

MARKET DEVELOPMENT ADVISORY GROUP

Webinar – April 2, 2020

Meeting Participation

- Webcast participation (including audio):
 - <https://www.meetview.com/ieso20200402/>
 - 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](#)

New Stakeholder Engagement Framework

Rationale for New Engagement Framework

- Stakeholder input is essential to the IESO's decision-making process and over the past few years the need for engagement has both increased and diversified
- IESO's issue-specific approach to engagement has not sufficiently connected how the engagements fit together and how they fit into the broader reliability and affordability mandate
- Stakeholders have expressed concern about the amount of time they spend on various IESO engagements and the lack of predictability in meeting schedules
- To reduce stakeholder fatigue and connect the various engagements, a new streamlined approach will be implemented in Q2 2020

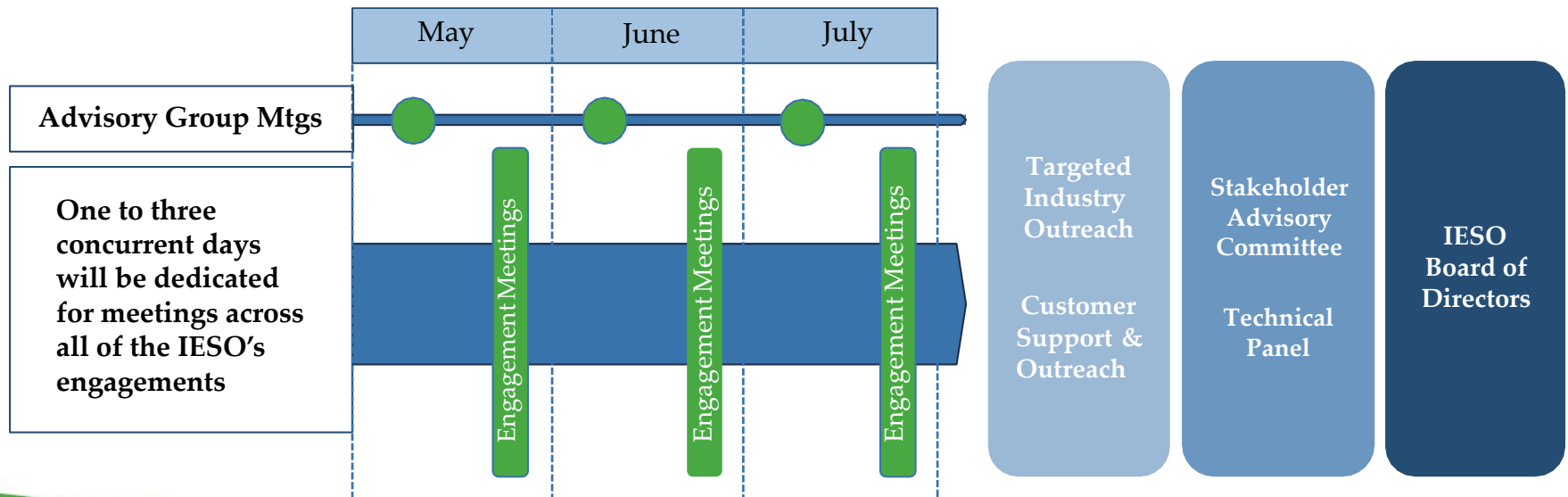
New Engagement Framework

- The new framework revolves around a meeting schedule of monthly or bi-monthly designated engagement days
- These engagement days will include advisory group meetings* and more specific detailed engagements:
 - **Advisory Group Day** – one day will be dedicated for any meetings of the Market Development Advisory Group, Demand Response Working Group or Energy Storage Advisory Group
 - **Stakeholder Engagement Days** – one to three days (as required) will be dedicated each month or bi-monthly for meetings across all of the IESO's engagements
- Each meeting will begin with an IESO Executive providing context on the various engagements under way, recapping progress on initiatives including how stakeholder input has been considered

*SAC and Technical Panel will continue as per their existing schedule as they are timed with the IESO Board meeting schedule

Designated Engagement Days

The monthly or bi-monthly engagement days will be organized so that related sessions are held on the same day in order to maximize relevance and stakeholder participation



Goals of New Engagement Framework

- These changes are aimed at enhancing the IESO engagement process by:
 - Providing greater certainty on the timing of engagement meetings allowing for enhanced preparedness and participation from stakeholders
 - Supporting an understanding of linkages between initiatives
 - Addressing concerns about stakeholder fatigue with fewer overall engagement meetings
 - Supporting a foundation for more comprehensive and integrated updates for the Stakeholder Advisory Committee and the IESO Board of Directors

Agenda

1. Update on 2020 MDAG Work Plan
2. Expanding Participation in Operating Reserve and Energy
3. Market Surveillance Panel Recommendations Update
4. Transmission Rights Clearing Account Update
5. Transmission Rights Market Review

EXPANDING PARTICIPATION IN OPERATING RESERVE AND ENERGY (EPOR-E)

Market Development Advisory Group

April 2, 2020

Purpose

- To review the finalized EPOR-E scope of work
- Provide historical information on the size and value of the OR market
- To share the IESO's work to date on Phase 1 - Requirements and Participation and solicit feedback from stakeholders
- Outline next steps

OVERVIEW OF EPOR-E SCOPE OF WORK

EPOR-E Scope of Work

- The EPOR-E Scope of Work (SOW) document has been posted on the MDAG webpage
- Three areas of focus have been outlined in the SOW:
 - Review of IESO requirements
 - Investigating participation of specific resources in Energy and OR
 - Identifying misalignment/areas of opportunity of internal IESO processes and tools with resource limitations
- EPOR-E has three phases:
 - Phase 1 – Participation and Requirements
 - Phase 2 – Exploration of Options
 - Phase 3 – Evaluation of Options

What is driving the need for EPOR-E?

- The IESO is continuously working towards improving market efficiency and grid reliability. EPOR-E will look to achieve this through expanded competition and increased flexibility.

Expanding competition

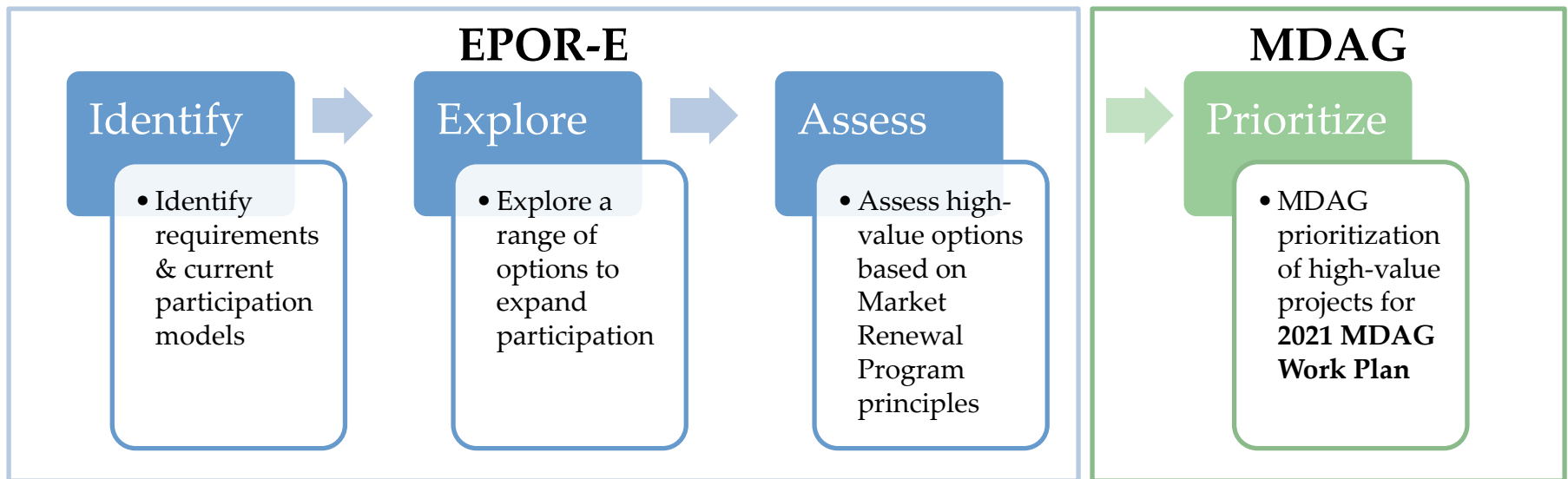
- Many stakeholders have indicated they would like to compete in the OR market. Expanding competition not only improves market liquidity and diversity but will drive down costs for consumers.

Increasing grid flexibility

- As Ontario's supply mix continues to evolve there is an increasing need for additional flexibility on the system.

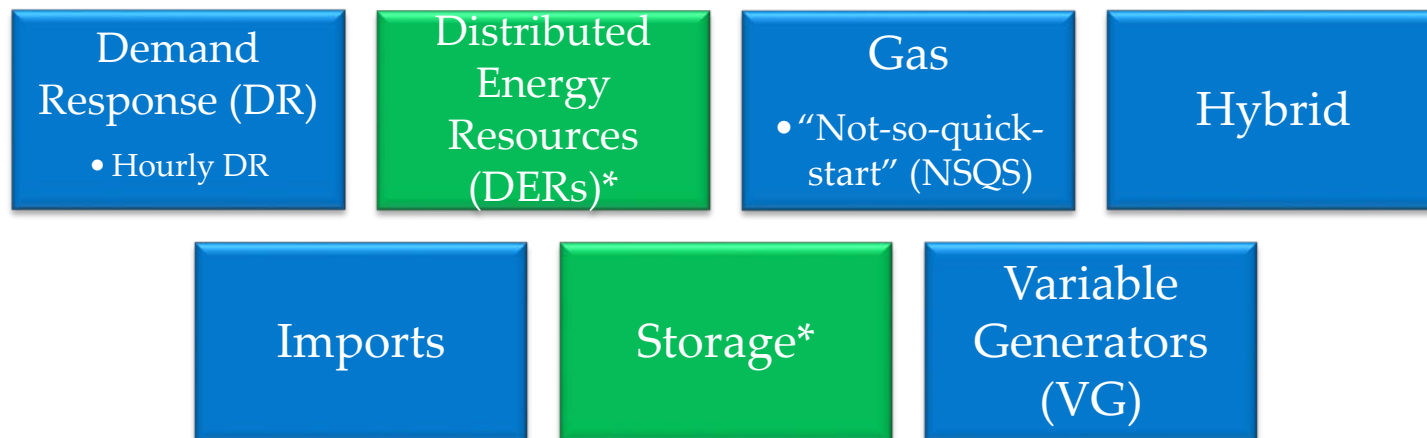
Process and Project Prioritization

- EPOR-E is a **scoping and assessment** exercise that will identify high-value market development projects for prioritization with the Market Development Advisory Group (MDAG).



Technologies to be Assessed

- EPOR-E will look at misalignments with our requirements on the following technologies, and assess the IESO's ability to adjust requirements, processes, tools, and participation models to enable further participation



**DER development is the focus of the Innovation and Sector Evolution Whitepaper Series and direct-connected storage is the focus of the Energy Storage Advisory Group's (ESAG) Storage Design Project*

Regulation Services and OR

Current status

- Today the IESO has 7 facilities under contract providing regulation services to the grid.
- When a specific resource is being used for regulation service they are subsequently omitted from being able to provide OR.

EPOR-E exploration

- The IESO will review tools and processes that limit regulation resources from providing Energy and OR

Interrelated Work – Storage

- A separate IESO Storage Design Project (SDP) through the Energy Storage Advisory Group (ESAG) is currently working towards enabling direct-connected storage in the IESO markets
 - The EPOR-E project is working in close collaboration with the SDP and aims to capture items that fall out of scope of SDP, such as **Behind The Meter (BTM) and hybrid participation.**
- The SDP is aiming to finalize design proposals by Q4 2020. Refer to the Energy Storage Advisory Group [engagement webpage](#) for further details

Interrelated Work - DERs

- The IESO's Innovation and Sector Evolution Whitepaper Series is currently researching opportunities to expand DER participation in wholesale markets.
 - The **“Models for DER participation in wholesale markets”** whitepaper is due to be released in Q2 2020.
- This initiative will provide the initial research and development of findings for DER integration into the IAMs. EPOR-E will use these findings and determine if there are possible opportunities for projects to be considered in the short-term before the Market Renewal Program.

Hybrid Resource Participation

- As part of EPOR-E we will begin scoping how hybrid resources can participate within the Ontario context.
 - Our initial observations show many different definitions of hybrid participation but this can generally be described as:

“A combination of multiple resource technologies where at least one characteristic is generation, has a single point of connection and represented by a single market resource ID. This excludes aggregation of the same or similar technology resources”

- **The focus of hybrid participation within EPOR-E is a generator/load with a BTM storage solution.**

Hybrid Participation Questions

As we continue to explore hybrid participation models, the IESO would appreciate stakeholder feedback on the following questions:

- Is our current focus of generator/load with BTM storage solution consistent with stakeholder expectations of “hybrid participation”?
- Do stakeholders have experience with hybrid participation in other jurisdictions? If so, are there any learnings we should be considering from other System Operators?

Please provide feedback to engagement@ieso.ca by April 27

Stakeholder Engagement

- The IESO would like to ensure EPOR-E is as collaborative an exercise as possible and aims to keep stakeholders informed through:
 - MDAG meetings;
 - Individual meetings with stakeholders (if and when possible);
 - A series of memos that summarises findings to date.
 - The purpose of the memos is to show our work on each phase of EPOR-E, and to seek stakeholder feedback and guidance as this work progresses.

Indicative Timeline

- The IESO will aim to share the first draft memo on Requirements and Participation in Q2 2020.
 - We are proposing a 3-week period for stakeholders to provide feedback on the first draft memo but will work with stakeholders who may require more time
- A separate final report will be produced at the end of the EPOR-E scoping and assessment exercise.

	Q1	Q2	Q3	Q4	Final Report
Phase 1	Requirements and participation				
Phase 2		Exploration of options			
Phase 3				Assessment of options	
	Draft phase 1 memo	Final phase 1 memo	Draft phase 2 memo	Final phase 2 memo	

Indicative Work Schedule

Project phase	Quarter	Task
1. Requirements & Participation	Q2, 2020	Post Scope of Work
		Publish EPOR-E slides and draft memo
		MDAG meeting - requirements and participation models
		MDAG members to provide feedback on draft memo
		Publish memo on requirements and participation
		1-on-1 meeting(s) with MDAG stakeholders (Requirement and options)
2. Exploration of options	Q3, 2020	MDAG meeting - option development to date
		MDAG members to provide feedback on draft memo
		Placeholder - Jurisdictional review of options to expand participation
		Draft memo outlining potential options for expanding participation
		Publish EPOR-E slides and draft memo
		MDAG meeting – continuation of option development
		MDAG members to provide feedback on draft memo
		Placeholder - stakeholder webinar/group discussion as required
		Phase 2 – Option development memo posted for stakeholder feedback
3. Assessment of Options	Q4, 2020	Publish Draft EPOR-E report and slides
		MDAG meeting to discuss findings of Draft EPOR-E report
		MDAG members to provide feedback on draft report
	Q1. 2021	Publish final EPOR-E report

Legend

 MDAG member actions

OPERATING RESERVE MARKET VALUE STATISTICS

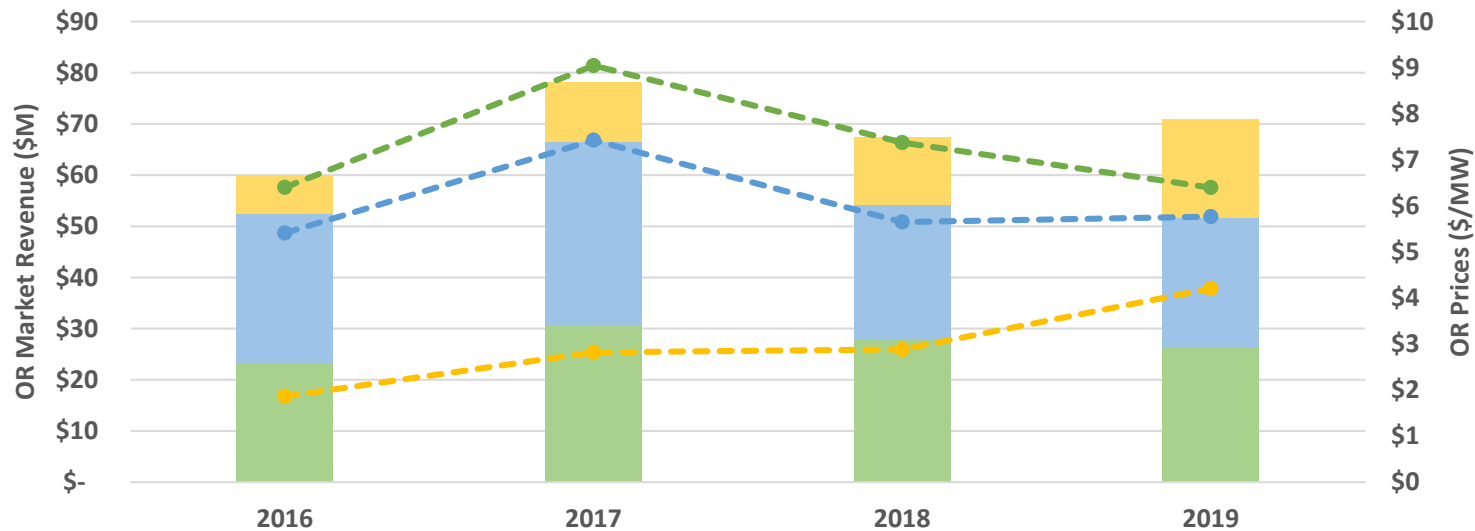
OPERATING RESERVE (OR) Market Opportunities

- The IESO would like to share market information to display market opportunities for interested stakeholders.
- This should provide details on opportunities for differing resource types who may have different operating characteristics and would like to provide OR at different times.
- The following slides will detail:
 - Historical OR market prices
 - Average OR prices by season and time of day

Annual OR Market Revenue and Prices

- The IESO consistently schedules just over 1,400 MW of Operating Reserve (OR) every day.
- Annual OR market revenue is typically around \$70M with average prices of approx. \$7/MW for 10S, \$6/MW for 10N, and \$4/MW for 30R in 2019.

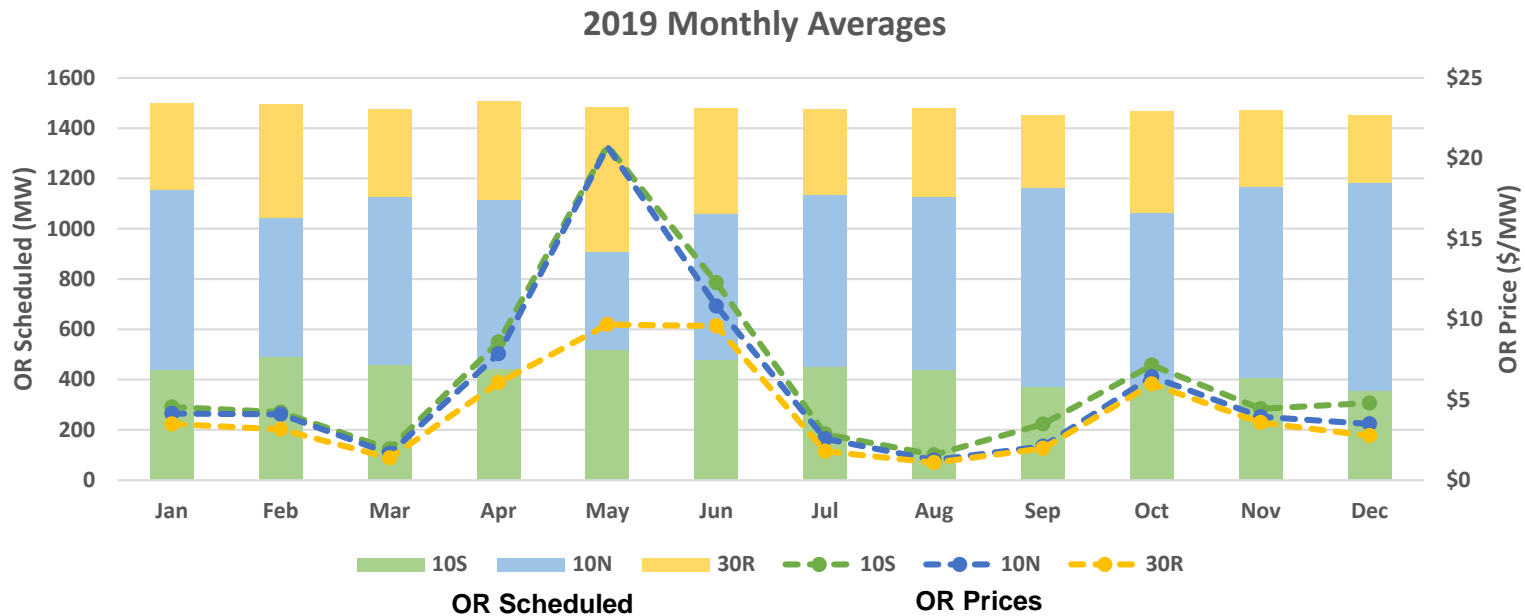
OR Market Revenues and Annual Average Prices 2016-2019



10S Market Revenue 10N Market Revenue 30R Market Revenue 10S Price 10N Price 30R Price

OR Seasonal Schedules and Prices

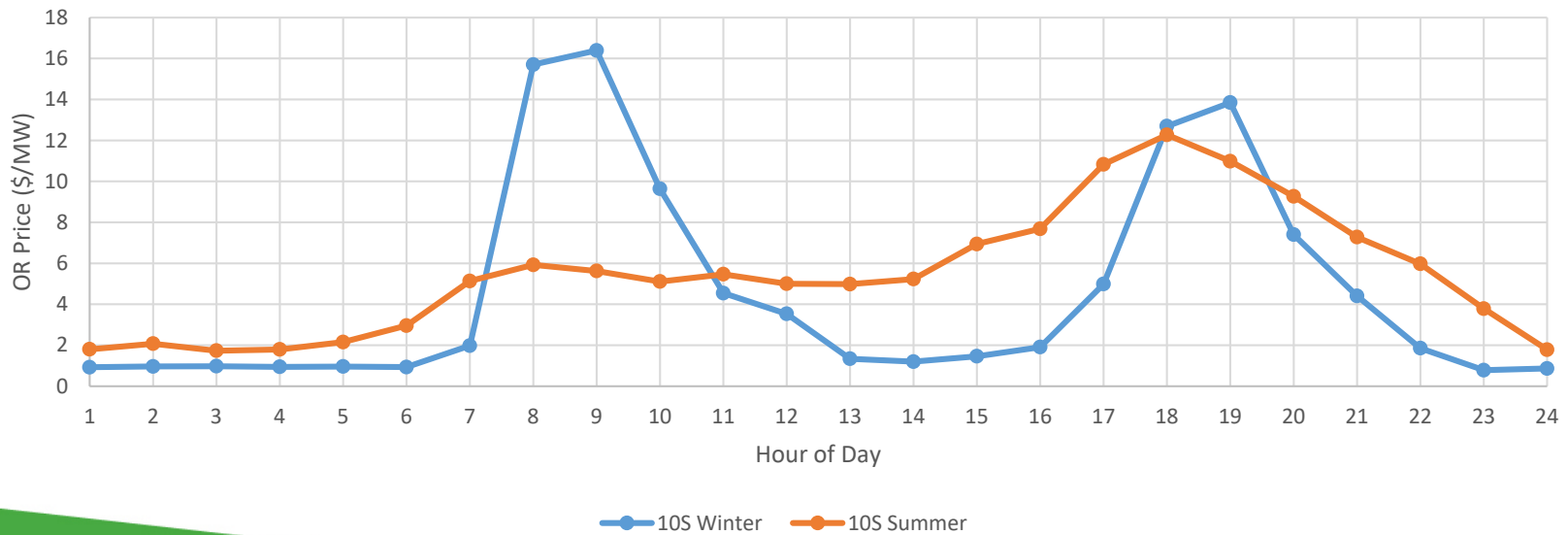
- OR prices fluctuate by season and are higher in late spring as there is less OR supply during freshet and resource planned outages.



10S Winter/Summer Hourly Price Trend

- The OR hourly price profile follows the hourly demand profile even though the OR requirements tend not to change throughout the day
 - Energy prices vary directly with demand
 - Energy is co-optimized with OR, so when energy prices increase, so do OR prices
- For 2019, the average price in the summer was about \$1 higher compared to the winter (\$5.60/MW vs \$4.60/MW)

2019 10S Winter and Summer Hourly Averages



EPOR-E PHASE 1 – REQUIREMENTS AND PARTICIPATION MODELS

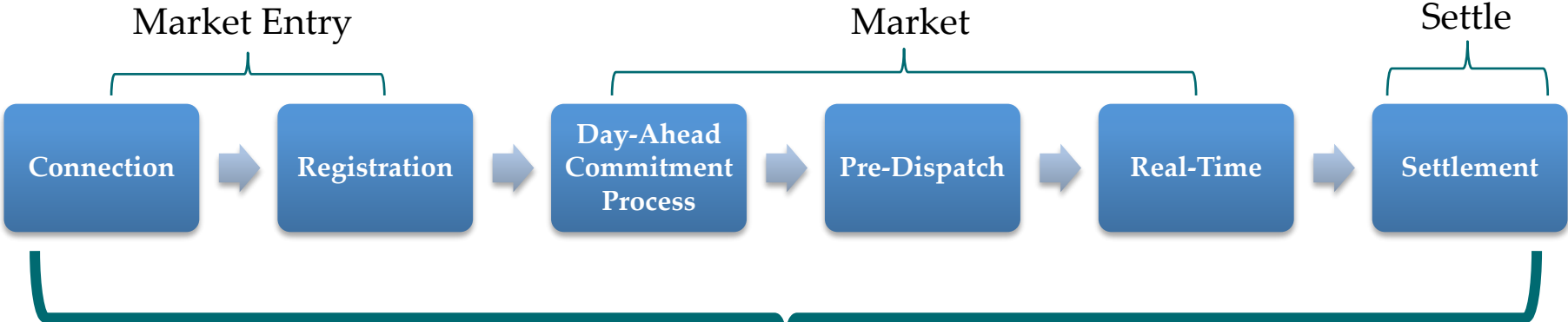
Phase 1

- Purpose - Determine items in scope for EPOR-E to find opportunities for option development
- Activities to be performed in Phase 1:
 - Identify process and requirements to participate in OR and energy markets (from market entry to settlement)
 - For the resource types to be assessed in EPOR-E, identify the misalignments/areas of opportunity with those requirements
 - Determine which misalignments/areas of opportunity are within IESO control and within scope of potential options development for EPOR-E
 - Draft memo will be developed that details process/requirements, areas of opportunity, items within the scope. This is to be reviewed by stakeholders and comments provided

PROCESS TO PARTICIPATE AND REQUIREMENTS

Process to Participate

Below are the high level steps to enter the market, deliver energy and OR, and settle with the IESO



IESO requirements are embedded into each stage of process

IESO system and tools follow this process and use inputs from each step to, schedule, dispatch and settle participants

Market participants must meet these requirements and allow our tools to model them properly if they are to participate in Energy and OR markets

Participation Model Walkthrough

- The IESO has participation models to show how resources are allowed to participate.
- We will run through a participation model of a resource using the process described on the previous slide.
- This will show how a typical resource goes through the process, highlighting some of the important requirements that are needed to participate in energy and OR.
- We will highlight why the IESO process and requirements are aligned with some resource types and describe nuances with other resource types. In some cases, these nuances create misalignments with our requirements or tools that don't allow certain resource types to participate in specific markets or products. These misalignments could be areas of opportunity for options as part of Phase 2 of EPOR-E.

Participation Model Walkthrough Example

- In the IESO market, a dispatchable quick start is one of our typical resource types providing a large portion of services to the grid. IESO requirements, tools and processes are aligned with this resource type. Most of the quick-start resources in Ontario are hydro.
- We will run through an example for a quick start resource from beginning (connection process) to the end (settlement). Assume this same resource type meets all requirements to participate in Energy and all three (10S, 10N, 30R) OR markets.
- Steps required for a quick start to participate in the energy market and requirements for OR will be called out further.

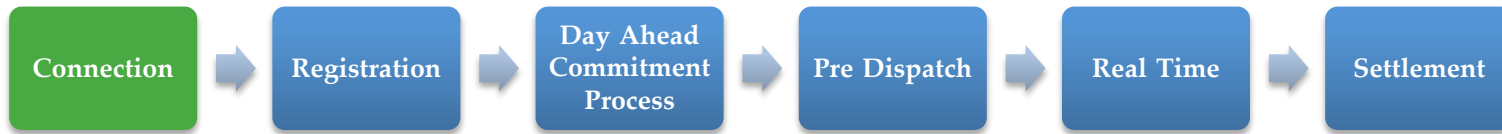
Participation Model Walkthrough Example (cont'd)

- Quick start - *A generation facility whose electrical energy output can be provided to the IESO-controlled grid within 5 minutes of the IESO's request and is provided by equipment not synchronized to the IESO-controlled grid when the request to start providing energy is made.*
- Quick start resources are able to participate in all IESO markets and offer those products seamlessly.

Resource Type	Energy	OR – 10S	OR – 10N	OR – 30
Quick-start				

	Fully enabled
	Partially enabled
	Not enabled

Example - Connection



Necessary to gain approval from the IESO to allow a facility to be connected to the IESO controlled grid

Prepare application

- Identify and confirm connection points for facility

Obtain conditional approval to connect

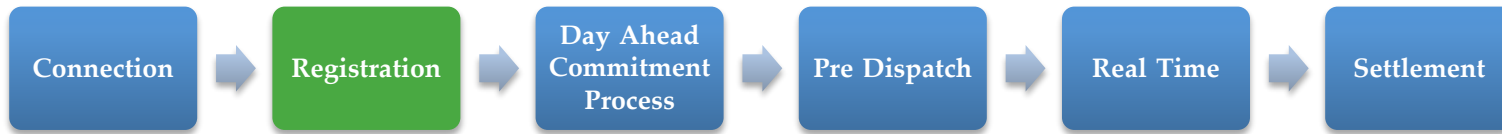
- Submit application and deposit
- Complete connection assessment:
 - System impact assessment and customer impact assessment applications
 - Complete transmitter connection approval process

Build facility

- Build to requirements and specifications indicated in your conditional approval

Requirements to participate in energy market and OR :

Example - Registration



Used to authorize participation in the IESO-administered markets, and to allow the IESO to monitor the reliability of the IESO-controlled grid.

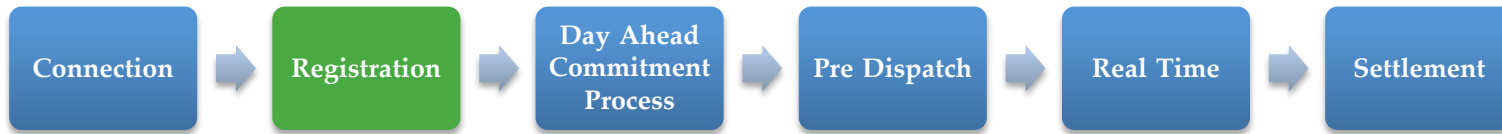
Complete market participant authorization with IESO

- Registration of organization with IESO
- Registration of Participation with IESO
 - OEB License
 - Prudential requirements
 - Participant workstation
 - Emergency Preparedness Plan

Requirements to participate in energy market and OR:

- OEB license to sell electricity or ancillary services (mandatory for only certain resources)
- Confirm participant has collateral on hand in case of default
- Must be > 1 MW size

Example - Registration cont.



Used to authorize participation in the IESO-administered markets, and to allow the IESO to monitor the reliability of the IESO-controlled grid.

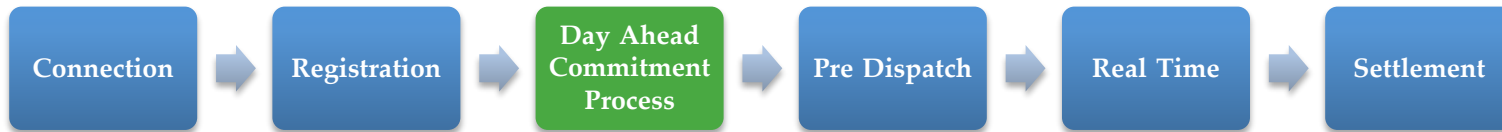
Complete facility registration with IESO

- Set up telemetry
 - Install communication circuit, test and set up test plan
- Metering registration
 - Install and meet hardware and testing requirements through a Meter Service Provider
- Complete Commissioning Tests and Performance Validation

Requirements to participate in energy market and OR:

- IESO can test facility based on performance requirements
- Register as a dispatchable resource (being able to respond to 5 minute dispatch instructions and pass dispatchability test - must be dispatchable, be able to receive dispatch instructions, and IESO has real time monitoring)

Example - Day-Ahead



The DACP provides a dependable view of the next days available supply and anticipated Ontario demand. It allows the commitment of certain resources and improves the efficiency of the market through advanced optimization and scheduling of resources

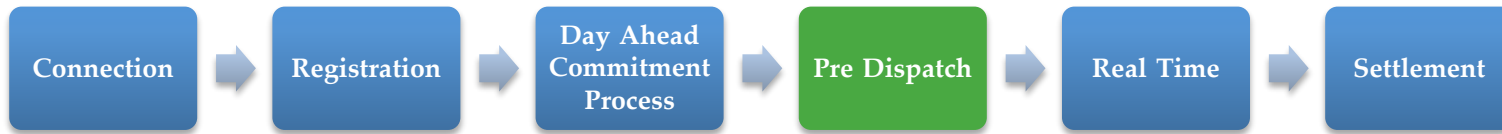
Submit daily dispatch data

- Between 06:00 EST and 10:00 EST resources must submit hourly price-quantity pairs, ramp rates, resource ID for energy and any corresponding OR offer for each class being offered for the next day's dispatch
 - OR offers must be less than or equal to the MW in your energy offer
 - OR offers also must include a single "up" ramp rate

Requirements to participate in energy market and OR:

- Submit your offer into the market to be considered for participation and support co-optimization requirement – resources may be scheduled for any of the three classes of OR as per their offers

Example - Pre-Dispatch



Determines projected prices and schedules over a number of future hours giving an indication of future likely dispatch for dispatchable resources.

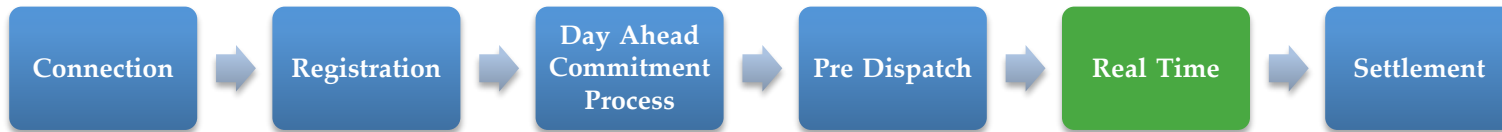
Revise dispatch data as required

- Revisions of offers is allowed within your availability declaration envelope (ADE - sets the hours and max MW you can resubmit offers for) up until the mandatory window (2 hours before real time)
 - Any revisions to the OR offer must also align with the ADE and still not exceed energy offer quantity
- Prepare for the likely dispatch if scheduled

Requirements to participate in energy market and OR:

- Submit your offer into the market to be considered for participation and support co-optimization requirement – resources will be considered for the three classes of OR

Example - Real Time



Transmits dispatch instructions for the required amount of energy injected or withdrawn from the IESO-controlled grid and sets the market clearing price.

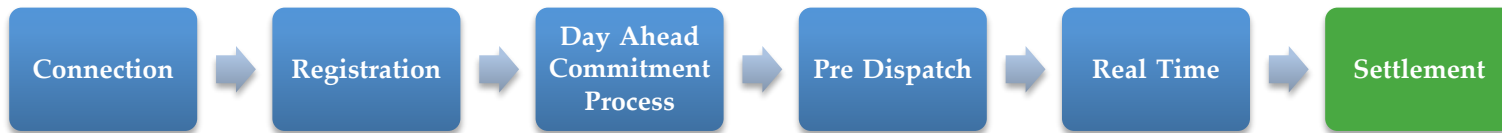
Follow real-time dispatch instructions

- Respond to dispatch instructions every five minutes
- Move for energy, meet the MW requirement at the end of the dispatch interval and at least within compliance deadband
- Standby for OR

Requirements to participate in energy market and OR:

- Meet the Market rules
- Specific OR rules include:
 - Provide offered reserve in 10 or 30 minutes – set by NPCC
 - Sustainment of 1 hour – set by NPCC Directory 5: Operating Reserve
 - Must be dispatchable - IESO needs to recover the ACE to reportable pre-contingency in 15 minutes – resources need to receive the dispatch signal, respond, and meet ORA compliance

Example - Settlement



Settle the physical and financial markets with market participants

Review preliminary settlement statements

- Review that information is accurate for each trade day
- Submit notice of disagreement if there is a concern

Review final settlement statement

- Review information is correct (either matches preliminary statements, or preliminary statement and adjustments)
- Submit notice of dispute if there are problems

Retrieve Invoice

- Make payment if required

Requirements to participate in energy market and OR:

- Payments must be made within two business days of receiving the invoice
- If you notice an error and wish to notify the IESO:
 - Submit Notice of disagreement within 4 days after receiving the preliminary statement
 - Submit notice of dispute within 20 business days after receiving final statement

Authority of Requirements

The IESO has the option to review and update items under its authority, with limited to no ability to change items under other regulatory bodies

IESO

Other Bodies (NERC, NPCC, OEB)

- Registration of organization
- Participant authorization – Prudential requirements and participant workstation
- Size requirements (>1 MW)
- Co-optimization
- Tools and processes to facilitate market operation

- Connection
- Performance Validation
- Dispatchability to meet OR time requirements – NERC/NPCC
 - Telemetry
- Metering requirements – Measurement Canada

- 10 and 30 minute OR classes - NPCC
- One hour sustainment of OR - NPCC
- Participant authorization – OEB, NEB licensing

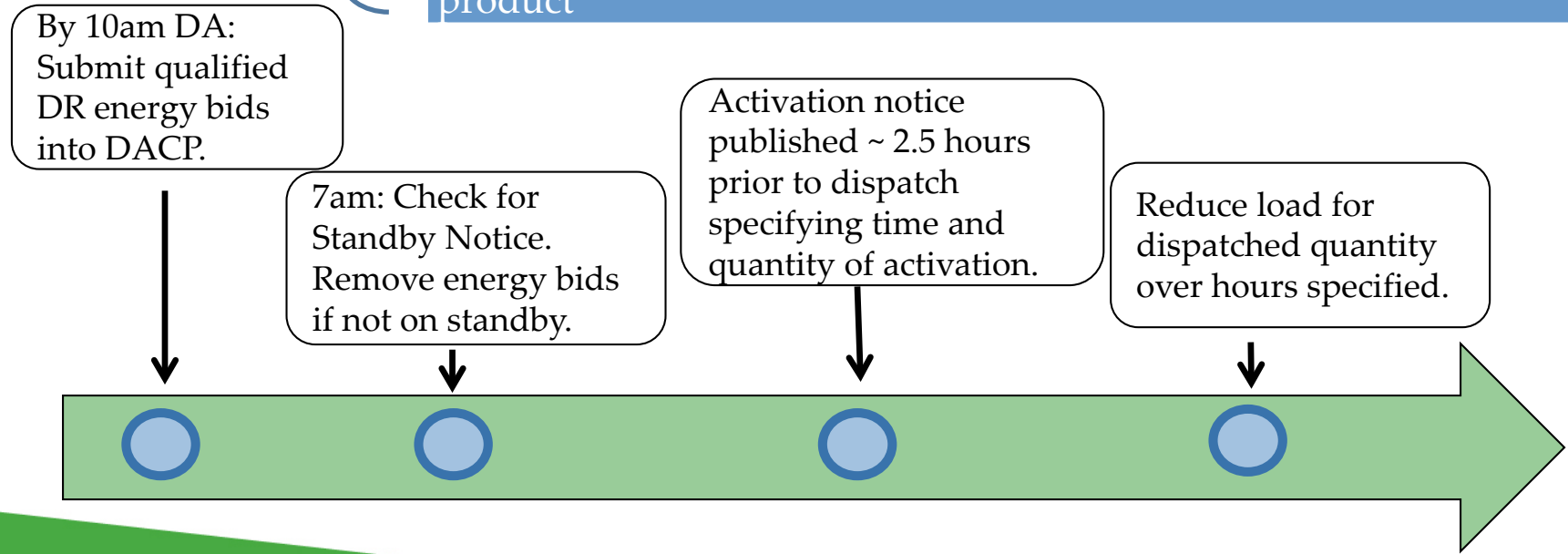
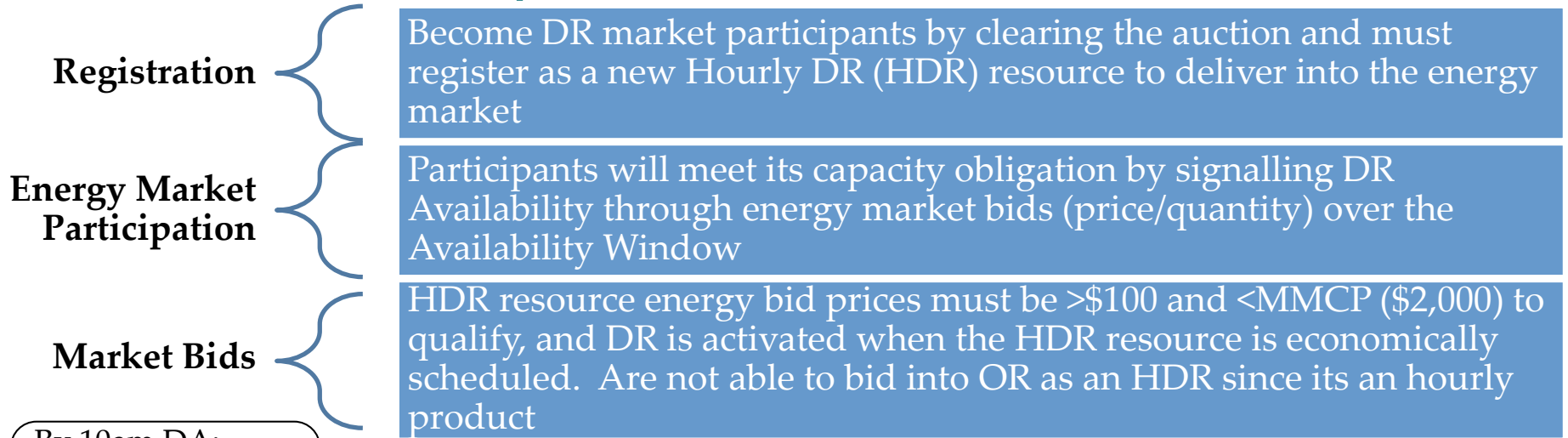
PARTICIPATION MODELS AND AREAS OF OPPORTUNITY FOR OTHER RESOURCE TYPES

Participation Models and Areas of Opportunity

- The following section will detail the participation models and areas of opportunity by adjusting requirements, tools and/or participation models for several resources to be explored by EPOR-E:
 - Demand Response – Hourly Demand Response (HDR)
 - Gas – Not-so-quick-start (NSQS)
 - Imports
 - Variable Generators (VG) – Solar and Wind
- For the other resource types not covered in this presentation but to be explored by EPOR-E:
 - DERs - will be explored after further analysis is completed by the Innovation, Research and Development group
 - Storage –will be coordinated with the storage design project
 - Hybrids – there currently are no participation models in place for hybrid resources. The IESO will be proposing potential models that could be implemented as part of EPOR-E which will include generator/load with BTM storage

HDR – Participation model

Energy	OR – 10S	OR – 10N	OR – 30



HDR – Opportunities

Opportunities for requirements, tools and participation models:

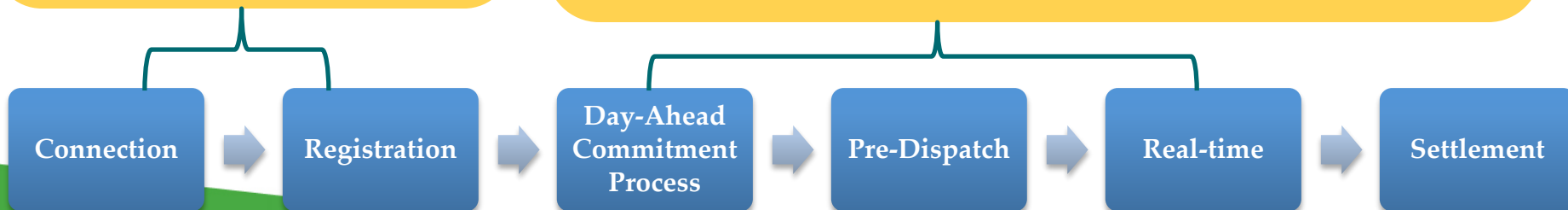
- 1) Market Entry - No OEB license required (Not a barrier, but different from other resource types)
- 2) Market Entry - Virtual resources are aggregated – there is no telemetry on contributors and not modeled where they are physically located. Doesn't meet current OR telemetry requirements.
- 3) Market - Based on how HDR's are scheduled they cannot: respond to 5 min instructions and provide OR within 10 or 30 minutes
- 4) Market - Fixed constraint – HDR's are locked in for up to 4 hour blocks if activated and tools will not allow OR to be scheduled since they are hourly resources

1) DR is controlling load and therefore does not require an OEB license

2) Connect and Register as an HDR resource

3) Requires stand by notification to be activated and resource activation process takes 2.5 hours

4) When activated, IESO tools lock in resources for up to 4 hours on their dispatch



NSQS – Participation Model

Energy	OR – 10S	OR – 10N	OR – 30

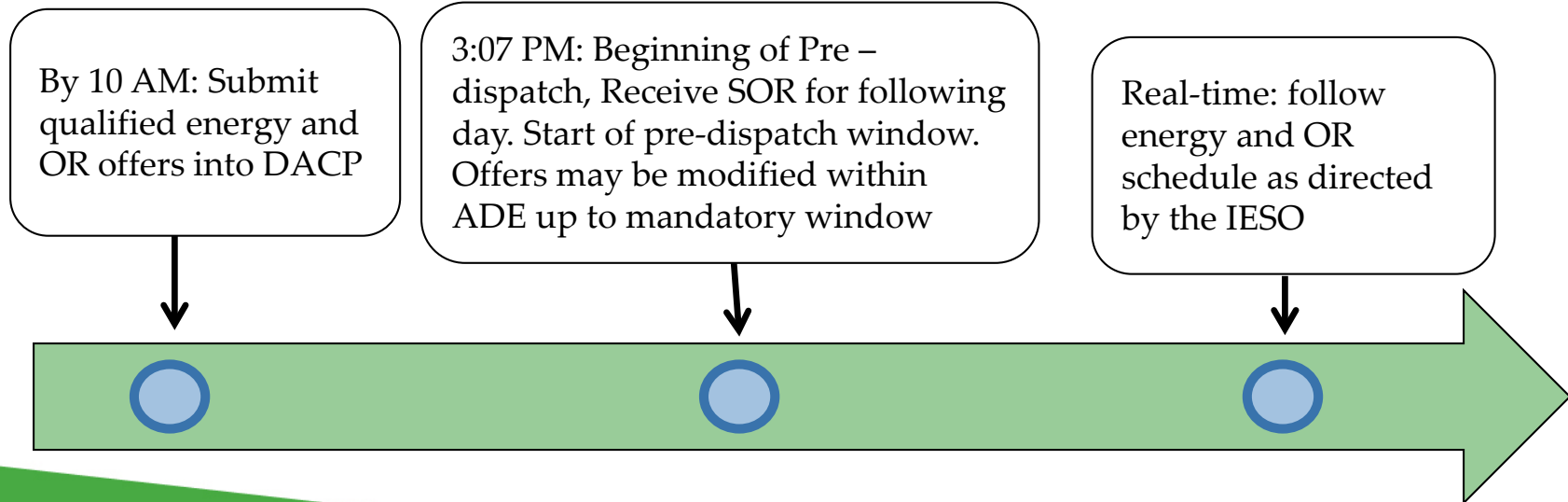
Not-so-quick starts (NSQS) are resources whose operating characteristics fall between quick start and non-quick start resources

Registration

- NSQS generator registration is limited by the current quick start and non-quick start framework.

OR Participation

- Ability to participate in OR is confined to the current IESO registration framework and the IESO's ability to develop cost effective tool changes enabling their unique characteristics



DACP – Day-Ahead Commitment Process
SOR – Schedule of Record
ADE – Availability Declaration Envelope

NSQS - Opportunities

Opportunities for requirements, tools and participation models:

1) Market Entry and Markets - No formal NSQS category exists and as a consequence generators in this category must register into the existing IESO frameworks and systems, limiting the ability to participate in certain markets

1) Resources must register within current IESO framework, which could result in limited participation to certain products

Connection

Registration

Day-Ahead
Commitment
Process

Pre-Dispatch

Real-time

Settlement

Imports– Participation Model

Energy	OR – 10S	OR – 10N	OR – 30

Registration

Register as a boundary entity. This requires a NEB and OEB licence.

Dispatch

Co-ordinated using hourly interchange schedules; as the IESO cannot issue dispatch instructions every five minutes in real-time to facilities located outside Ontario (except with Quebec).

Pricing

Paid intertie zone price through which they are importing, which could be different than HOEP due to congestion on the line (resources can buy transmission rights to hedge against congestion). Receive Intertie Offer Guarantees

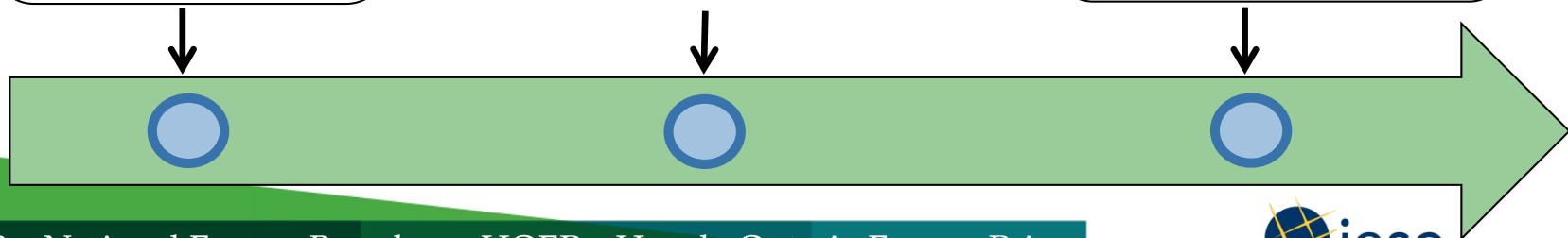
Operating Reserve

The rules currently allow non synchronized OR to be provided by imports. The IESO is currently assessing the viability of OR across interties with Hydro Quebec as part of a pilot program. It is currently a manual process for the control room to dispatch OR from imports.

Before the mandatory window: submit offer, location of transaction, NERC Tag

One hour before real time (PD minus 1): Imports are scheduled and confirmed with neighbouring jurisdictions; Intertie Offer Guarantee price is set

Real-Time: Imports are treated as non-dispatchable at this point and are dispatched for the full hour



NEB – National Energy Board

HOEP – Hourly Ontario Energy Price

OEB – Ontario Energy Board

PD – Pre-Dispatch

NERC – North American Electric Reliability Corporation

Imports - Opportunities

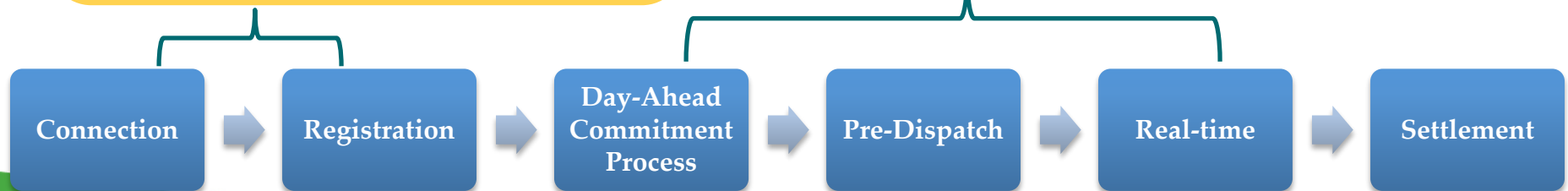
Opportunities for requirements, tools and participation models:

- 1) Market - dispatching imports- They don't receive 5 minute dispatch instructions
- 2) Market Entry – Telemetry is not facility specific
- 3) Market Entry - Interconnection agreements/ facility backed – aside from Quebec, current interconnection agreements don't facilitate OR across interties

2) Currently telemetry and metering is only required on the tie-line

3) The IESO requires interconnection agreement to support OR

1) Are scheduled and dispatched hourly



VGs – Participation Model

Energy	OR – 10S	OR – 10N	OR – 30

Registration

Register as either a Market Participant or a Program participant (if above 5 MW). If a program participant, they must also participate in the centralized forecasting program

Scheduling with forecast

Resource schedules are constrained to IESO forecast. The schedule could be classified as informational or mandatory and will determine if they need to limit their output.

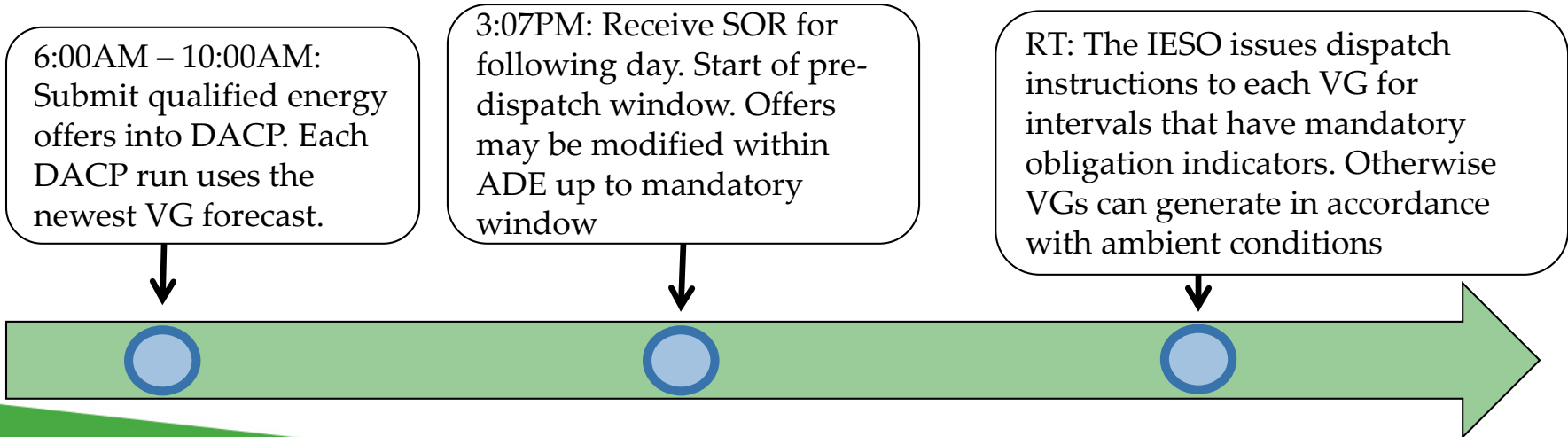
Market offers

For energy Solar and Wind resources offers (excluding the last 10% of the available capacity of a wind facility) must be no less than $-\$3/\text{MWh}$. The last 10% of the available capacity of a wind facility must be no less than $-\$15/\text{MWh}$. Are not able to currently offer into OR

6:00AM – 10:00AM:
Submit qualified energy offers into DACP. Each DACP run uses the newest VG forecast.

3:07PM: Receive SOR for following day. Start of pre-dispatch window. Offers may be modified within ADE up to mandatory window

RT: The IESO issues dispatch instructions to each VG for intervals that have mandatory obligation indicators. Otherwise VGs can generate in accordance with ambient conditions



DACP – Day-Ahead Commitment Process
 SOR – Schedule of Record
 ADE – Availability Declaration Envelope

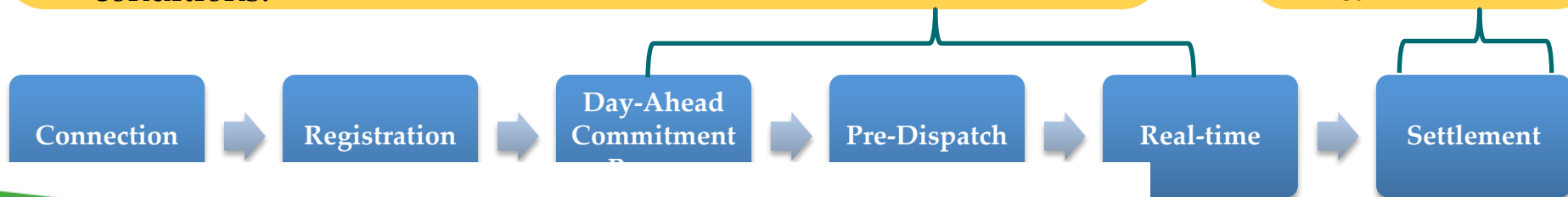
VGs - Opportunities

Opportunities for requirements, tools and participation models:

- 1) Market - Certainty of operation – forecasts do not provide certainty to guarantee output if called upon for an OR contingency event. Uncertain if resource could:
 - Be called on within 10 or 30 minutes for required output
 - Be sustained at that output for at least 1 hour
- 2) Market - Current tools do not allow VG generators to be held down for OR.
- 3) Settlement – linkage's to contracts

- 1) MW output may differ from what was offered in day ahead to real time. Forecast error could occur from expectations in DACP and PD to real-time.
- 2) VGs can be curtailed for economics, or due to a constraint on the system, otherwise they will output according to ambient conditions.

3) PPAs pay participants for maximizing output and for foregone energy



Summary of Opportunities for Alignment

HDR

- Dispatchability – no telemetry; ability to respond within 10 or 30 minutes; tool constraints
- Tool constraint – where resources are locked and limited from providing other services

NSQS

- Participation model – resource type is not defined or supported by IESO tools

Imports

- Dispatchability – no telemetry on the facility and don't receive 5 minute dispatch instructions
- Interconnection and facility backed agreements – need agreements to facilitate OR across the interties

VGs

- Ability to meet market rules and NERC/NPCC requirements – certainty in meeting output in 10 or 30 minutes and sustaining output for 1 hour
- Tool limitations – being able to dispatch resource down for OR
- contracts– incentivized for maximizing energy output

REQUESTS FOR STAKEHOLDER FEEDBACK

Questions for Stakeholder Feedback

- Are the requirements to participate in energy and OR clear and understandable?
- Based on the models and opportunities presented, is it clear what could be limiting a resource from participating?
- Based on the information that was presented, are your resources or a subset of your resources capable of meeting our current requirements?
- Have you come across similar issues for participation in other markets?
- **The IESO requests that stakeholders who are interested in an individual teleconference with the IESO to further discuss any participation issues for the resource types identified, please email engagement@ieso.ca to schedule a call.**

Next Steps

- In Q2 2020, the IESO will be posting the Phase 1 Memo – Participation and Requirements for stakeholder review.
 - This will expand on what was discussed in this presentation, incorporate feedback received from stakeholders and incorporate any updates from the SDP and Innovation White Papers on DERs, hybrids, and storage.
- Please provide feedback to engagement@ieso.ca by April 27 to ensure the IESO can incorporate it into the Phase 1 memo.

Questions?

OVERVIEW: MSP REPORTS AND STATUS OF RECOMMENDATIONS

Market Development Advisory Group

April 2, 2020

Purpose

- As requested by MDAG members, this presentation provides an overview of MSP recommendations the IESO is working on

The Market Surveillance Panel

- The Market Surveillance Panel (MSP) is a Panel of the Ontario Energy Board (OEB)
- One of the MSP's mandates is to investigate market activities and participants, and make recommendations related to its investigations
- Recommendations are typically published through semi-annual reports
- More information on the role of the Market Surveillance Panel can be found in the IESO's [MDAG presentation from May 2019](#)

What Does the IESO do with MSP Reports?

- The IESO reviews the Panel's analysis and recommendations
- The IESO responds to Panel recommendations and considers addressing them based on materiality and other priorities (including reliability requirements, available resources, and alignment with other existing or planned commitments such as Market Renewal)
- Panel reports and IESO's responses are published on the OEB's [website](#)
- IESO's annual status update on outstanding MSP recommendations is available on the IESO's [website](#) (latest available [here](#))

Monitoring Reports (semi-annual)

The MSP report has three sections:

1. A general assessment of the market
2. Specific market outcomes (such as pricing, demand, supply, etc.)
3. An analysis of anomalous market outcomes

Recommendations being Explored/Implemented

- The IESO often agrees with the recommendation and that the issue should be investigated further
- These recommendations will not be addressed through Market Renewal Program (MRP) but are prioritized for the near-term because the solution is likely aligned with MRP and/or may have material impact to the market
- The IESO is currently working with or plans to engage with stakeholders on the following topics in 2020 resulting from 11 MSP recommendations:
 1. Operating Reserve Accessibility
 2. Dispatchable Load and Unwarranted Congestion Management Settlement Credits (CMSC)
 3. Variable Generator (VG) Forecasting Tool
 4. Transmission Rights Clearing Account (TRCA) Disbursement
 5. Transmission Rights Payments during Outages
 6. Intertie OR Nodal Price Chasing
 7. Demand Response Fictitious Demand

Operating Reserve (OR) Accessibility

- Description of Issue:
 - There are instances when a resource is scheduled for more operating reserve than they are capable of providing.
- MSP Recommendation:
 - Ensure unavailable OR is not scheduled
 - Claw-back payment from resources who cannot provide the scheduled OR if called upon
- Current Status:
 - The IESO launched the Improving Accessibility of Operating Reserve stakeholder engagement in March of 2019
 - At a webinar on March 30, the IESO presented the detailed design of the OR settlement claw-back mechanism for any OR that cannot be accessed by the IESO for stakeholder review and feedback
 - The IESO will continue to engage with stakeholders to finalize the OR performance criteria during OR activation that is intended to resolve this issue
 - Information on the engagement can be found [here](#)

Dispatchable Load and Unwarranted CMSC

- Description of Issue:
 - Dispatchable loads should not be compensated with CMSC as a result of an operational constraint arising from conditions at the dispatchable load's facility such as for safety, equipment and applicable law (SEAL) reasons
- MSP Recommendation:
 - Implement rules to recover CMSC payments made to dispatchable loads when the payments are made due to reasons within the control of the facility
- Current Status:
 - In June 2019, the IESO eliminated the \$4,000 materiality threshold to claw-back unwarranted CMSC payments from dispatchable loads
 - The IESO is continuing to consider the changes required to recover CMSC as described by the Panel

Variable Generator Forecasting Tool

- Description of Issue:
 - VGs are scheduled based on a centralized forecast
 - There are certain instances when the forecasting tool is disabled that will result in other IESO tools using the VG's registered maximum capacity to determine unconstrained schedule, which can be significantly different than the forecasted output. This can cause high CMSC payments and market price suppression
- MSP Recommendation:
 - Formalize the process by which the IESO determines when to disable/re-enable the VG forecasting tool
 - Under the circumstances outlined above, the IESO should set the generator's unconstrained schedule at its forecasted output
- Current Status:
 - The IESO agrees with the recommendation and has updated [Market Manual 7.2 Section 3](#) and internal documentation to reflect the issuance of an advisory notice when the tool is disabled/re-enabled
 - The IESO has scheduled a webinar on April 30 to provide more information and discuss next steps with stakeholders

TRCA Disbursement

- Description of Issue:
 - The IESO disburses TRCA surplus funds based on demand shares on a semi-annual basis
- MSP Recommendation:
 - Revise the manner in which the IESO allocates disbursements from demand shares to costs paid
 - The IESO should not disburse any further funds from the TRCA until the disbursement methodology has been altered
- Current Status:
 - The IESO agrees there is an issue and has launched the TRCA Disbursement Methodology Review
 - The IESO is currently working with stakeholders to develop and implement a solution
 - Materials can be found [here](#)

Transmission Rights Payments During Outage

- Description of Issue:
 - Market Rules currently state that when the transfer capability of an intertie is 0 MW due to outage, no TR payments must be made
 - MSP has identified instances when the transfer capability of an intertie has been reduced to 0 MW in one direction due to an outage and Transmission Rights (TR) holders still received TR payments
- MSP Recommendation:
 - The IESO should ensure its procedure for determining an outage when administering Transmission Rights aligns with the Market Rules
- Current Status:
 - The IESO agrees with the recommendation and has developed a project plan to implement the required changes to ensure that TR payouts are not made when the transfer capability of an intertie is reduced to 0 MW
 - On March 11, the IESO held a webinar to explain the changes to IESO processes and systems, timing for when the changes will take effect, and impact on TR market participants
 - The March 11 webinar presentation is available [here](#)

Intertie Operating Reserve Nodal Price Chasing

- Description of Issue:
 - Due to the two-schedule market design, resources are eligible for CMSC payments when they are constrained-on for energy and OR
 - The Panel has observed a market participant engaging in what appears to be nodal price chasing through its OR import offers. Nodal price chasing is the act of a market participant altering their bids/offers in order to increase the CMSC payment they will receive.
- MSP Recommendation:
 - The IESO should consider ways and means of deterring the Intertie Operating Reserve nodal price chasing behaviour described in this report
- Current Status:
 - Both the IESO and the MSP acknowledge that with the transition from Ontario's two-schedule system to a single schedule market (SSM), CMSC will be eliminated
 - In the interim, the IESO agrees with the recommendation to undertake an assessment of potential solutions prior to the implementation of SSM

Demand Response Fictitious Demand

- Description of Issue:
 - When virtual Hourly Demand Response (HDR) resources were first integrated into the market in 2016 there was an implementation error which, in certain instances, artificially inflated the forecasted demand of the system by up to 220 MW. The increase in demand would, in general, increase the market clearing price.
 - This error was caught by the IESO and corrected about 11 months after the implementation
- MSP Recommendation:
 - A. When implementing changes to the market, the IESO should audit the pre-deployment testing process to ensure that sufficient controls are in place to identify errors and unintended consequences
 - B. When an error or unintended consequence is detected, the IESO should publically disclose details of the error or unintended consequence, the impact on the market, and actions taken or to be taken to address the matter

Demand Response Fictitious Demand (cont'd)

- Current Status:
 - In 2017, the IESO introduced significant improvements to strengthen its testing practices including establishing a Quality Assurance (QA) team that creates testing plans for projects. The IESO's Internal Audit unit, which reports to the IESO Board, is scheduled to undertake a review of the QA and deployment function in 2020
 - The IESO agrees with Part B of the Panel's recommendation and will review its current practices to report publically on IESO significant or material errors
 - The IESO expects to complete this review by Q2 2020

Recommendations to be Resolved through MRP

- The IESO is undertaking the MRP with a series of projects that will deliver a more efficient electricity market
- There are a number of outstanding MSP recommendations that the IESO agrees with (at least in principle) that will be addressed through the MRP
 - MRP is expected to go-live by Q1 2023
- The [Market Renewal Program's Detailed Design](#) work currently underway will include discussion on:
 1. Real-time Generator Cost Guarantee Program
 2. Intertie Failure Charge
 3. Control Action Operating Reserve
 4. Net Interchange Scheduling Limit
 5. Constrained-On Export CMSC

Questions?

TRCA DISBURSEMENT METHODOLOGY REVIEW

Market Development Advisory Group

April 2, 2020

Purpose

- This presentation provides an updated proposal for the TRCA disbursement methodology

Agenda

1. Recap
2. Review stakeholder feedback
3. Revised proposal with rationale
4. Implementation
5. Timing

RECAP

Recap

- The IESO engaged the Brattle Group to deliver a [public report](#) which recommends allocating 100% of the surplus funds to Ontario loads on the basis of market efficiency
- At the November and December 2019 MDAG meetings the IESO indicated alignment with this recommendation and intent to implement by the May 2020 scheduled disbursement
- At the January 2020 MDAG meeting, the IESO maintained its proposal to allocate all TRCA surplus funds to loads but delayed the effective date of its proposal to the November 2020 disbursement based on stakeholder feedback
- The IESO has continued to receive extensive feedback that the decision should emphasize contribution to transmission system costs
- In response to stakeholder feedback, the IESO is proposing to change the methodology to the one recommended by the MSP in 2017.

STAKEHOLDER FEEDBACK

Feedback Overview

- The IESO appreciates the feedback received from stakeholders on this topic
- The feedback was categorized by the following themes:
 - Effective Date
 - Impact
 - Comparison with other jurisdictions
 - Methodology
- Please refer to the Summary of Stakeholder Feedback and IESO Responses document posted on the [MDAG webpage](#) for further context on engagement on the TRCA Disbursement Methodology Review.

Feedback Theme: Effective Date

Stakeholder Feedback:

Stakeholders support the IESO's decision to delay the effective date until November 2020. However, existing TR holders could be harmed if the TRCA disbursement methodology is changed prior to November 2021.

IESO Response:

- *In December 2019, the IESO proposed an effective date of May 2020. The IESO has considered stakeholder feedback and decided to delay the implementation to November 2020 (look-back period from Jun 1 to Nov 30)*
- *The IESO is balancing different perspectives in making this decision:*
 - *The Market Surveillance Panel who is recommending an immediate suspension of disbursements and an immediate change in methodology*
 - *Ontario loads who will benefit from this change*
 - *Impact to exporters and TR participants, primarily on speculators in TRs who purchase TRs but not hedging exports*

Feedback Theme: Impact

Stakeholder Feedback:

Some stakeholders believe the IESO's impact analysis shows that consumers may receive little, if any, benefit and could be worse off following the market rule amendments.

IESO Response:

- *The IESO identified two scenarios in its impact assessment based on stakeholder feedback received:*
 1. *The TRCA disbursement does not impact trading behaviour*
 - *Holding all else constant, the TRCA surplus should remain the same size and the change would have an incremental benefit to loads*
 2. *The TRCA disbursement does impact trading behaviour*
 - *Impact to trading behaviour means export bid prices are reduced and it is possible that loads may not receive incremental funds through a change in the TRCA disbursement methodology.*
 - *However, there would be greater transparency and certainty in export transaction costs which would improve market efficiency, ultimately benefitting Ontario consumers*

Feedback Theme: Comparison with Other Jurisdictions

Stakeholder Feedback:

The IESO proposal is different from the way most US FTR markets treat the distribution of transmission surpluses.

IESO Response:

- *The IESO agrees with this feedback. The current methodology and the proposed future methodology are different from US markets*
- *Designs of US TR markets are fundamentally different from Ontario's design. US markets are focused on internal point-to-point congestion, while Ontario is based on "surge pricing" over the interties only*
- *The term "surplus" is also accounted for differently. In US markets, 1) TR auction revenues and 2) congestion funds are accounted for separately. Loads typically receive the TR auction revenues. The remaining "surplus" is limited to congestion rent less auction payouts.*
- *The IESO acknowledges that in some jurisdictions, some of the remaining surplus can be allocated to exporters under certain circumstances*

Feedback Theme: Methodology

Stakeholder Feedback:

Under the context of avoiding system charges by not consuming, loads are no different than exports because individually they can avoid transmission rates by not consuming

IESO Response:

- *Under the context of avoiding system charges, the IESO agrees that individual loads and exporters can avoid transmission charges by not consuming/exporting*
- *In response to the feedback we have received, the IESO has revised its TRCA disbursement proposal*

REVISED PROPOSAL

Current Disbursement Methodology

- The IESO agrees with the MSP that the current TRCA disbursement methodology (based on proportionate share of volume) over-allocates the TRCA surplus funds to exporters at the expense of Ontario loads*
- Over the last 5 years, loads have received ~87% of the TRCA surplus, while exporters have received ~13% of the TRCA surplus under the current methodology based on volume share
- As noted in the MSP's analysis*, from a fairness perspective, loads contribute a much greater share of total transmission costs than exporters and therefore should receive a larger proportion of the disbursement

*Recommendation 4-1 from the [May 2017 MSP Monitoring Report](#)

Previously Proposed Methodology

- In stakeholder meetings in late 2019 and early 2020, the IESO proposed that loads should be the sole recipient of TRCA surplus funds
- From an equity perspective:
 - The transmission system (including interties) was built to reliably serve Ontario consumers
 - The vast majority of system costs (such as Global Adjustment) are borne by Ontario consumers which enable traders to conduct their business
- From an efficiency perspective:
 - The current TRCA disbursement methodology incents inefficient export bidding behaviour

Stakeholder Feedback on Methodology

- In response to the IESO's proposed TRCA disbursement methodology, many stakeholders have provided feedback that the proposal to allocate all TRCA surplus funds to loads is unfair to exporters because:
 1. Exporters contribute to the cost of the transmission system
 2. The OEB approaches to establish transmission rates for loads and exporters are similar cost-based approaches
- Some stakeholders also noted that in some neighbouring jurisdictions, exporters are eligible for congestion disbursement under certain limited circumstances
- The IESO considered this feedback and intends to proceed with the MSP recommended solution that balances market efficiency and equity

Revised Proposal

Allocate TRCA surplus funds to loads and exporter classes based on proportion of transmission service charges paid.

- From an equity perspective, loads will receive a larger proportion of the TRCA surplus funds, while still recognizing the cost-contribution of exporters
- From an efficiency perspective, the revised proposal significantly reduces (but doesn't eliminate) the incentive for inefficient export bidding behaviour caused by the TRCA disbursement. Export bid prices will be more aligned with market conditions.

IMPLEMENTATION

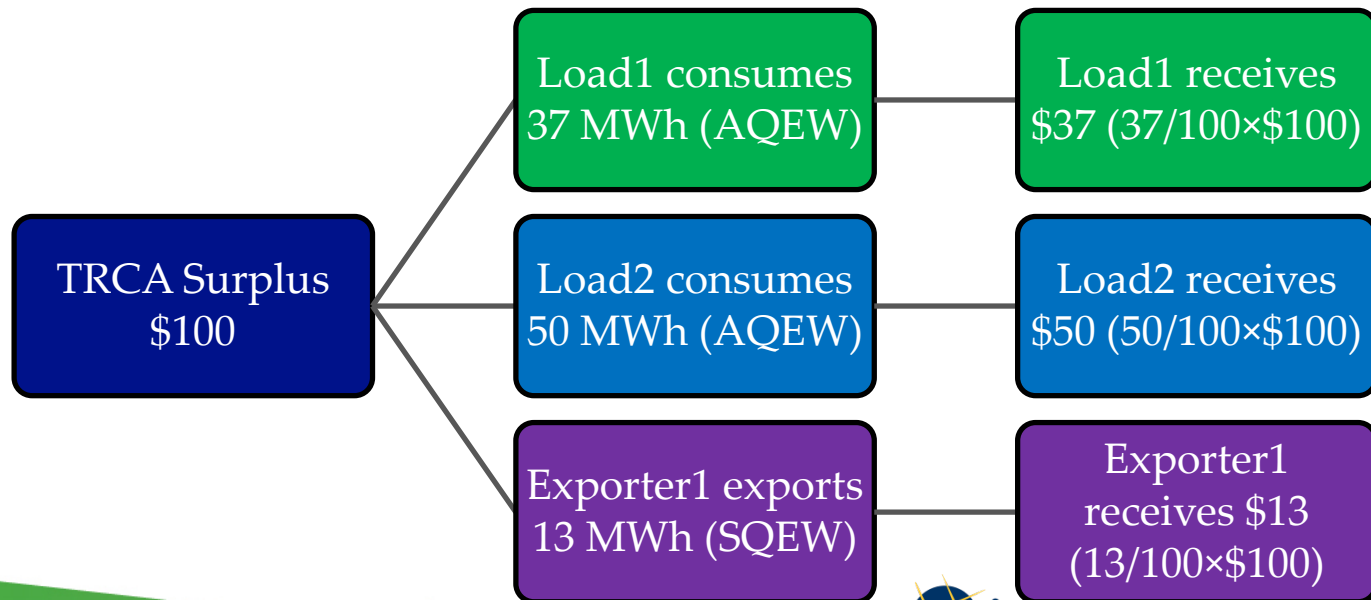
Current Methodology

- The current TRCA disbursement methodology disburses TRCA surplus funds based on each load and exporter's proportionate share of total energy volume over the prior look-back period.
 - Total energy volume is determined using Allocated Quantity of Energy Withdrawn (AQEW) for loads and Scheduled Quantity of Energy Withdrawn (SQEW) for Exporters

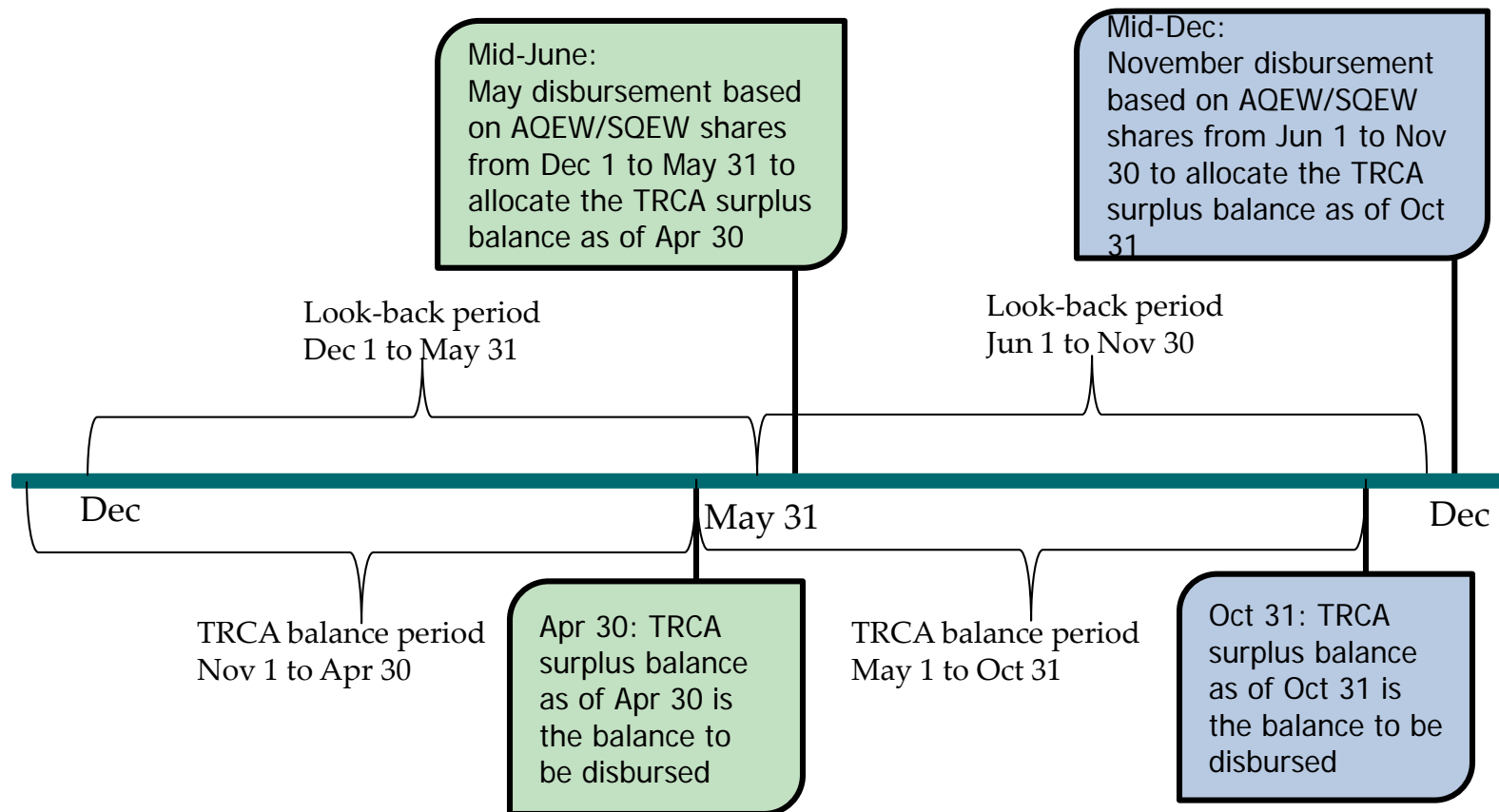
Example:

Assume over the last 6 month look-back period there was:

- \$100 TRCA surplus to be disbursed
- 100MWh of total volume (AQEW+SQEW)



Current Methodology - Timing



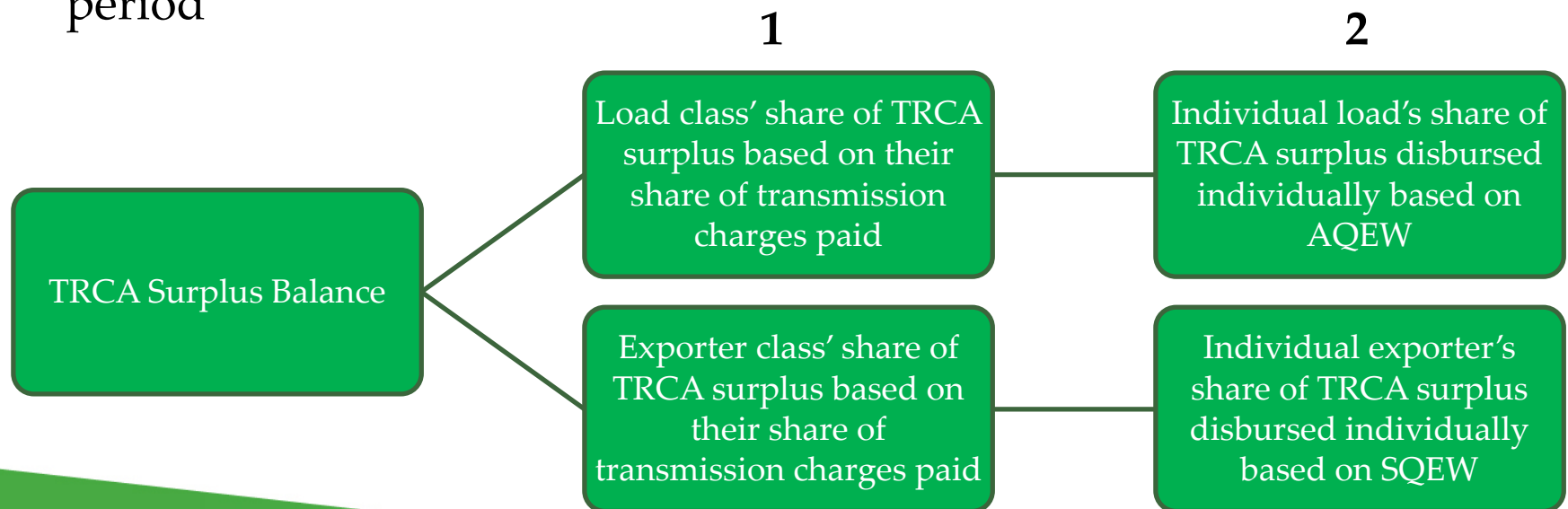
- *Note that the TRCA surplus to be disbursed is based on the TRCA balance as of the prior month's month-end balance (April 30 for the May disbursement and October 31 for the November disbursement)*

Implementation Considerations

- The proposed disbursement methodology introduces additional requirements and considerations to the current methodology. For example:
 - Not all wholesale loads directly pay transmission fees to the IESO but rather pay them to another Market Participant (MP) who passes them along to the IESO
 - Funds will continue to be disbursed back to loads, including those that pay transmission fees through another MP

Implementation of Proposed Methodology

1. The IESO will first divide the TRCA surplus between the load and exporter classes based on the proportion of transmission costs paid over the TRCA balance period
2. Once the allocation is determined, within each class, TRCA surplus funds will be allocated to individual loads and exporters based on their proportionate share of AQEW/SQEW over the look-back period



Implementation of Proposed Methodology (cont'd)

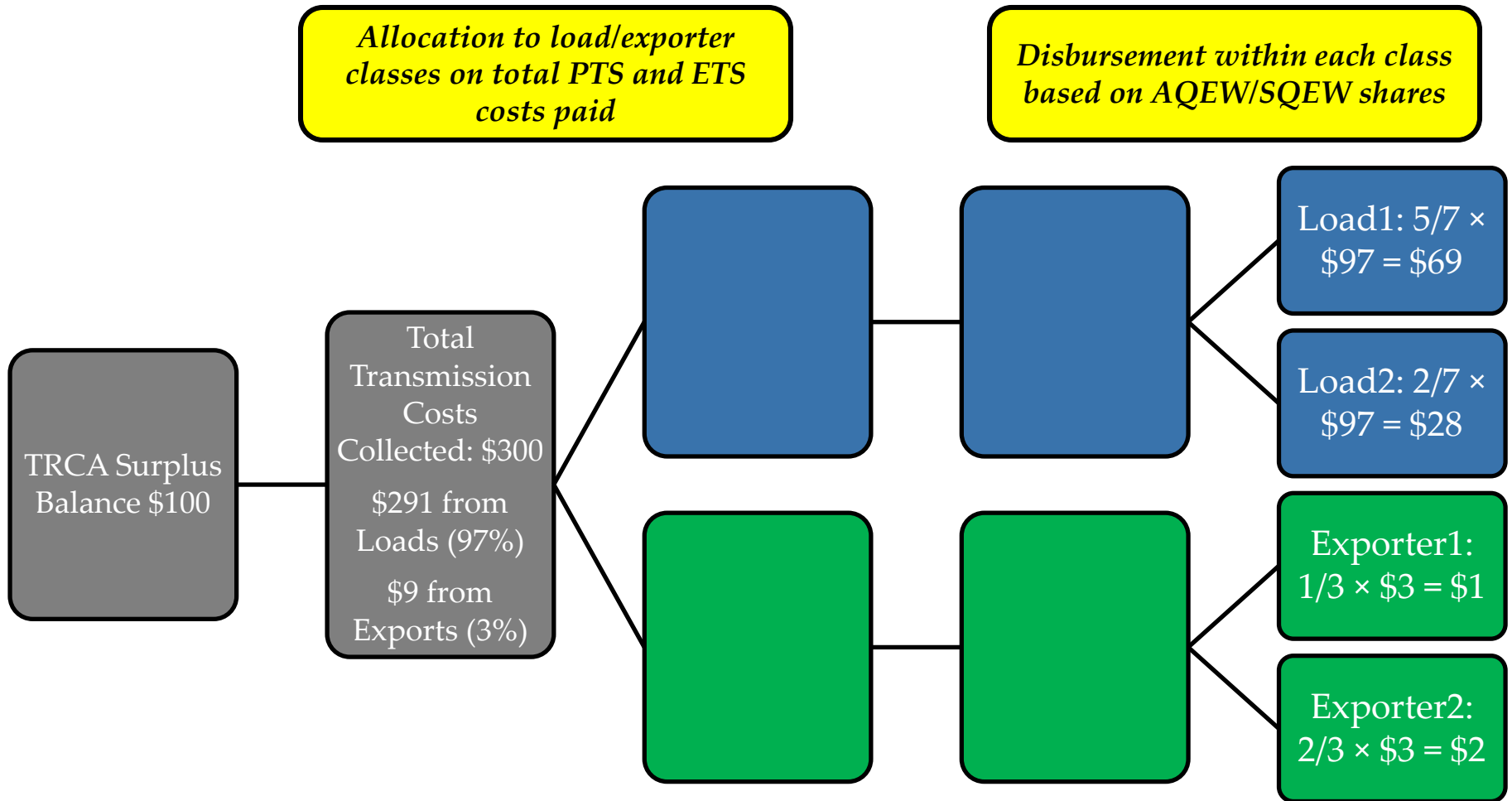
- To address the issue of transmission costs not being finalized in time for month-end settlement, the IESO will use the Provincial Transmission Service (PTS) and Export Transmission Service (ETS) charges collected over the 6-month balance period to calculate the allocation of the TRCA balance between load and exporters (*historical allocation information in appendix*)
 - The time period used to calculate the transmission cost-based allocation will be aligned with the period that the TRCA surplus was accumulated in

Illustrative Example of New Methodology

Assumptions:

- TRCA surplus available to disburse: \$100
- Total transmission costs paid in balance period: \$300 (97% from loads and 3% from exporters)
- Total AQEW during disbursement period: 7MW (Load1 5MW, Load2 2MW)
- Total SQEW during disbursement period: 3MW (Exporter1 1MW, Exporter2 2MW)

Illustrative Example of New Methodology



Market Rules

- Chapter 9 will be updated to reflect the proposed disbursement methodology
- Draft redlined market rules will be posted to the MDAG engagement webpage following the webinar
- Stakeholders will be notified by email when the market rules are available for review and feedback
- Stakeholder feedback will be considered in the version of redlined market rules anticipated to be included in the May Technical Panel meeting

Next Steps

- Draft redlined market rules to be posted to MDAG webpage following webinar for stakeholder review and feedback
- Pending review of stakeholder feedback, on May 26, IESO will ask Technical Panel to “Vote to Post” amendments
- The IESO will seek IESO Board approval after the Technical Panel (TP) process is completed
- Feedback on the proposed methodology can be provided by April 27 to engagement@ieso.ca

May 26, 2020:
Ask TP for a
“Vote to Post”
TRCA MR
amendments for
stakeholder
comment

June 23, 2020:
Ask TP for a
“Vote to
Recommend”
TRCA MR
amendments to
the IESO Board

August 25, 2020:
IESO Board to
vote on TRCA
MR amendments

Nov 2020:
TRCA MR
amendments goes
into effect for
December 2020
disbursement (for
period June to
November 2020,
inclusive)

APPENDIX

Historical Proportion of Transmission Costs Paid

- This chart shows the historical proportion of total transmission charges collected between Provincial Transmission Service and Export Transmission Service charges based on past look-back and balance periods
- Historical allocation has been stable ~98% from PTS and 2% from ETS charges
- Using the look-back period or balance period to calculate the 6-month allocation has yielded almost identical results

Look-back Period	Provincial Transmission Service Charge	Export Transmission Service Charge	Balance Period (look-back period shifted back by 1 month)	Provincial Transmission Service Charge	Export Transmission Service Charge
Jun-Nov 2015	97.7%	2.3%	May-Oct 2015	97.7%	2.3%
Dec 2015-May 2016	97.2%	2.8%	Nov 2015-Apr 2016	97.1%	2.9%
Jun-Nov 2016	97.6%	2.4%	May-Oct 2016	97.7%	2.3%
Dec 2016-May 2017	97.4%	2.6%	Nov 2016-Apr 2017	97.4%	2.6%
Jun-Nov 2017	97.9%	2.1%	May-Oct 2017	97.8%	2.2%
Dec 2017-May 2018	97.6%	2.4%	Nov 2017-Apr 2018	97.6%	2.4%
Jun-Nov 2018	98.2%	1.8%	May-Oct 2018	98.1%	1.9%
Dec 2018-May 2019	97.7%	2.3%	Nov 2018-Apr 2019	97.8%	2.2%
Jun-Nov 2019	97.8%	2.2%	May-Oct 2019	97.7%	2.3%

Questions?

TRANSMISSION RIGHTS MARKET REVIEW

Market Development Advisory Group

April 2, 2020

Purpose

- To present MDAG members with an overview of the Transmission Rights Market Review and to solicit feedback on the proposed scope of work
- To provide an overview of the stakeholder engagement approach for this Review

Agenda

- Background and drivers
- Proposed scope and timeline
- Next steps

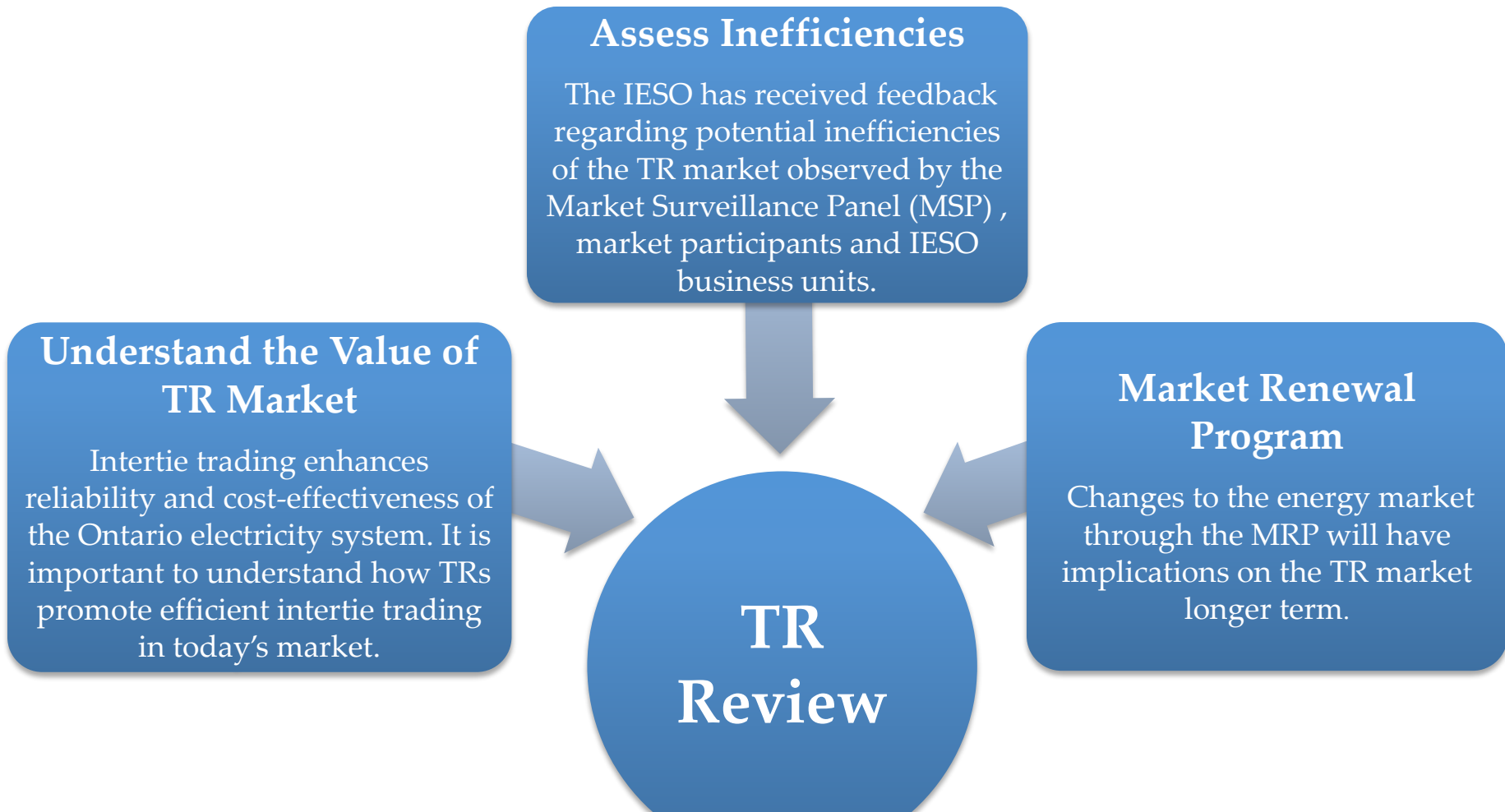
Origins of Transmission Rights

- Transmission Rights (TRs) were introduced in the U.S. to help wholesale electricity consumers and load serving entities (LSEs) manage the price risk (due to congestion) of flowing power across different price zones
- There are many factors that can cause congestion to occur, exposing LSEs and their customers to a high degree of financial risk without a natural hedge against it. This creates difficulty for consumers and LSEs to fulfill their obligation to serve loads and support the cost of operating the transmission network through regulated rates
- Allocating TRs to consumers and LSEs provides insurance against congestion, significantly reducing this price risk
- Creating a market for TRs allows consumers and LSEs the opportunity to sell TRs they don't think they need and allows financial traders the opportunity to purchase TRs, thereby maximizing the value of TRs to consumers

Ontario TR Market

- The Ontario TR market was established at market opening and has been operating largely based on its original design.
 - With the uniform market price in Ontario, TRs are not needed to hedge internal congestion costs, but offered solely on the interties to provide a hedge against intertie congestion costs (price difference between an intertie zone and Ontario).
- The value of the TR market is significant and generates on average \$150 million in auction revenue each year from up to 30 TR market participants, including physical and financial traders.
- TRs are offered on long-term (annual) and short-term (monthly) durations through quarterly and monthly TR auctions.
- TRs are financial instruments and do not guarantee *physical* transmission service or impact the scheduling of transactions.

TR Market Review – Drivers



TR Market Review – Proposed Scope

Stage 1

Value Assessment

- Assess the historical performance of the TR market, determine the objective for the TR market and whether the TR market is achieving its intended purpose

Stage 2

Near Term Improvements

- Identify near-term changes that will improve the overall efficiency, value and function of the TR Market (Pre-MRP)

Stage 3

Long Term Improvements

- Identify long-term changes to ensure alignment and compatibility of the TR market with the MRP (Post-MRP)

TR Market Review – Proposed Approach

Stage 1 - Value Assessment

- Present fundamentals of the TR Market to stakeholders
- Evaluate historical data and solicit stakeholder feedback on how TRs are used in practice
- Assess the value the TR market provides under a range of system conditions
- Review the original objective statement for the TR market and establish an objective statement in the context of today's electricity market
- Determine the extent to which the TR market is achieving its objective

Deliverable: Assess the value of the TR market to Ontario and, in turn, determine the need for and scope of Stage 2 and Stage 3

TR Market Review – Proposed Approach

Stage 2 – Near Term Improvements

- Examine structure and mechanics of the current TR market
- Identify areas of inefficiency and potential improvements
- For example, potential changes could include :
 - Eliminating paths where there is little or no value from TR auctions
 - Reducing the number of TRs offered on certain interties
 - Assessing on and off peak TRs options
 - Reviewing the current methodology to determine TR quantities for future auctions
- Prioritize list of potential changes, based on stakeholder input

Deliverable: A prioritized set of initiatives to improve the efficiency of the TR market today

TR Market Review – Proposed Approach

Stage 3 – Longer Term Improvements

- Review the TR market in the context of the redesign of Ontario's electricity market ongoing through the MRP
- Recommend potential improvements to the TR market for implementation to ensure compatibility and alignment with MRP
- Likely areas of review would include:
 - TR settlement from real-time to day-ahead
 - Implication of MRP changes to the calculation of Intertie Congestion Prices

Deliverable: A prioritized set of initiatives to ensure alignment with MRP and delivery of an efficient TR market in the long term

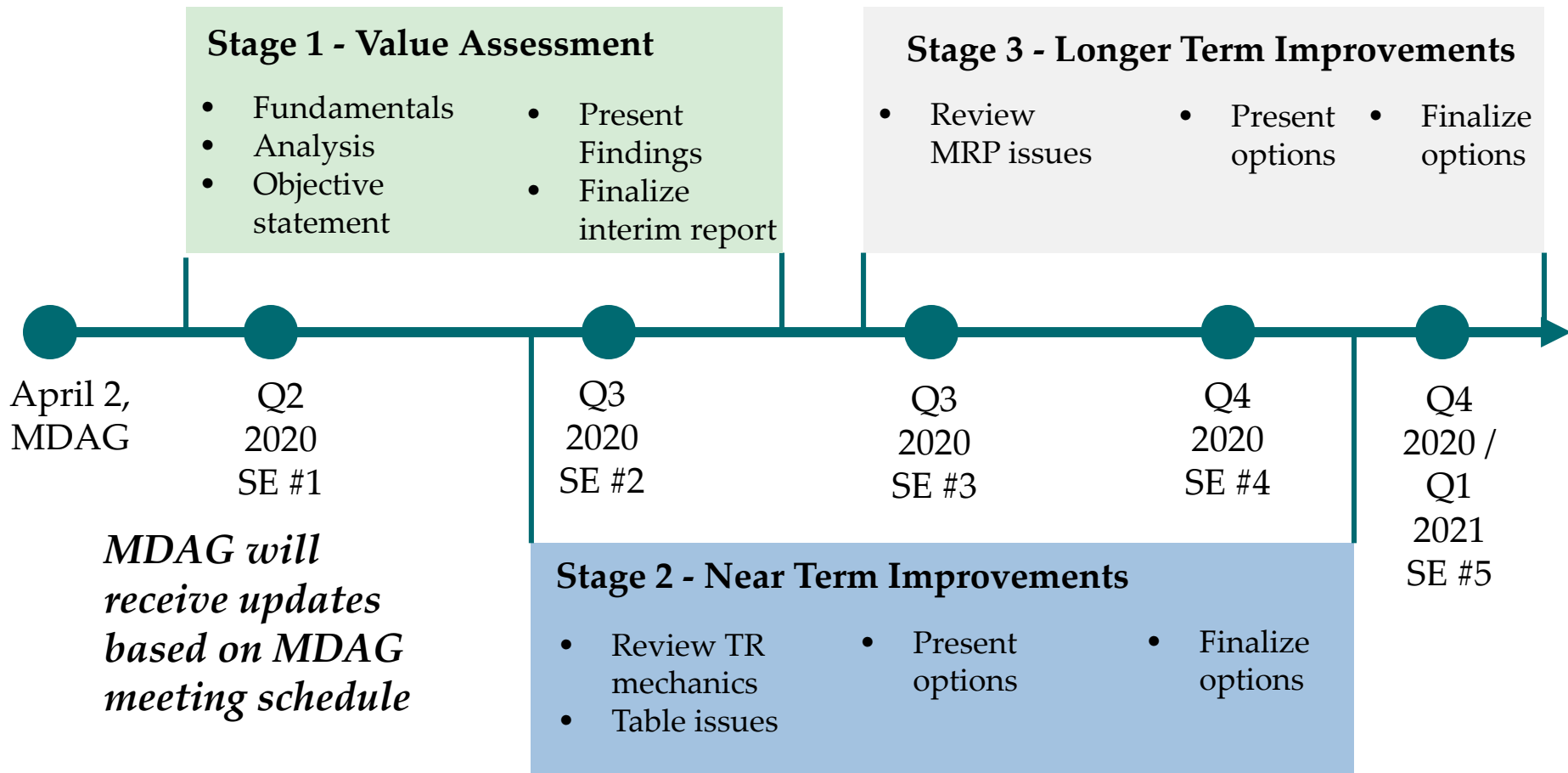
Stakeholder Engagement Approach

- Following this meeting, MDAG members and other interested stakeholders are encouraged to provide feedback on the proposed scope of work (SOW) for this Review
- Feedback on the proposed SOW will be used to launch this Review as a separate stakeholder engagement to be conducted independently of the MDAG in Q2 2020
- All interested stakeholders are welcome to participate in this stakeholder engagement however, the IESO anticipates this will be of particular interest to energy traders
- Regular updates will be provided to the MDAG to allow members to evaluate and advise on the progress of the Review and any findings
- Stakeholder feedback on this engagement approach can be provided to engagement@ieso.ca by April 27

Questions for MDAG – Proposed SOW

- Is the proposed scope appropriate?
- Does the sequencing of stages make sense or should MRP changes be prioritized?
- Are the timelines realistic?
- What stakeholder constituents would be most interested in participating in the review?
- How often would MDAG like to be engaged?
- What level of involvement would MDAG like to play?
- What do MDAG members believe is the purpose of the TR market?
- Written feedback can be provided to engagement@ieso.ca by April 27

TR Market Review - Proposed Timeline



Questions?

RECAP OF STAKEHOLDER FEEDBACK REQUESTS AND NEXT STEPS

Market Development Advisory Group

April 2, 2020

Summary of Stakeholder Feedback Requests

- EPOR-E
 - Hybrid resource participation models (slide 15)
 - Participation Models and Areas of Opportunity for Other Resource Types (slide 51)
 - Indicate interest in individual teleconference with the IESO to discuss potential participation issues for certain resource types
- TRCA
 - Revised proposal for TRCA disbursement methodology
 - Draft redlined market rules will be posted on the MDAG engagement web page for stakeholder review and feedback
- Transmission Rights Market Review
 - Stakeholder engagement approach
 - Propose scope of work (slide 109)

Summary of Stakeholder Feedback Requests

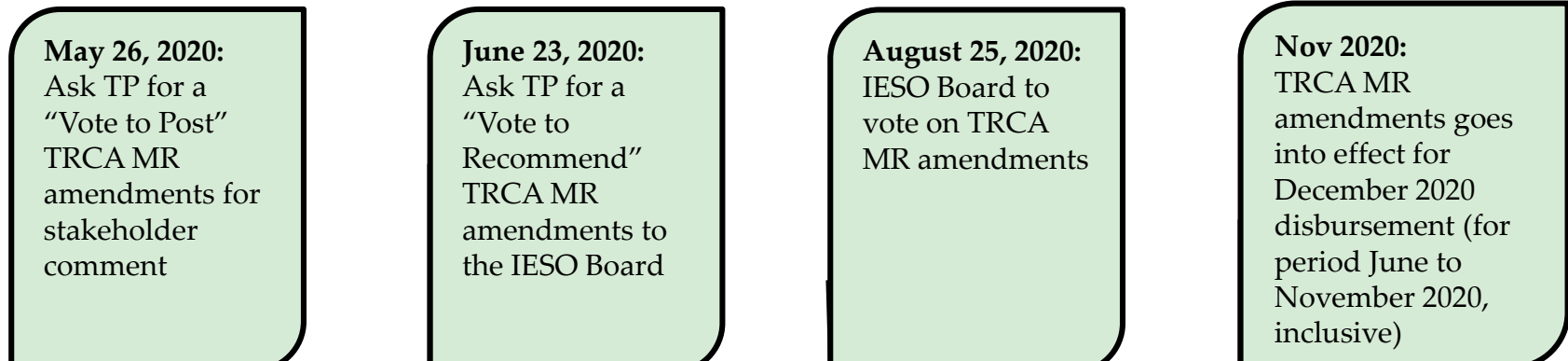
- Please provide feedback to engagement@ieso.ca by April 27 using the feedback form on the [MDAG engagement web page](#)
- For stakeholders who may require more time, please email engagement@ieso.ca

Next Steps – EPOR-E

- In Q2 2020, the IESO will be posting the Phase 1 Memo – Participation and Requirements for stakeholder review.
 - This will expand on what was discussed in this presentation, incorporate feedback received from stakeholders and incorporate any updates from the SDP and Innovation White Papers on DERs, hybrids, and storage.

Next Steps – TRCA Disbursement Methodology

- Draft redlined market rules to be posted to MDAG webpage following webinar for stakeholder review and feedback
- Pending review of stakeholder feedback, on May 26, IESO will ask Technical Panel to “Vote to Post” amendments
- The IESO will seek IESO Board approval after the Technical Panel (TP) process is completed



TR Market Review - Next Steps

- Feedback on the proposed SOW will be used to launch this Review as a separate stakeholder engagement to be conducted independently of the MDAG in Q2 2020
- The IESO will reach out to the broader trading community and other key stakeholders to encourage participation in this stakeholder engagement

MDAG- Next Steps

- MDAG members will be notified when the next MDAG meeting has been scheduled

Questions?