent and accurate, consumers and suppliers are empowered to act in a way that benefits themselves and their good decisions benefit society as a whole.

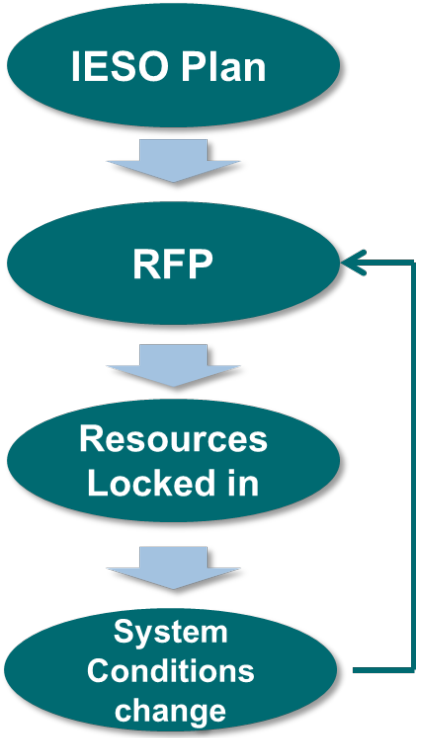
**Q's for Future Projects**

- Do prices exist?
- Are they accurate?
- Are they missing information?
- What decisions are they informing?
- What value can be unlocked?

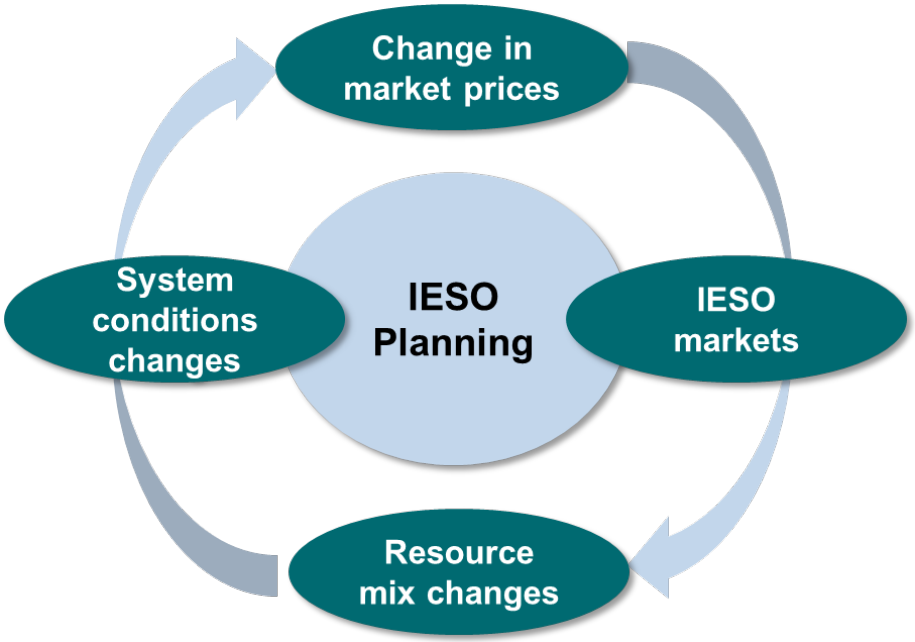
# Prices Key to a Dynamic Market



# Enhanced Role for Markets and Planning




IESO plans and periodically procures to meet expected needs




Resources clear the market to meet actual needs supported by IESO planning

# Markets and Acquisition Workplan

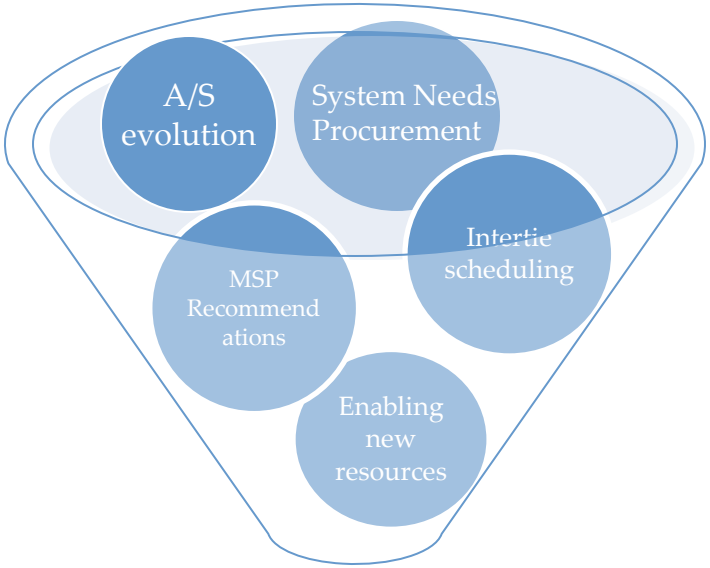
# Background

- MRP is setting the foundation for future market enhancements
- The IESO recognizes that markets cannot be static and need to continuously evolve
- With MRP as the foundation we will continue to transition to a more dynamic market
- Recognizing the volume of potential market enhancements, the IESO wants to engage stakeholders to help prioritize those markets projects that deliver the highest value and move us in the right direction

# MDAG Workplan

- The IESO proposes to introduce a Workplan that will provide transparency and set a prioritization framework

- **Single venue** for capturing market enhancement projects identified within the IESO and by stakeholders
- **Prioritization framework** for selecting market enhancement projects
- **Transparent process** for outlining projects that are needed for reliability




**Projects evaluated through the Workplan**

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# Benefits of a Workplan

**Enhances Communication**

- Transparent two-way dialogue between IESO and its stakeholders


**Prioritizes Initiatives**

- Effective tool to prioritise defined projects and research initiatives


**Focuses on Objectives**

- Sets key milestones that will be aligned with internal processes

**Tracks progress**

- One timeline to track progress of projects

**Transparent Process**

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# Types of Projects

- While MRP is still in the design phase, the Work Plan for 2020 will focus more on research initiatives to gain appropriate insight and prepare for the next wave of market projects
- As design resources become available, the IESO will have capability to take on more market change projects

## Research Initiatives

- Exploring modification to existing markets
- Jurisdictional scans
- Commissioned independent analysis

## Market Development Projects

- MRP out of scope e.g. more frequent intertie scheduling
- Addressing future flexibility

Illustration purposes only

# Approach for 2019

- The IESO will work with members of the MDAG on a simplified approach to evaluate and prioritise research initiatives by Fall 2019
- This will allow us to set into motion the highest prioritised research initiatives during 2020


**Research Initiatives**

- Exploring modification to existing markets
- Jurisdictional scans
- Commissioned independent analysis

Illustration purposes only

# Approach heading in to 2020

- In parallel, the IESO will work with the MDAG to develop a more rigorous evaluation and prioritization process for market development projects
- The IESO is aiming to have stakeholder input and prioritized projects by early in Q1 2020 to ensure it can be built into internal processes

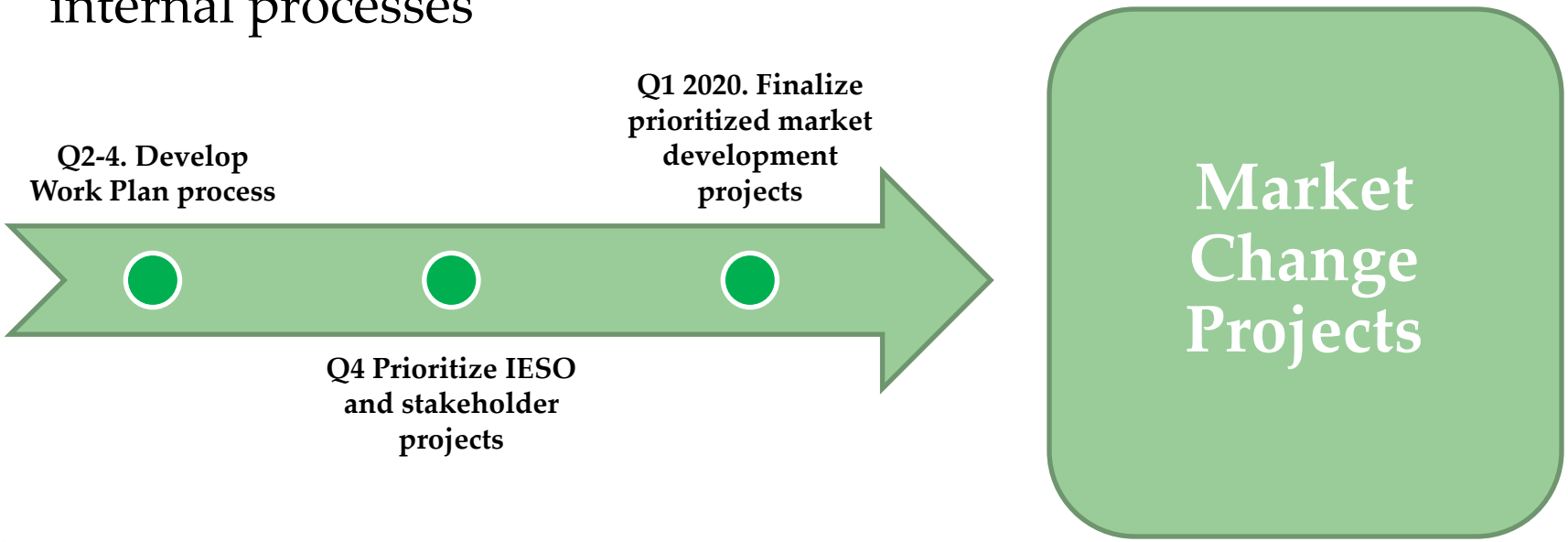



Illustration purposes only

# IESO Considerations

- The Workplan will need to align with a number of key IESO milestones, including:

| | |
|---|---|
| IESO project prioritization process | IESO resource allocation process |
| IESO strategic and business planning | Related IESO processes (e.g. Planning products) |

# Evaluation Criteria

- To prioritize projects we will need to agree upon a set of evaluation criteria
- MDAG should explore whether the approaches should differ for:
  i. Research initiatives evaluated in 2019
  ii. Other projects evaluated in 2020 and beyond

**2019**

- **Simplified Evaluation process for research initiatives**

**2020 +**

- **More rigorous evaluation criteria for future projects**

***This will be discussed in more detail at the next MDAG***

# Historical Lookback – DRWG Evaluation Process

# Historical Lookback – Demand Response Working Group (DRWG) Evaluation Criteria

- Previously, the DRWG has taken a qualitative approach to evaluate projects based on the following criteria

1. Alignment with goals for DRWG
2. Impacts on Markets (assess likely benefits) e.g. materiality, competition, efficiency
3. Ease to implement (assess likely costs) e.g. time, effort, cost, IESO internal constraints

***This was used for a group with a similar set of stakeholders, and a different approach may be needed for the Markets Workplan***

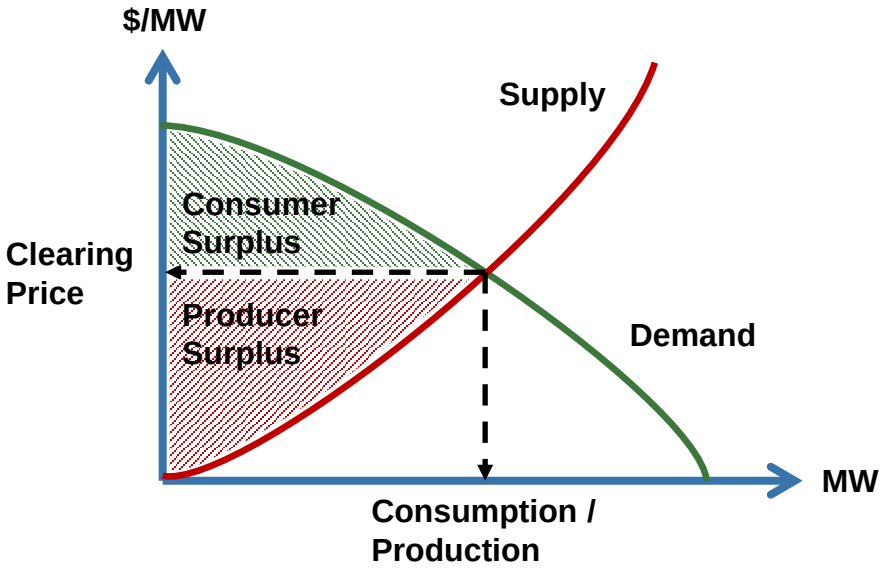
# Transparency of Reliability Projects

- The Work Plan could also provide transparency for any projects that need to be undertaken to ensure reliability
  - For example, a competitive procurement for ancillary services
- If the IESO is in a position to outline a plan for reliability-based projects, they will be communicated to the MDAG as part of the Work Plan projects

# Review of Market Outcomes

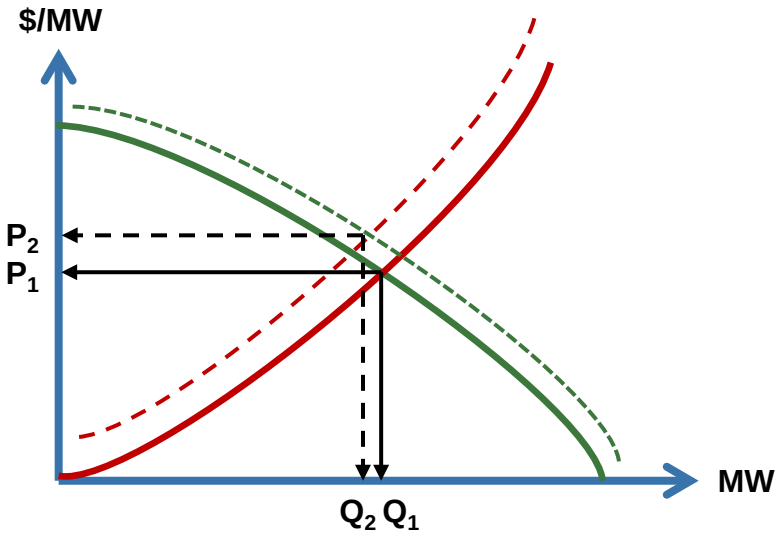
# Energy Pricing

- Price is "cleared" by the intersection of the supply and demand curves
- At the point where price clears, maximum benefits to both producers and consumers occur
- Benefits are measured by producer and consumer surplus



# Supply and Demand

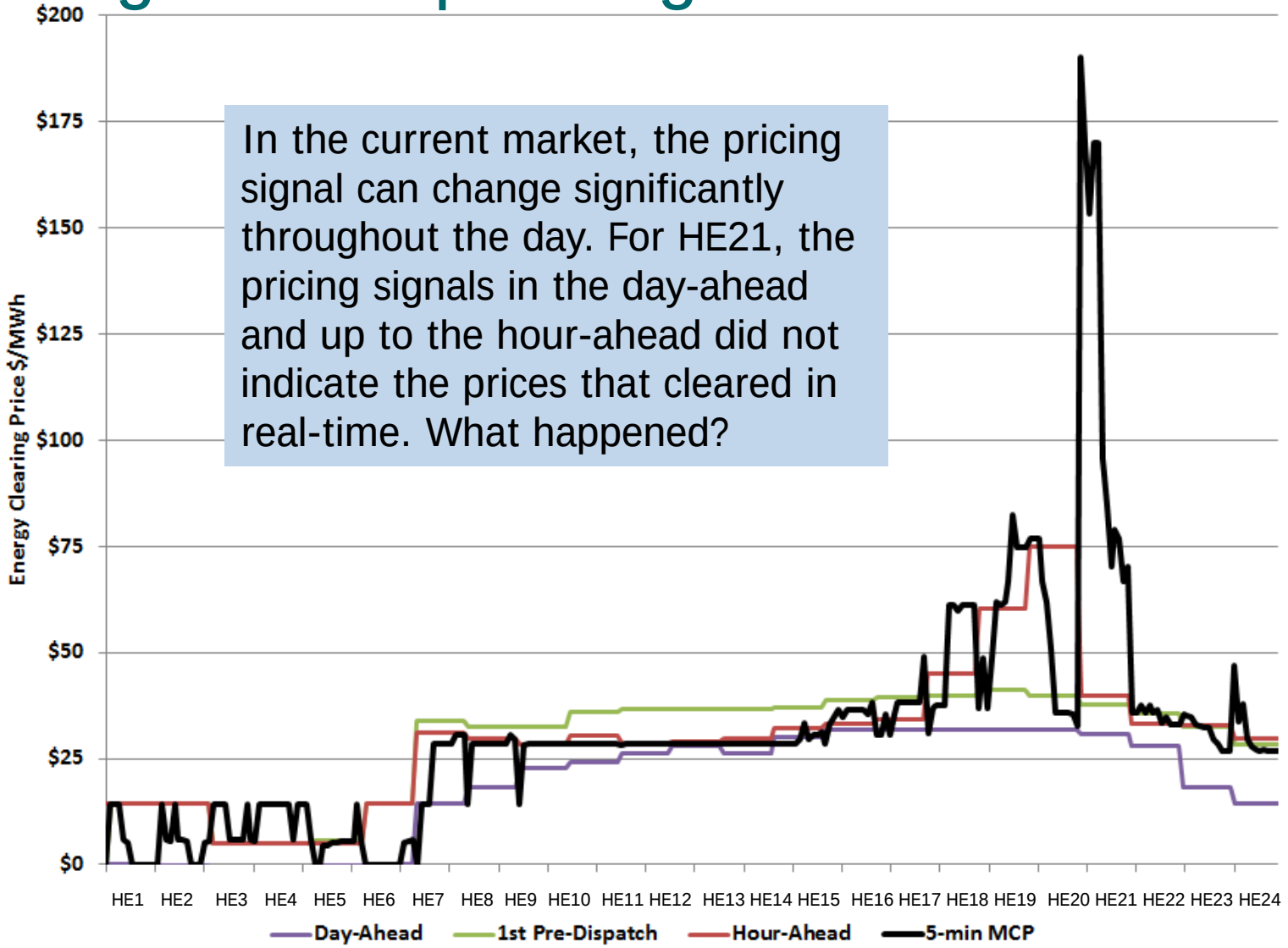
- Impacted by
  - Supply availability and costs, i.e. outages, fuel
  - Demand requirements, i.e. weather related, value of goods produced using electricity
- Can be established for different timeframes
  - Operating time-frame from day-ahead to 5-min dispatch
  - For longer term decision-making



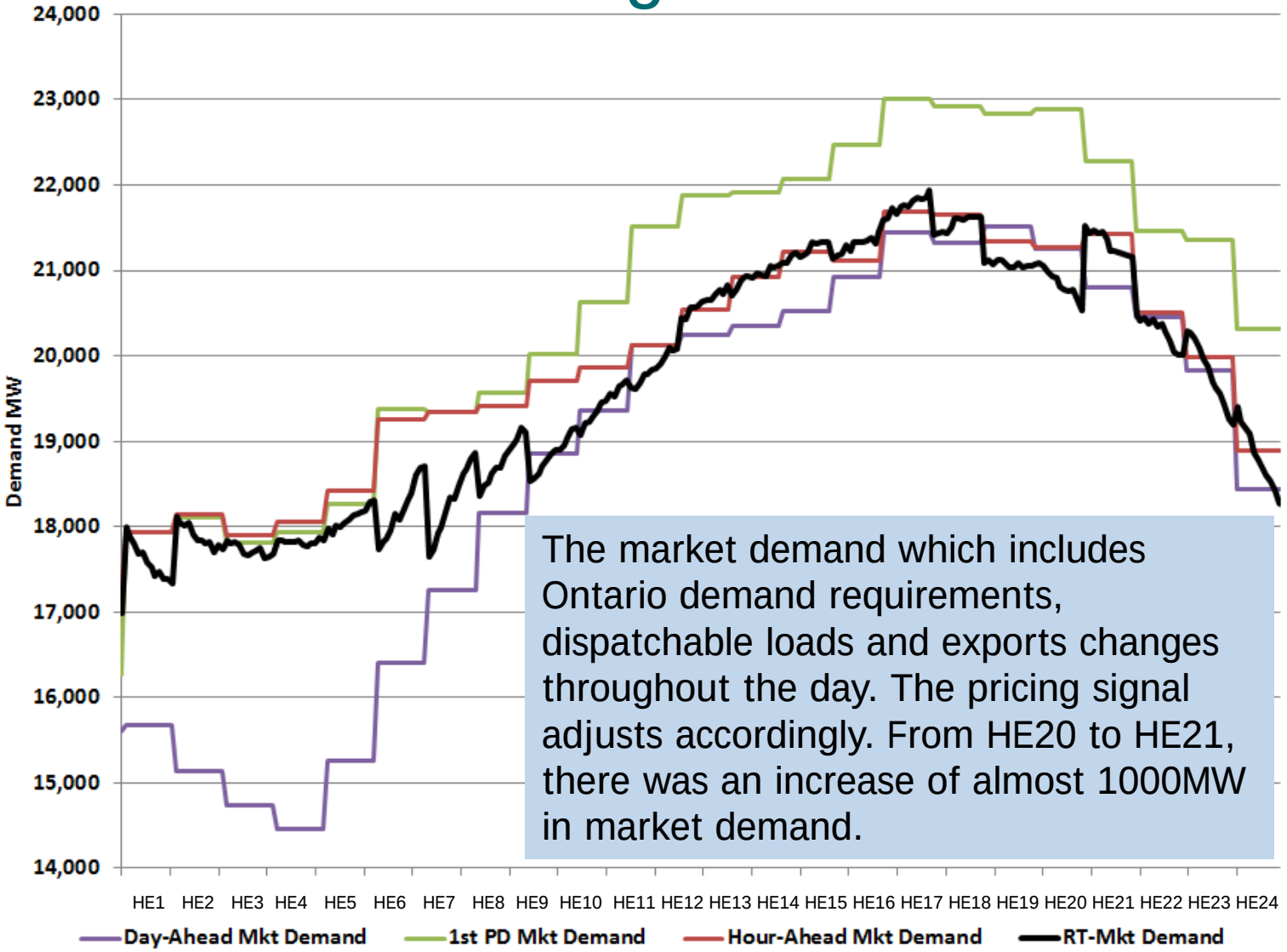
# Operating Time-frame Pricing Signals

- Wholesale prices calculated and settled on a 5-minute "real-time" basis – HOEP is the average of the 12 interval prices in an hour
- Operating decisions such as resource commitment and intertie scheduling from day-ahead up to hour-ahead are made based on the conditions and the economics at the time
  - Advisory prices are calculated but not used for settlement
  - No ability to "lock-in" a price day-ahead
- MRP puts in place foundational elements for improved price certainty in the operating time-frame

# Pricing in the Operating Time-frame

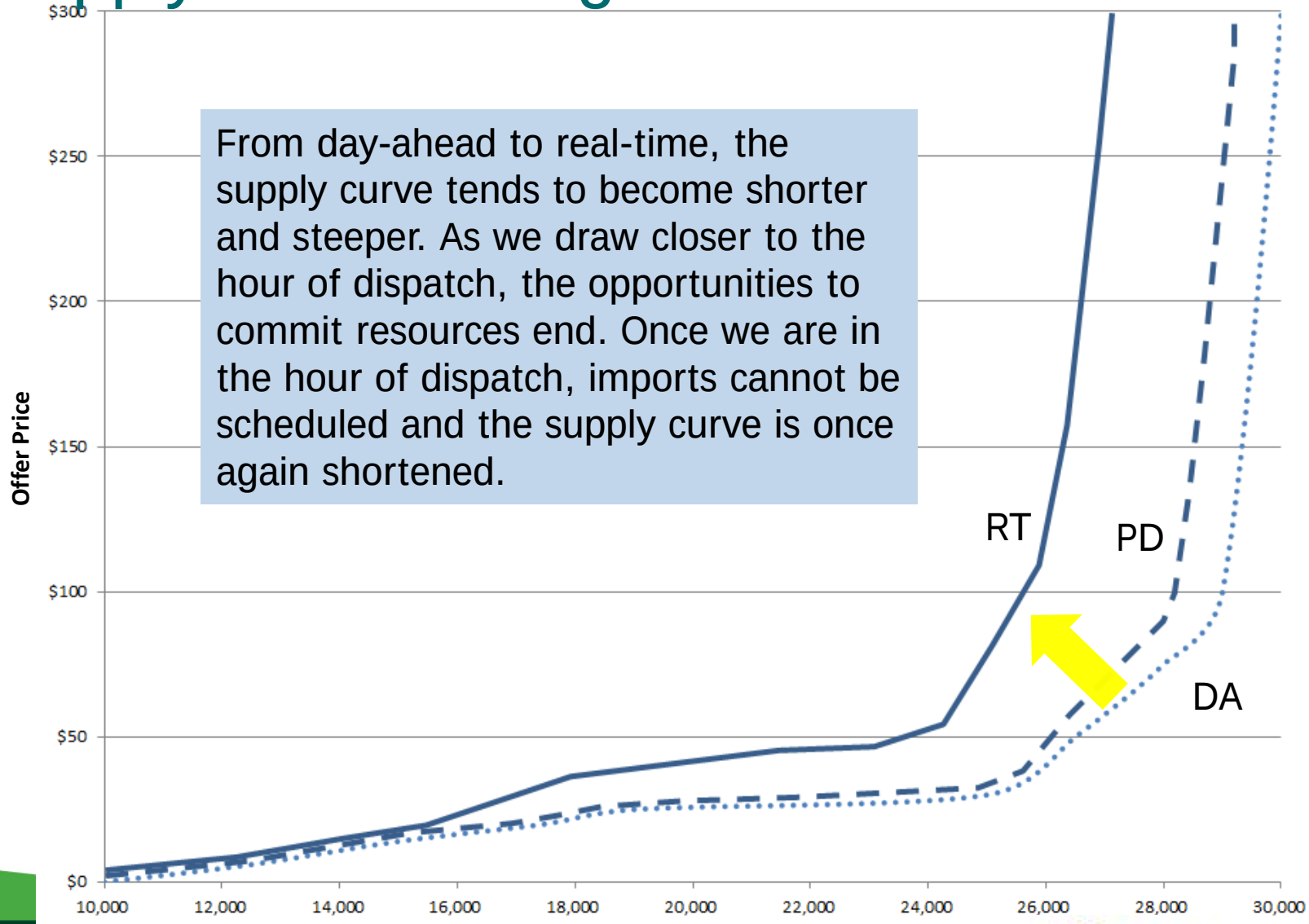


# Market Demand Changes




The market demand which includes Ontario demand requirements, dispatchable loads and exports changes throughout the day. The pricing signal adjusts accordingly. From HE20 to HE21, there was an increase of almost 1000MW in market demand.

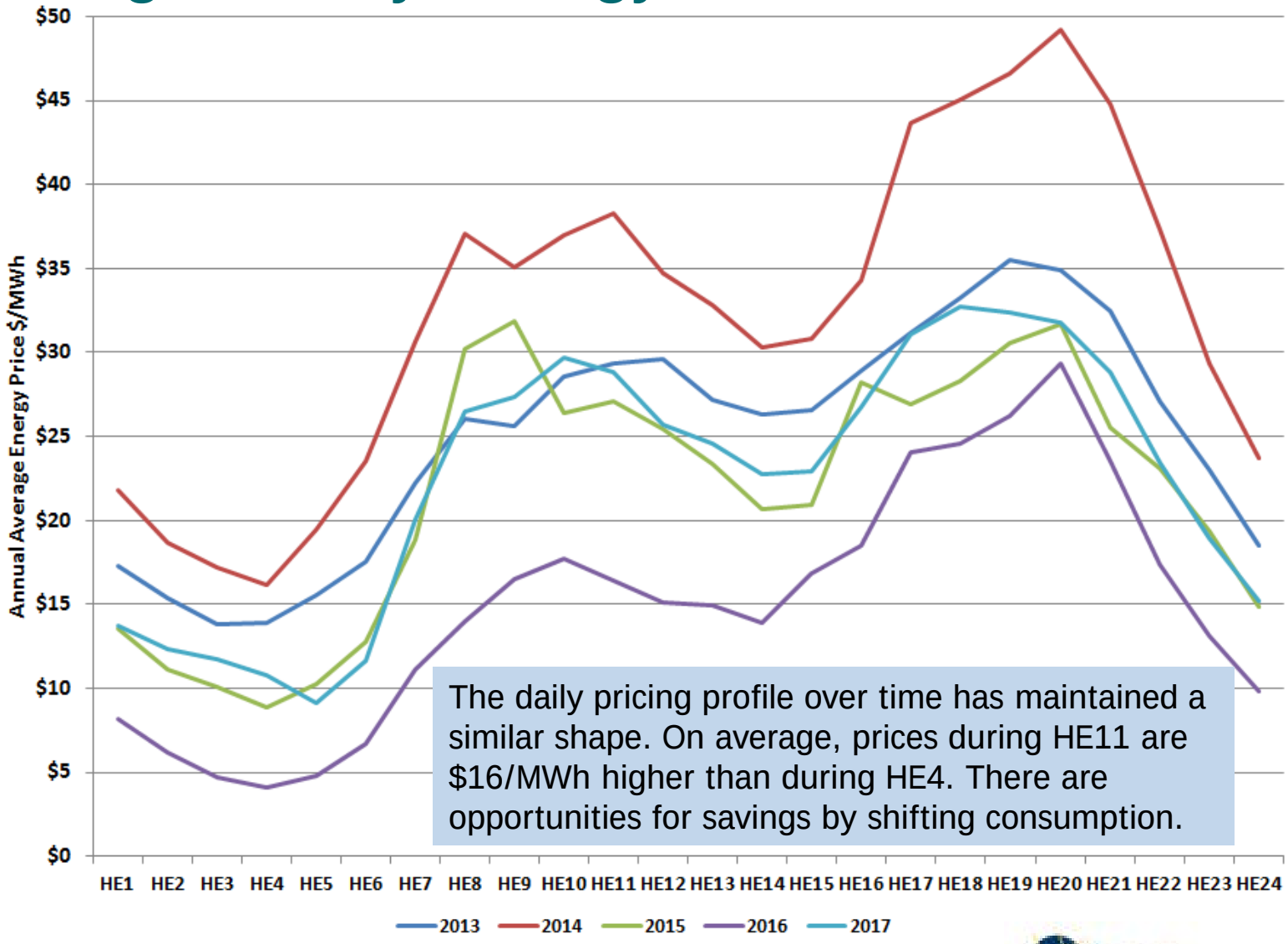
# Supply Curve Changes



# Pricing Signals in the Longer Term

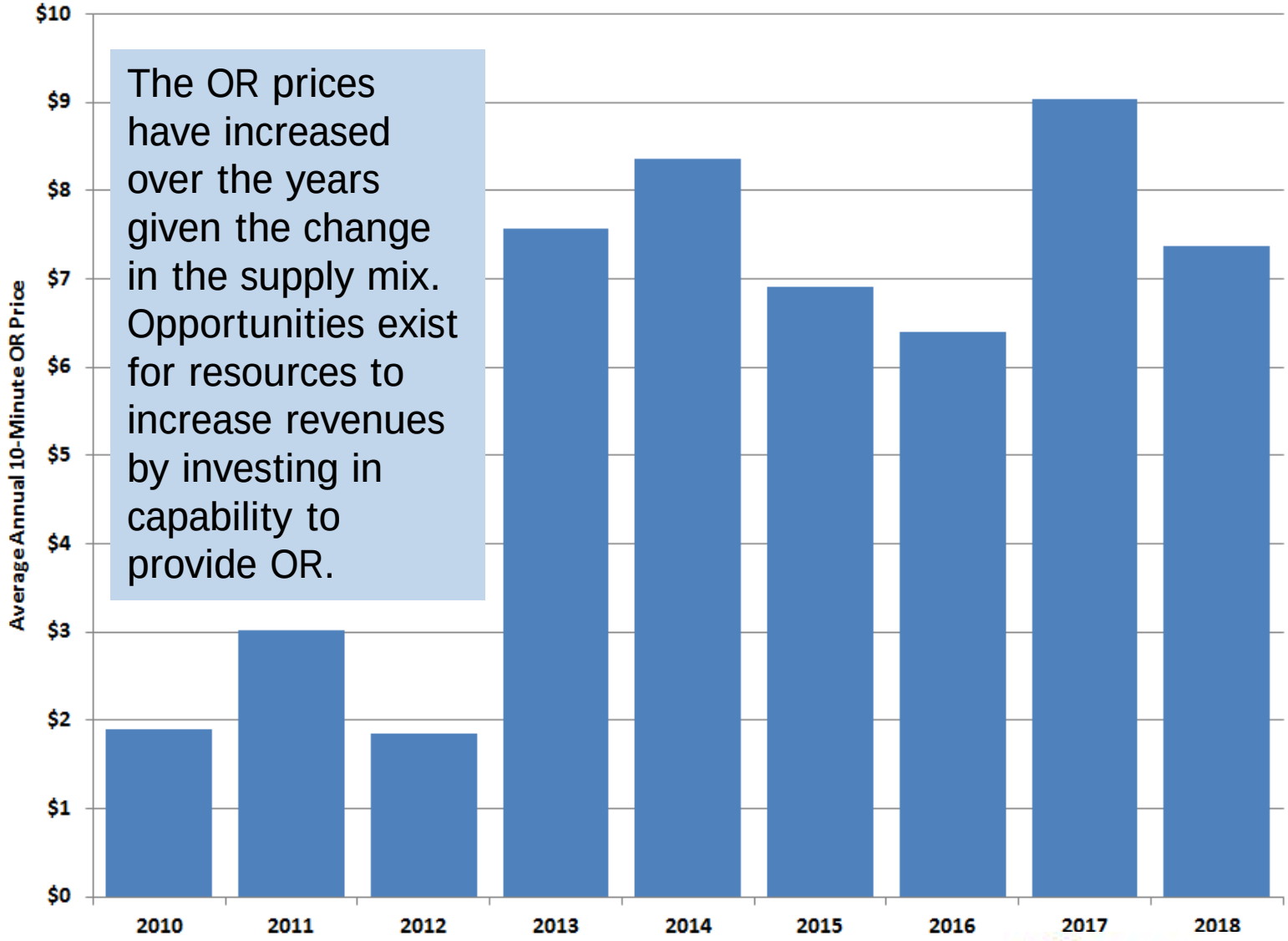
- Over time, trends in pricing signals can be established
- Electricity consumers and producers in the operating timeframe can respond in varying abilities – from 5-minute dispatchable to responding to broad price patterns to completely non-dispatchable
- Many more consumers and producers can look at long term pricing signals for opportunities to save or increase revenues by making more informed consumption and investment decisions

# Average Hourly Energy Prices




The daily pricing profile over time has maintained a similar shape. On average, prices during HE11 are $16/MWh higher than during HE4. There are opportunities for savings by shifting consumption.

# Average 10-Minute Synchronised OR Prices




The OR prices have increased over the years given the change in the supply mix. Opportunities exist for resources to increase revenues by investing in capability to provide OR.

# Introduction to Intertie Trading and Transmission Rights

# Purpose

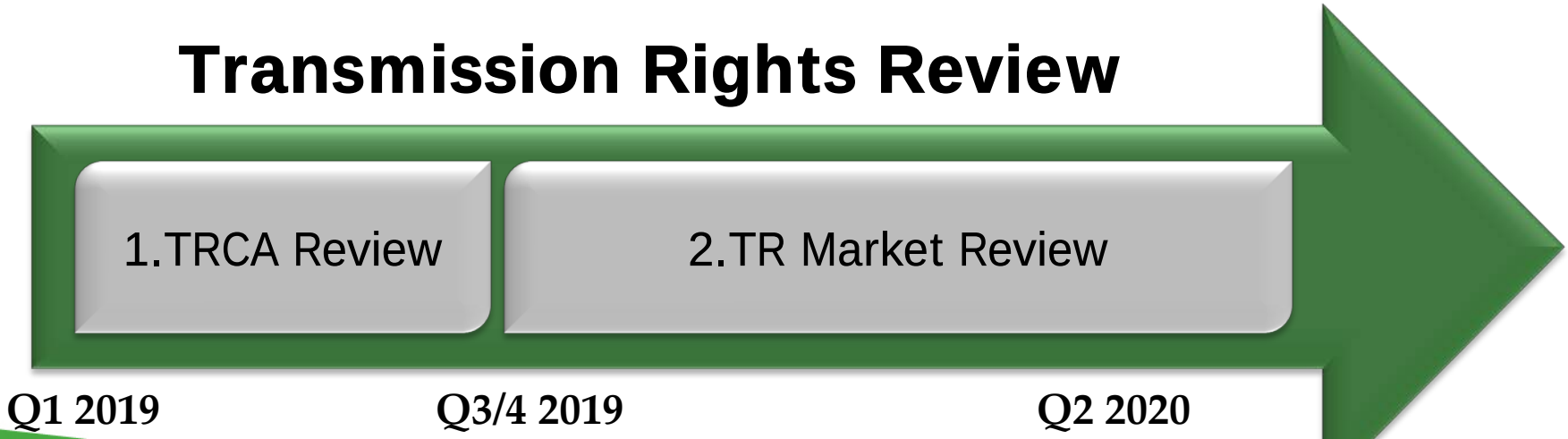
- To provide stakeholders with an overview of the Transmission Rights (TR) Review that the IESO will be working on in 2019

# Introduction

- Through the Market Renewal Program (MRP), the IESO is making a foundational redesign of its electricity market
- With the completion of the high-level design phase of MRP, now is the right time to initiate a review of the IESO's Transmission Rights Market to ensure it is achieving its intended objectives and is aligned with the proposed changes from MRP

# TR Review Timing

- There are two parts to the TR Review that will be performed sequentially:
  1. Review of the Transmission Rights Clearing Account (TRCA) disbursement methodology
  2. Overall review of the TR Market



# Background

- Intertie trading
- Intertie Congestion Pricing (ICP)
- Transmission Rights in Ontario
- Transmission Rights Clearing Account (TRCA)

# Background: Ontario's Interties


- Ontario has interties with its five neighbours: Quebec, Manitoba, Minnesota, Michigan and New York
- Interties are transmission lines that allow energy to move between adjacent balancing authorities. Like any transmission line, interties can carry only so much energy.

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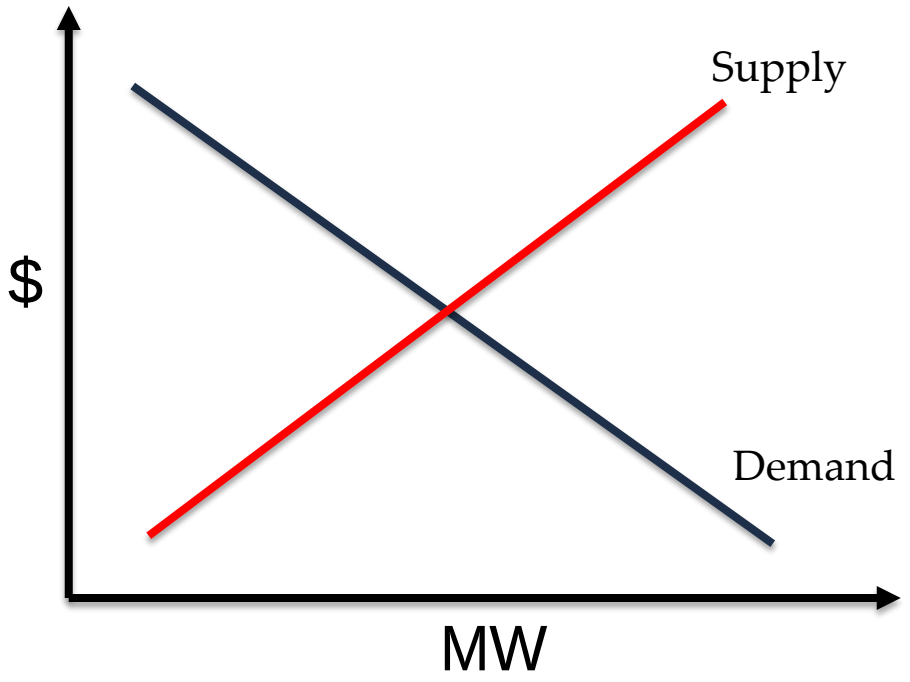
# Background: Intertie Trading

- In Ontario, energy transactions (including intertie transactions), are scheduled based on **economics**
- Traders submit bids to export and offers to import energy that competes against domestic resources including load and supply
- A computer algorithm called the Dispatch Scheduling Optimizer (DSO) evaluates all bids and offers from load, generators, imports/exports to determine optimal schedules and set the market price

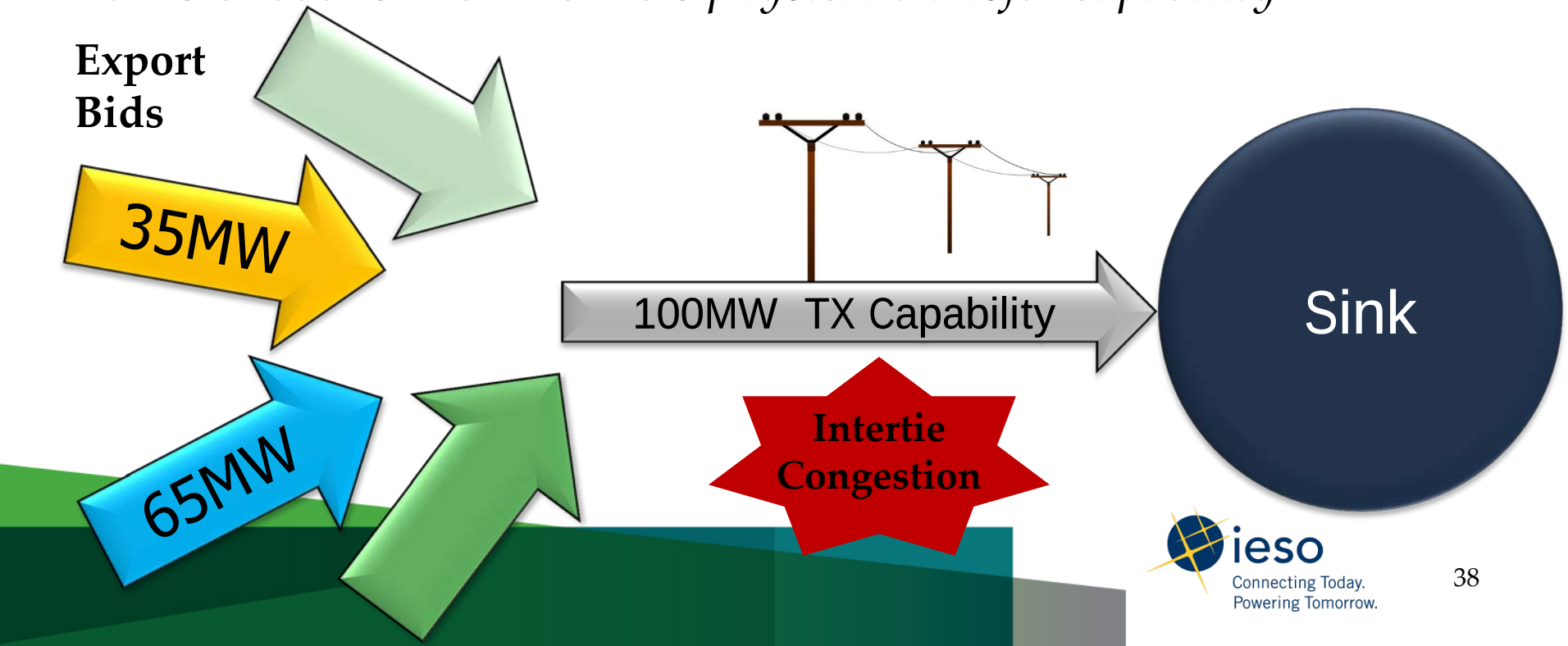


# Background: Intertie Trading

- Intertie trading is driven by electricity price differences between jurisdictions (e.g. IESO, NYISO, MISO)
- Prices can differ *between* jurisdictions for a variety of reasons including:
  - Different supply mix characteristics
  - Different seasonal patterns, weather conditions
  - Different market conditions (e.g. higher than anticipated demand, outages, local transmission issues, USD/CAD exchange rate)
- The ability to import and export power provides operational and planning flexibility, and enhances the reliability and cost-effectiveness of the electricity system.

# Background: Intertie Congestion

- Intertie capacity is a scarce resource and at times there is more demand from traders than available intertie capacity
- Congestion occurs when the quantity of economic offers or bids exceeds the intertie's *physical transfer capability*



# Background: Intertie Congestion Pricing

- When there is more intertie demand than capability, the IESO also determines schedules based on economics
  - The highest priced bids or lowest priced offers will flow. A premium (intertie congestion price) is then charged to traders in addition to the energy price for that hour based on trader bids/offers.
- Intertie congestion will cause prices for imports and exports to be *different* than prices in Ontario

*Price that domestic loads are charged*

*Intertie Congestion Price: Premium that traders are charged **when** an intertie is congested*

*Intertie Zonal Price: Price that traders are charged/paid*

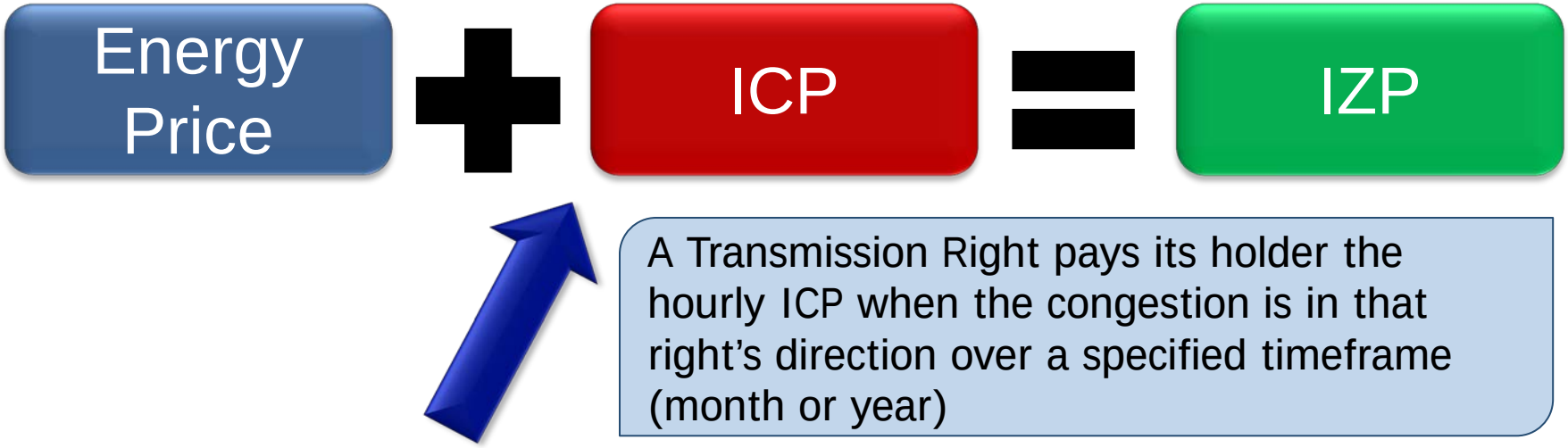
*ICP funds are collected into the TRCA and ultimately refunded to Market Participants (load and exporters)*

# Background: Transmission Rights (TR)

- Transmission Rights (TRs) are financial instruments auctioned by the IESO to hedge (or speculate) against intertie congestion pricing (ICP)
  - TRs entitle holders to a payment of the price difference between an intertie zone and Ontario for a defined period of time
- Transmission Rights are offered on long-term (annual) and short-term (monthly) durations through TR auctions
- TRs do not guarantee *physical* transmission service or impact the scheduling of transactions
- TRs help promote intertie trade by providing hedging opportunities thus leading to more competition and liquidity

# Background: Transmission Rights (TR)

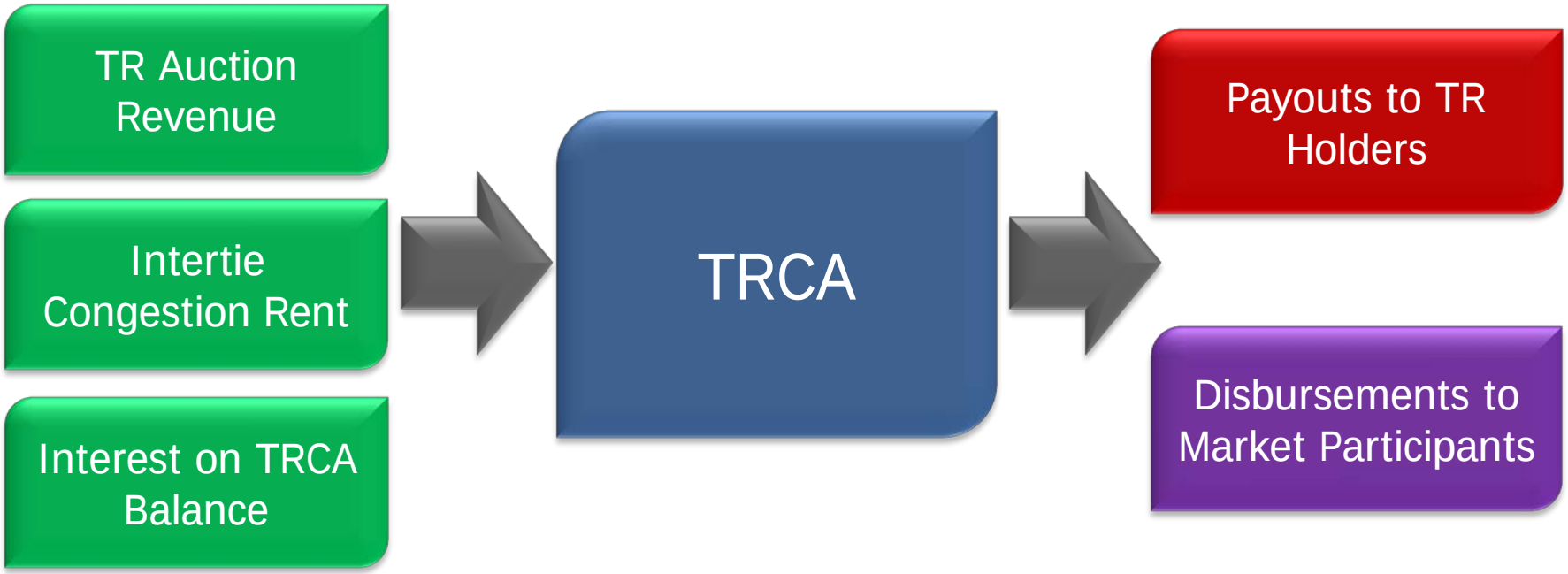
- The Intertie Congestion Price (ICP) is the hourly "premium" for exports and "discount" for imports charged to traders when there is more demand than intertie capability – also referred to as "Intertie Congestion Rent"




- For example, a trader that purchases a 1MW Ontario to Michigan TR for April 2019 would receive a payout equal to the positive ICP on the Ontario to Michigan export path for all hours in April 2019 [MR Chap 8, Sec 4]

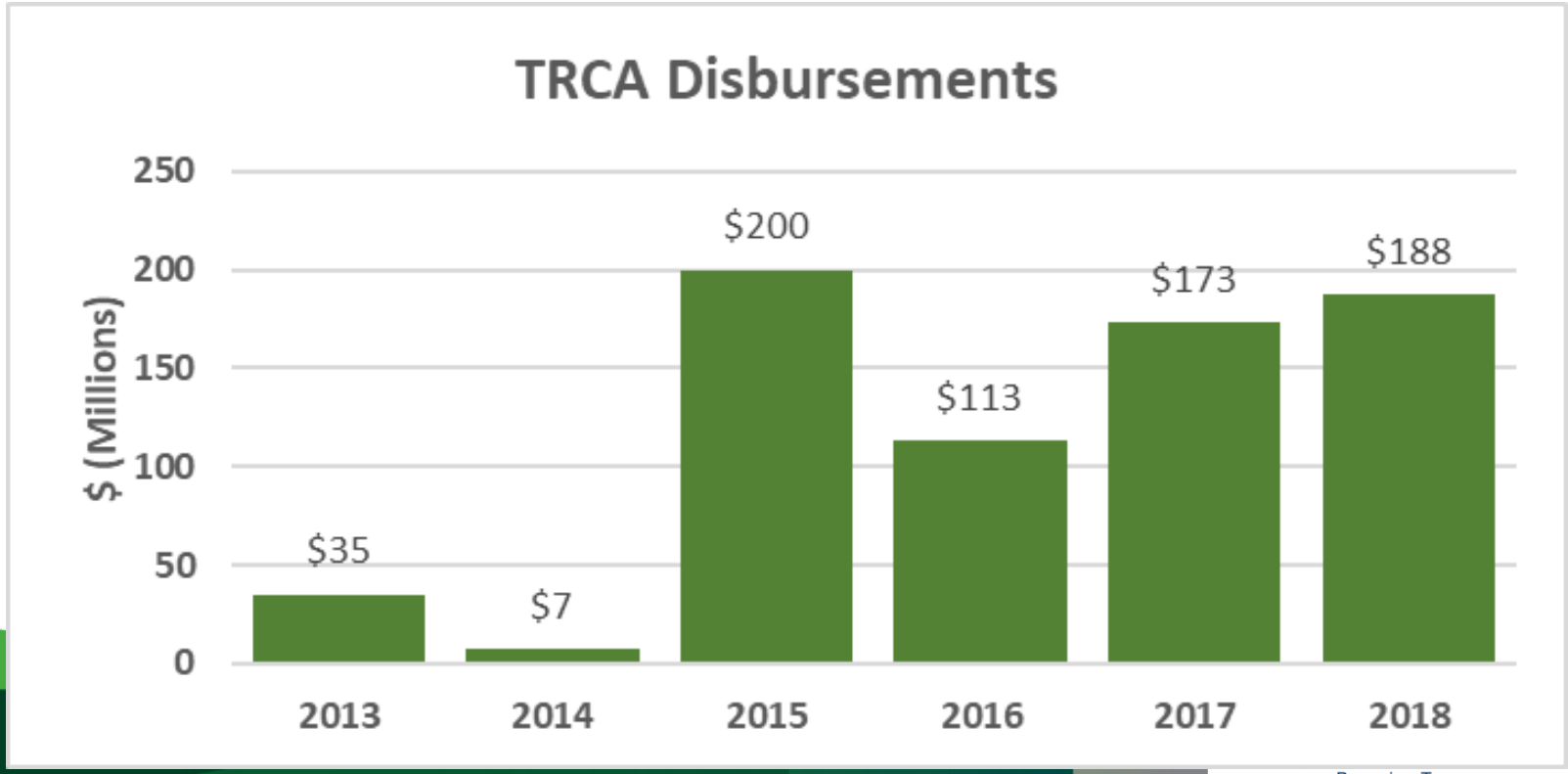
# Background: TRCA

- The Transmission Rights Clearing Account (TRCA) collects and disburses intertie congestion-related funds to Market Participants (load and exporters)



# Background: TRCA Disbursements

- TRCA surplus funds (above reserve threshold of $20 million) are disbursed every 6-months when the balance exceeds the threshold by at least $5 million. The disbursement is made to **Market Participants (load and exporters) based on their respective share of demand** over the prior period [MM5.5, Sec 1.6.26]



# Overview of the TR Review

1. TRCA Review
2. TR Market Review

# TRCA Disbursement Methodology Review

- In May 2017, the Ontario Energy Board's Market Surveillance Panel (MSP) issued a recommendation to the IESO on the TRCA disbursement methodology:

  **Recommendation 4-1:**

  A. *The IESO should revise the manner in which it allocates disbursements from the Transmission Rights Clearing Account such that disbursements are proportionate to transmission service charges paid over the relevant accrual period.*

  B. *The IESO should not disburse any further funds from the Transmission Rights Clearing Account until such time that Recommendation 4-1(A) has been addressed.*

- The current TRCA disbursement methodology allocates surplus funds based on demand shares from loads and exporters
- The IESO has agreed that it should review the TRCA disbursement methodology but does not agree there is justification in suspending the disbursements at this time since the mechanism is working as designed

# TRCA Disbursement Methodology Review

- The IESO has initiated a review of the methodology used to disburse TRCA funds back to Market Participants to ensure the methodology is efficient and equitable
- An external consulting firm, The Brattle Group, has been engaged by the IESO through an RFP to deliver a public report that will:
  1. Discuss best practices for disbursing TRCA funds based on economic and regulatory theory, as well as perform a jurisdictional scan;
  2. Evaluate the current disbursement methodology; and
  3. Assess other potential methodologies
- This public report will support the IESO in assessing whether changes to the current methodology should be pursued

# TRCA Disbursement Methodology Review

***Next Steps:***

- The IESO will be publishing a draft version of the report for stakeholder comment this Spring
- The IESO will discuss the report's findings with stakeholders and determine next steps, if any
  - Changes, if required, can potentially result in Market Rule, Market Manual, and internal tool changes

# TR Market Review

- After the TRCA review is completed, the IESO plans on launching a stakeholder engagement to perform an overall review of the TR Market
- Market Renewal is foundational redesign of Ontario's electricity market
  - The timing is right for an overall review of Ontario's TR market to assess its objectives and benefits, and to identify potential improvements to the market
- Changes identified through the TR Market review may be implemented at the same time as Market Renewal changes or earlier if it makes sense

# TR Market Review

- The TR Market stakeholder engagement will include:
  1. Review the objectives of the TR Market
  2. Assess the value and benefits of the TR Market
  3. Develop and evaluate potential improvements to the current TR Market design
  4. Ensure compatibility and alignment with changes proposed through the Market Renewal Program (eg transition to day-ahead settlement of TRs)