

Market Renewal Program Introduction for LDCs

August 17, 2018

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Agenda

- Welcome and Introductions
- Introduction to Market Renewal
- Introduction to the Incremental Capacity Auction (ICA)
- Topics for Discussion with LDCs
- Next Steps
- Question Period

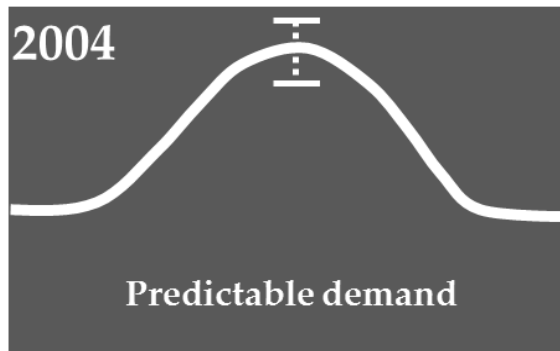
INTRODUCTION TO MARKET RENEWAL

Market Renewal Overview

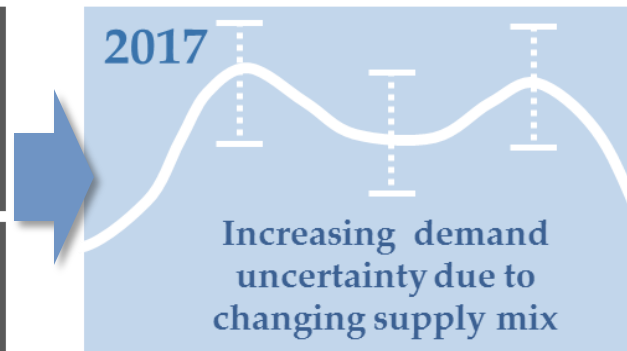
- Ambitious set of initiatives that amounts to a fundamental redesign of Ontario's electricity markets and **prepares us for future change**
- Current design has served Ontario well but demands of a modern **grid evolving rapidly**
- **Reforms are required** to allow the IESO to continue to manage the grid reliably & cost effectively
- Efficiency savings of **\$2.2-\$5.2 billion** over a 10 year period

A Changing Sector

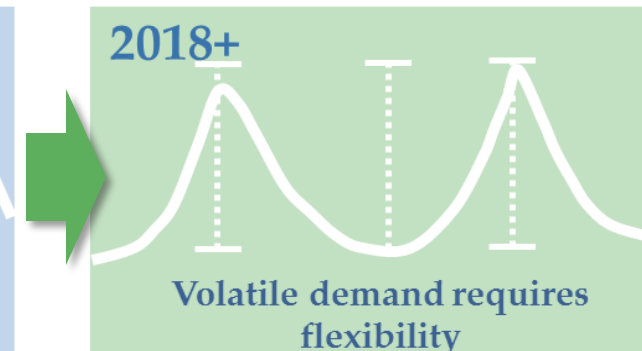
Challenge: Find ways to operate the grid cost-effectively as it becomes increasingly digitized, decentralized, decarbonized.... and much less predictable



- Centralized generation model
- Passive consumers
- Growing demand, clearly defined peaks



- Diverse supply mix
- Empowered consumers
- Flatter demand, lower peaks but price spikes



- Large volume of renewables and DERs
- Prosumers
- Large swings in demand driven by weather conditions or DERs

Renewing Ontario's Market

Address Inefficiencies of Current Design

- Unique 2 schedule system
- Reliance on out of market payments
- Price distortions and out of market actions

Solutions well tested in other markets but will need to be designed to meet Ontario needs

Reduce Costs and Risks

- Reduce risk of producing electricity
- More efficiently schedule and optimize resources
- Greater flexibility

Enable a More Dynamic Future

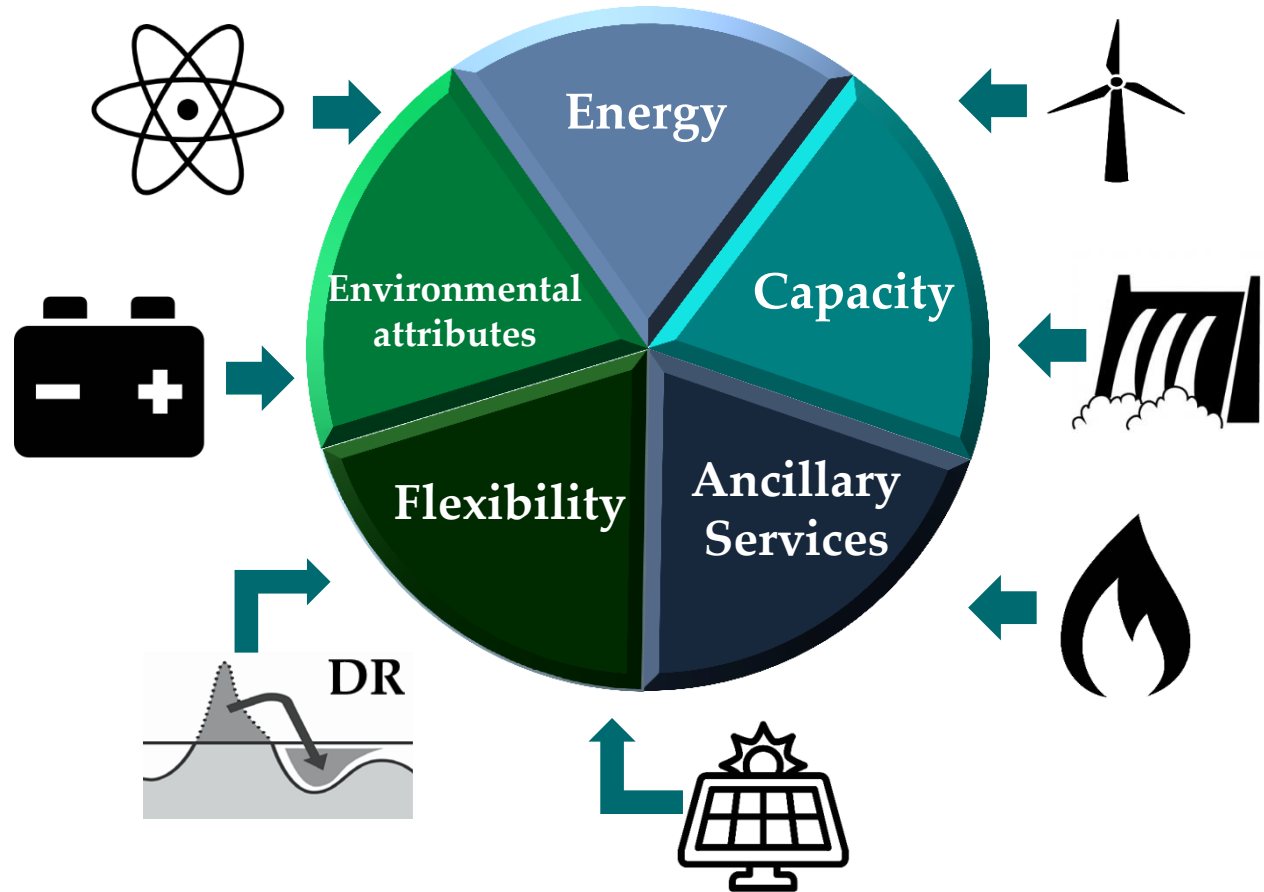
- Decarbonisation, decentralisation and digitisation
- Empowered customers

Options less well defined

Vision for the Future

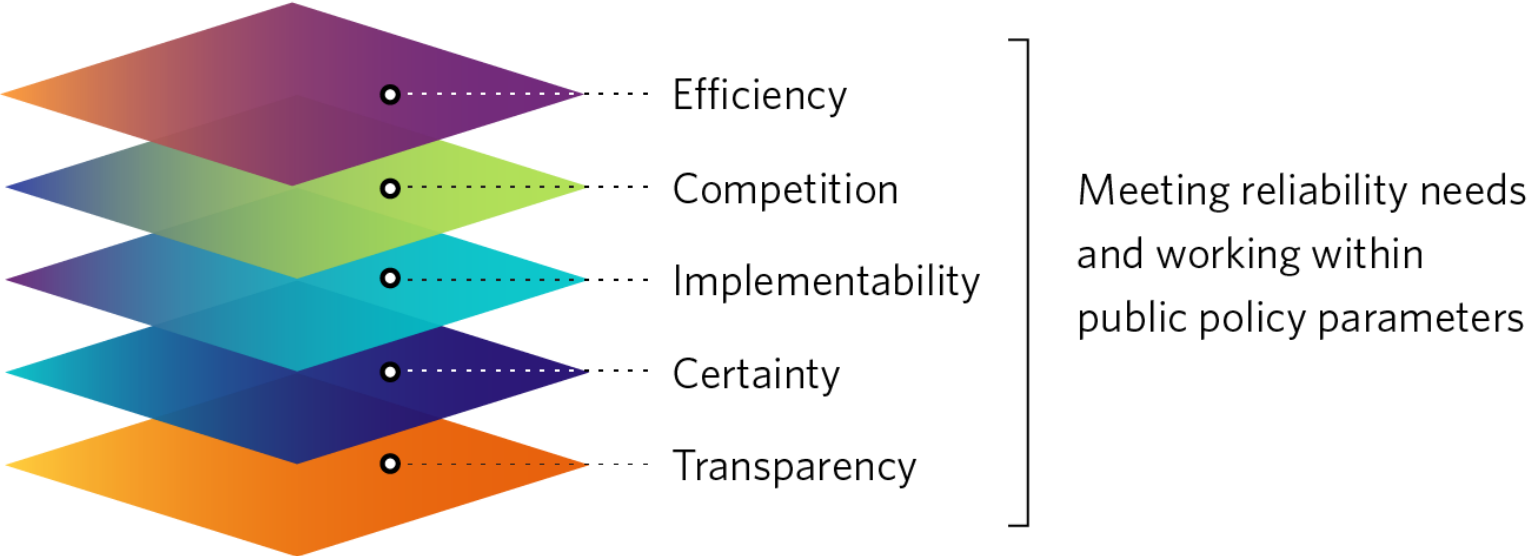
Unbundled Services and Revenue Streams

A more transparent and flexible marketplace based on clearly defined and “unbundled” products and services with clear price signals



Mission and Guiding Principles

A more efficient, stable marketplace with competitive and transparent mechanisms that meet system and participant needs at lowest cost.



Scope of the Market Renewal Program



ENERGY work stream

- Single Schedule Market
- Day-Ahead Market
- Real Time Unit Commitment



CAPACITY work stream

- Incremental Capacity Auction

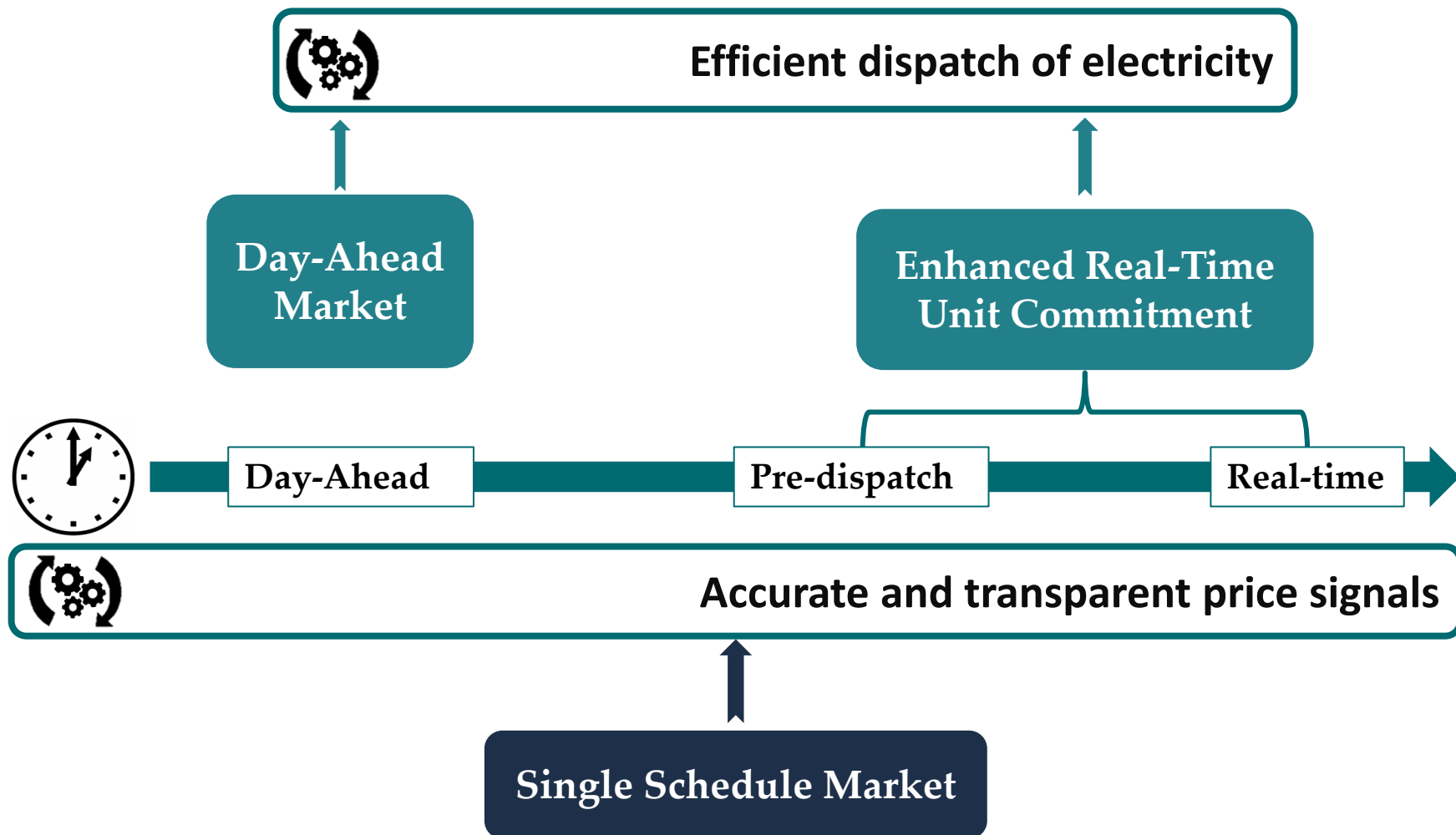


Near-term
Projects

**Market
Renewal**

Future
Projects

Energy Workstream



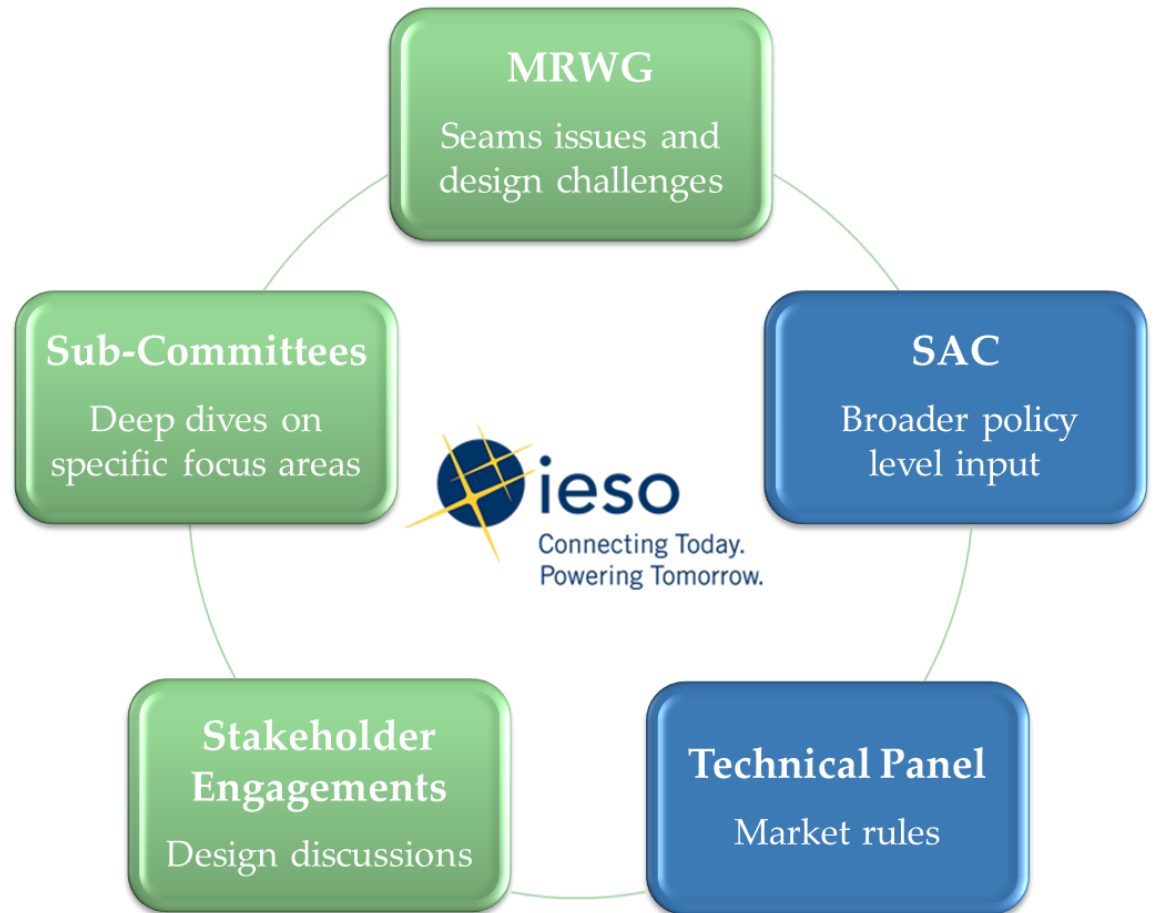
Capacity Workstream

A competitive mechanism to meet Ontario's future incremental capacity needs

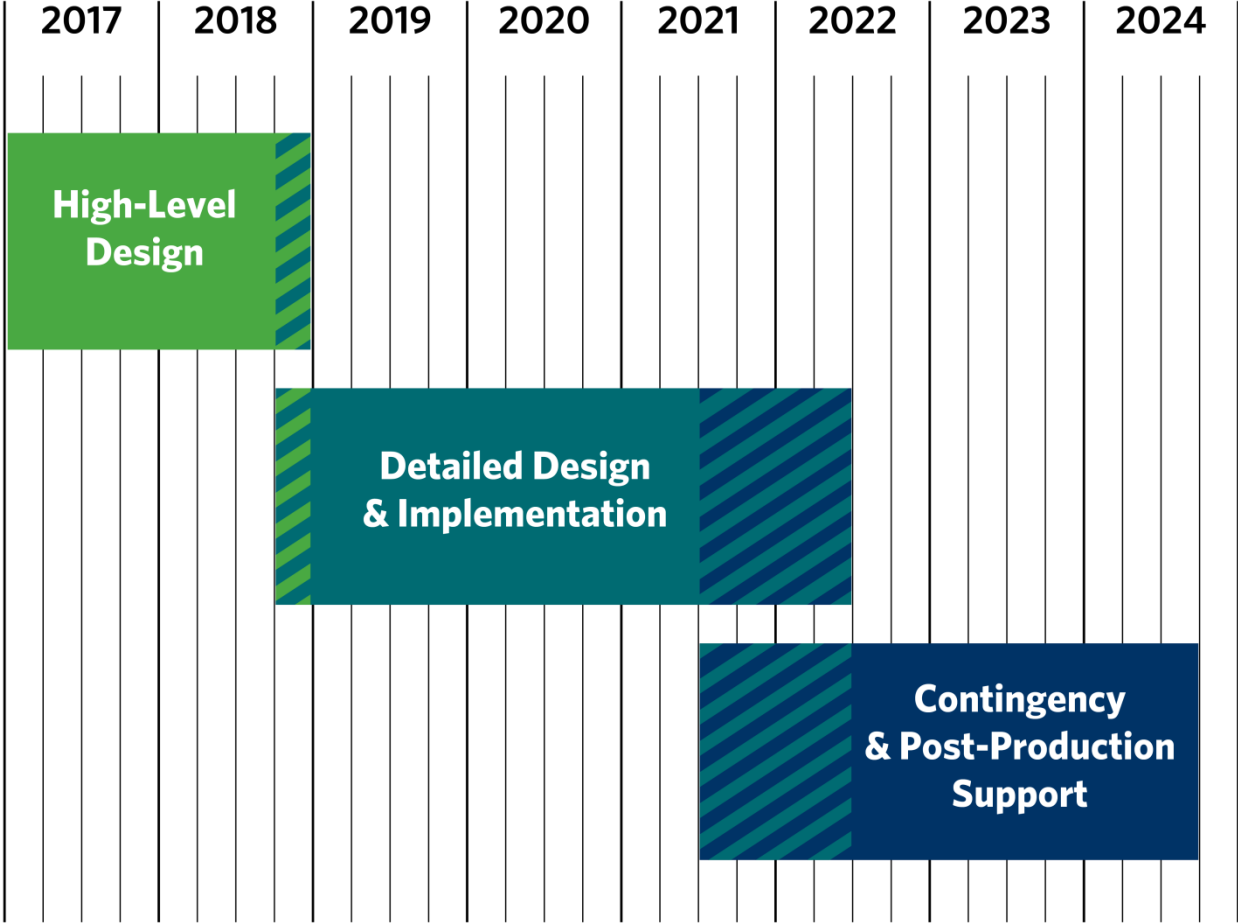
- Annual auctions avoid locking in resources any longer than needed
- Open to all resources, helping to drive innovation and unlock underutilized assets
- Enables capacity trade when efficient (lowering costs for consumers and generating revenues for suppliers)
- Well established in other jurisdictions
- DR auction demonstrated concept in Ontario

Engagement Framework

Committed to putting in place the appropriate framework to meet the evolving needs of the IESO and the sector



Market Renewal Indicative Timeline



For illustrative purposes only, dates are subject to change

INTRODUCTION TO THE INCREMENTAL CAPACITY AUCTION

What is Capacity?

- An auction establishes a market-based approach to maintaining resource adequacy through the procurement of *capacity*
- Energy and Capacity are distinct products
 - Capacity resources can also provide energy and other products (e.g. blackstart, operating reserve (OR), etc.)

Capacity

(in MW) is the *ability to provide energy or reduce load when called upon*

Energy

(in MWh) is the *actual electricity injected into/withdrawn from the grid*

Breakdown of the Incremental Capacity Auction

Incremental

- Will secure resources to meet system adequacy needs that are not met by contract or rate regulation
- Contracted and rate regulated capacity will not be eligible to participate

Capacity

- Will procure a single uniform capacity product
- Other products and services will be incentivized via other revenue streams

Auction

- A stable long-term mechanism that will secure capacity in a technology agnostic manner from diverse resource types
- Fundamental change in risk allocation from contract paradigm

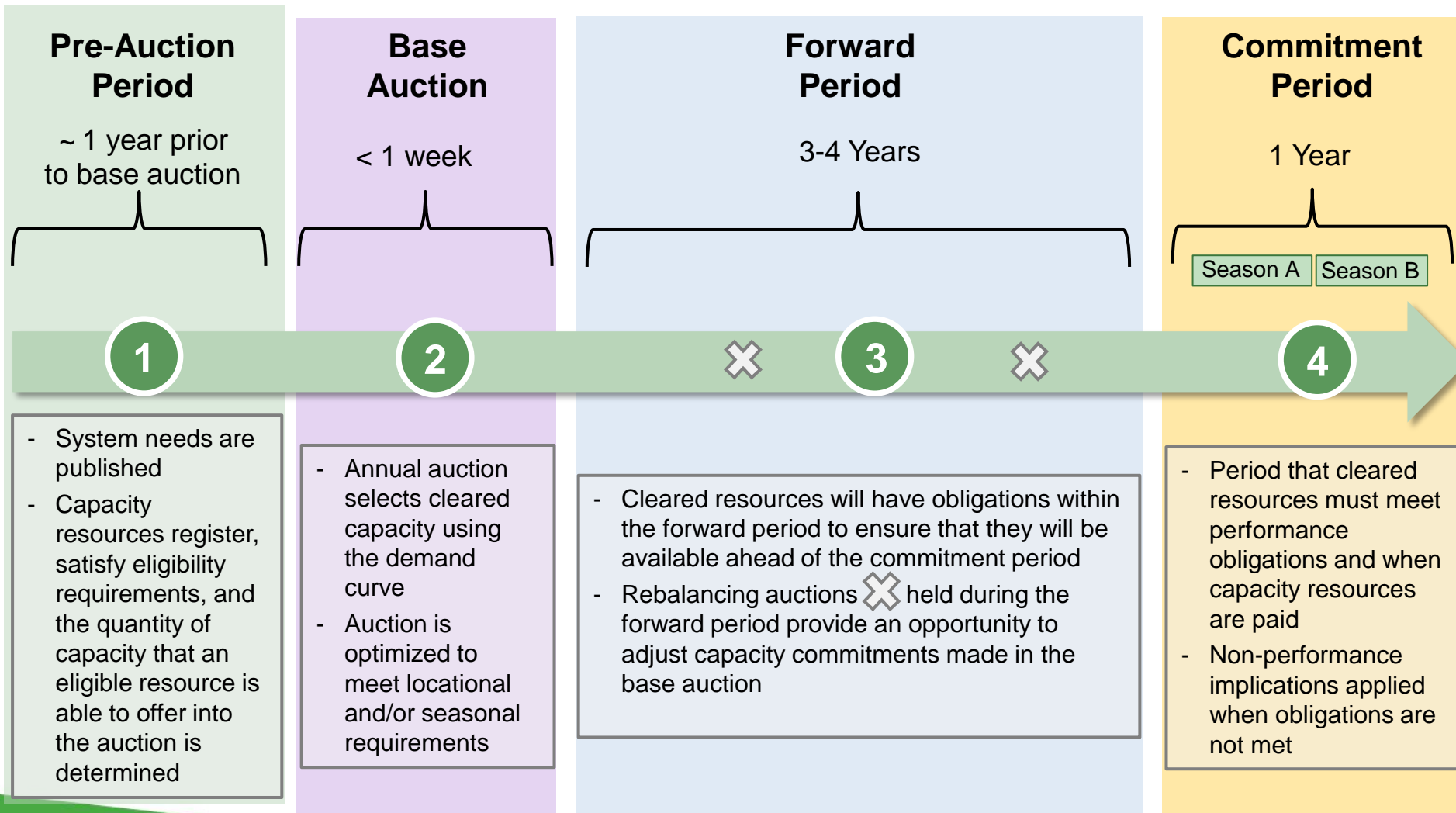
Defining the Capacity Product

- The ICA will commit capacity resources based on a consistent value across all resource types:

1 MW of capacity should provide the same marginal contribution to system-wide reliability (improved LOLE value) regardless of the type of resource providing it

- A capacity qualification process will be used to determine the capacity contribution of each individual resource submission

Illustration of Capacity Auction Process



Note: Frequency and timing of Rebalancing Auctions TBD

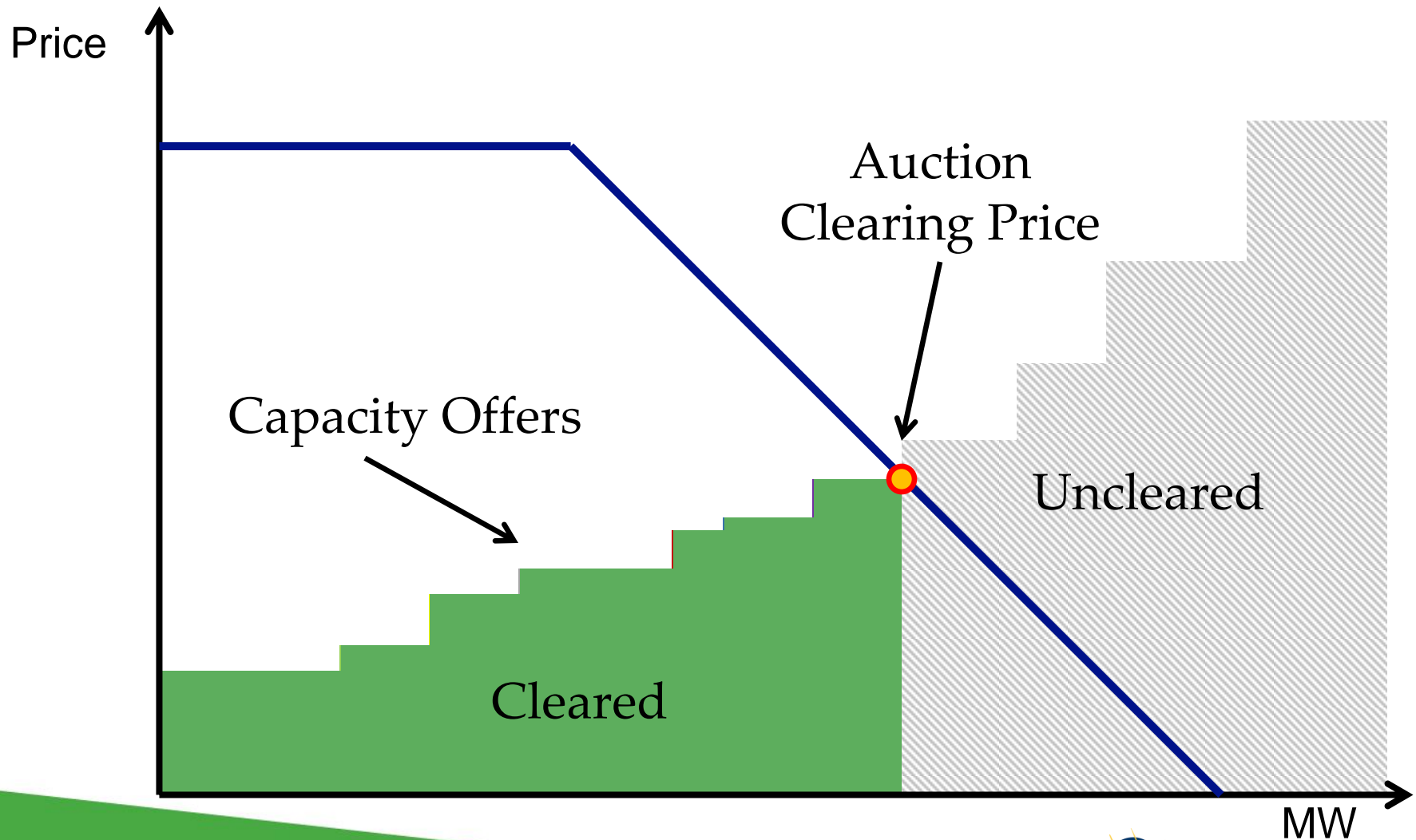
Pre-Auction Period - Overview

- Proponents who are interested in participating in the auction will need to register and provide information related to their project (e.g., location, connection details)
- The IESO will evaluate projects to determine whether eligibility requirements have been satisfied
- The capacity qualification process will determine the maximum quantity that eligible projects can offer into the capacity auction
 - The ability of the electricity system to deliver energy to loads at the time of system need will be a factor in the qualification process

Pre-Auction Period - Eligibility

- Prior to the auction, all proposed projects will be assessed against technical and commercial eligibility requirements
 - New build projects will have eligibility requirements in addition to those that apply for existing resources
- Energy storage and demand response will be eligible to participate in the auction
- The IESO is proposing to permit the participation of aggregated resources, subject to technical limitations
 - Specific requirements around aggregation will be developed as part of the detailed design

Base Auction – Illustrative Auction Clearing



Forward Period & Rebalancing Auctions

- The forward period is the time between the base auction and the first day of the Commitment Period
- A forward auction increases the amount of resources that can participate in the capacity auction because it allows time for new resources to be developed post auction clearing
- Rebalancing auctions held after the base auction provide a mechanism to match capacity supply and demand positions as the Commitment Period approaches



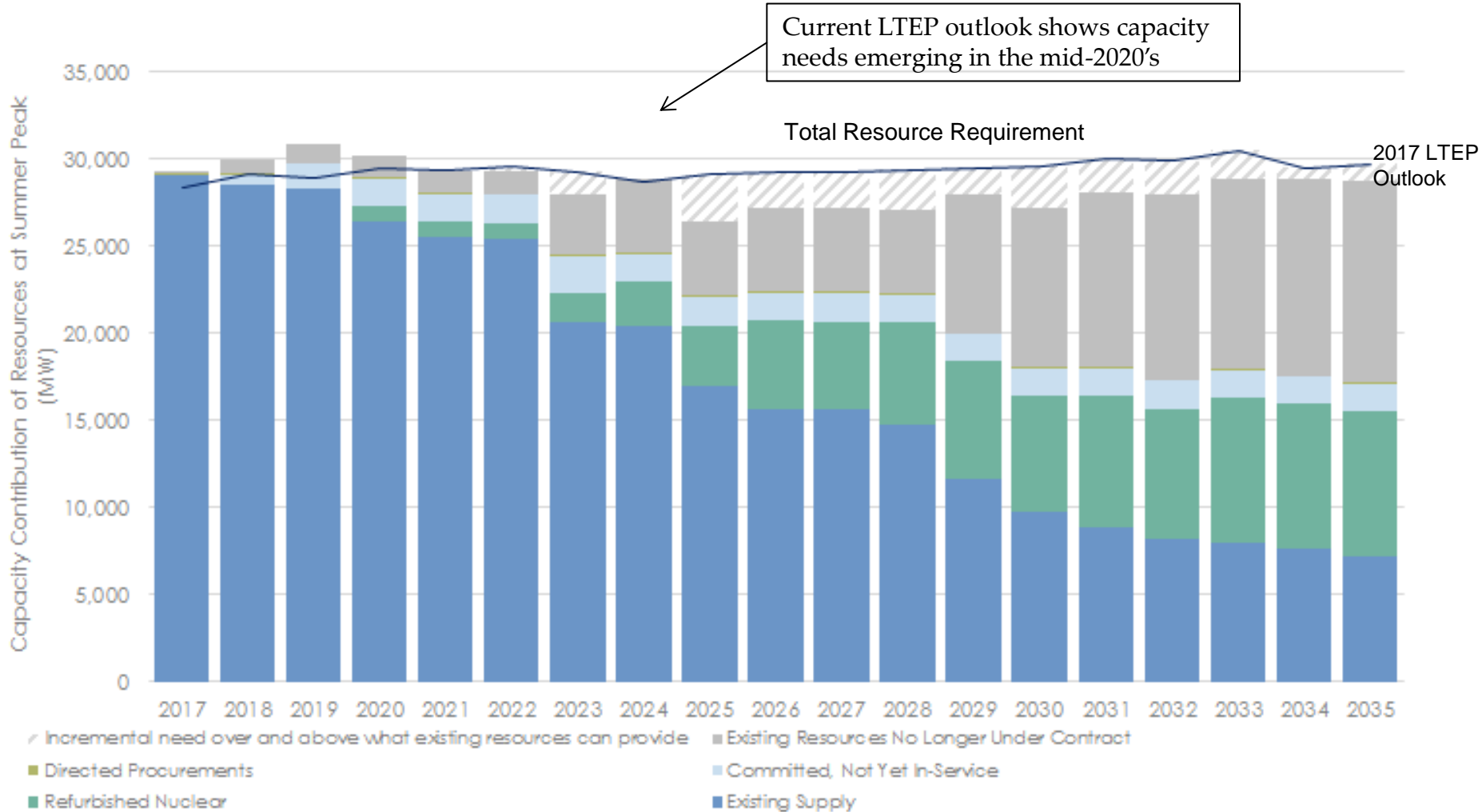
Commitment Period

- The Commitment Period is the period over which resources that cleared the base or rebalancing auction, and met all requirements during the forward period, are required to make their capacity available
 - Cleared resources will be required to meet obligations during the Commitment Period, including participation in the energy market
 - Capacity resources may incur financial implications if unable to meet their capacity obligations
- The Commitment Period will include seasonal obligations
 - Accounts for seasonal variations in resource output, and enables seasonal resources (e.g., DR) to participate

Considerations for Timing of First ICA

- The IESO expects to release annual updates to the supply/demand outlook
 - The IESO is currently developing the next update that is expected to be completed later this year and will reflect updates since the 2017 LTEP
 - IESO will engage with stakeholders in the fall on Planning activities; including assumptions, transparency, reporting approaches & timeframes
- Project development and implementation timelines are also being refined
 - Updating assumptions regarding completion of High Level Design and Detailed Design
 - Schedule for implementing Market Rules, Market Manuals, and having tools and processes in place
- The outcomes of these two areas of work will help inform the timing of the first auction

LTEP Supply and Demand Outlook



ICA Design Stages

- The ICA involves three separate design stages:
 1. **High Level Design** – used to present key decisions on the various design elements (i.e. the “what” and “why”)
 2. **Detailed Design** – determine details related to processes and provide more specific details related to the key decisions (i.e. the “how”)
 3. **Implementation** – create documentation (Market Rules, Market Manuals, Process docs, etc.), design and implement tools , provide training

TOPICS FOR DISCUSSION WITH LDCS

Connection Assessments

- Participants may seek new project connections or modifications of existing distribution system connections
- Auction rules may provide an indication of when participants should initiate the connection assessment process, and any connection related milestones applicable during the forward period

For Discussion:

- What concerns do LDCs have in relation to new or modified project connections triggered by interest in the ICA?

Deliverability Assessment

- The value of a capacity obligation depends in part on the ability of the distribution and transmission system to deliver the energy at the time of system need
- The capacity qualification process for potential ICA resources will include a deliverability assessment which will assess the ability of the transmission system to deliver energy from incremental capacity resources to demand at the time of system need
- This assessment will identify deliverability constraints associated with individual resource submissions

Deliverability Assessment cont.

For Discussion:

What information can LDCs provide to help inform the development of the IESO's deliverability assessment for distribution connected projects?

August 29th Agenda

- Provide LDCs with more detail about auction features that pertain to new connections
- Ask LDCs for information about the scope of existing LDC processes (e.g. the CIA) which will help inform the IESO's deliverability assessment design
- Provide an opportunity for LDC staff to ask questions or raise issues related to the ICA

NEXT STEPS

Next Steps

Date	Topic	Audience
August 29 th	ICA: More detailed discussion with LDCs	LDCs – focus on distribution connections, planning and operations
September 12 th	ICA Participation Model: Vision	All stakeholders
October 18 th	ICA Participation Model: Preliminary Decisions	All stakeholders

**An additional session will be scheduled for mid-September to discuss topics related to the Energy workstream that will be of interest to LDCs

Questions and Feedback

- If you have any questions or feedback, please contact engagement@ieso.ca
- To learn more about Market Renewal, visit <http://www.ieso.ca/en/sector-participants/market-renewal/overview-of-market-renewal>