

Developing a Made-in-Ontario Capacity Market

Presented to the Stakeholder Advisory Committee
August 20, 2014



- High level of participation from sector on understanding the need, opportunity, potential concerns and on scope
 - Two Capacity Market Info Days; April 8, August 13
- The industry is open and ready to consider how to design a capacity market for Ontario
- We can learn from others' experience and improvements, as we work with stakeholders to design a market that is right for Ontario
- Seeking SAC feedback on the design elements, broader impacts and on how the engagement should be structured to ensure that we are getting input from all parts of the sector

Today, Ontario has a reliable, well-functioning electricity grid but ongoing cost pressures mean it is essential that future resource needs are met in a cost effective manner

Past Decade

- In the mid-2000s capacity was needed quickly to meet rising demand and ensure the reliable phase out of coal-fired generation
- Use of long term contracts facilitated investment to meet government policy and dampened price volatility



Next Challenge

- Explore cost effective options to deliver resource adequacy under increasing uncertainty;
 - Nuclear refurbishment
 - Future demand growth
 - Renewable portfolio
 - Demand-side resource
 - Emergence of new technologies
 - Volatility in fuel costs

Capacity needs can be met through a variety of approaches

Energy-Only Market

- Economically efficient with long-term investment risk borne by investors
- Can result in volatile prices and less certainty in the supply of capacity

Capacity Market

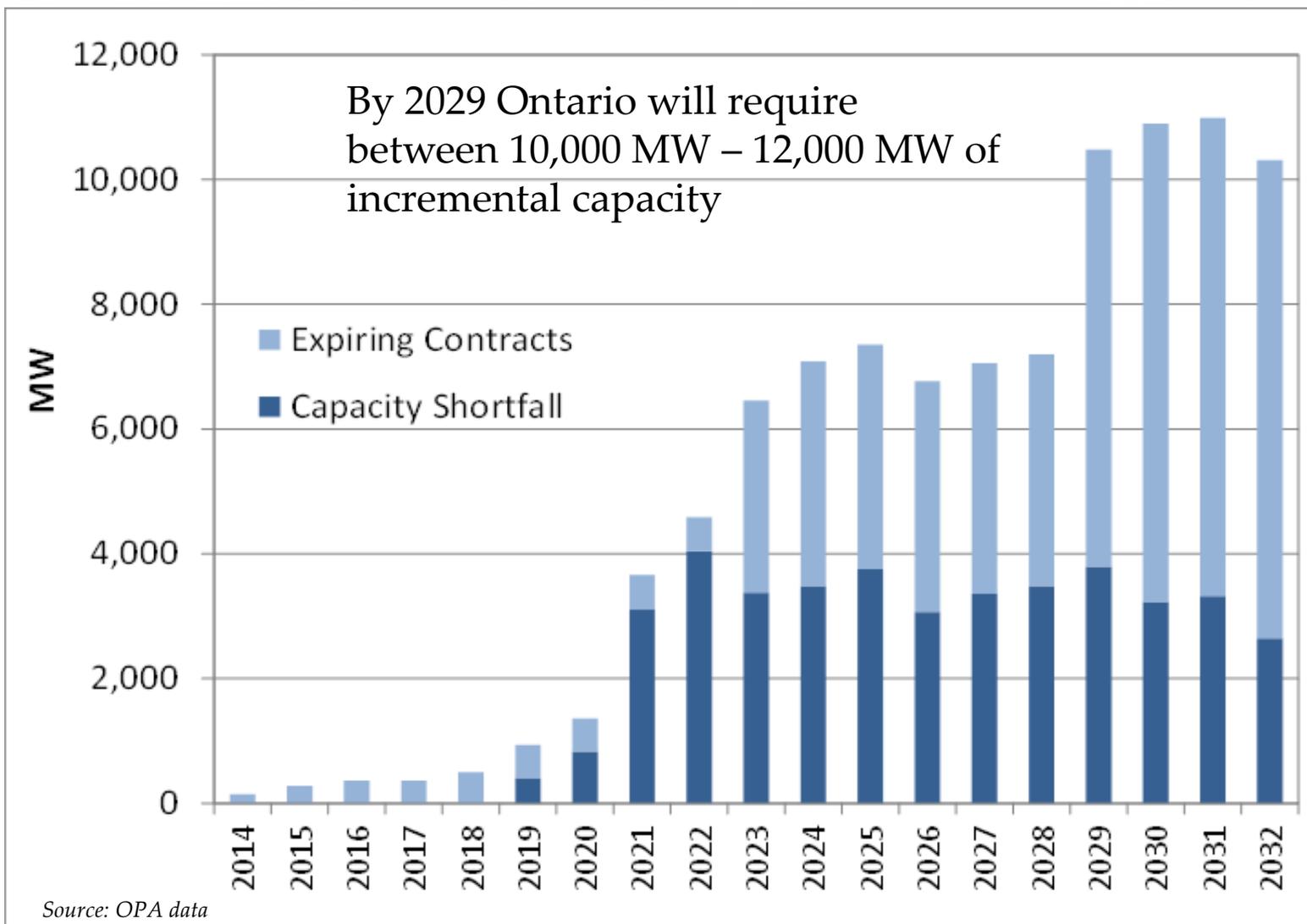
- Introduces more competition into the procurement of capacity
- Provides a balance between economic efficiency and stability of prices and supply
- A hybrid approach

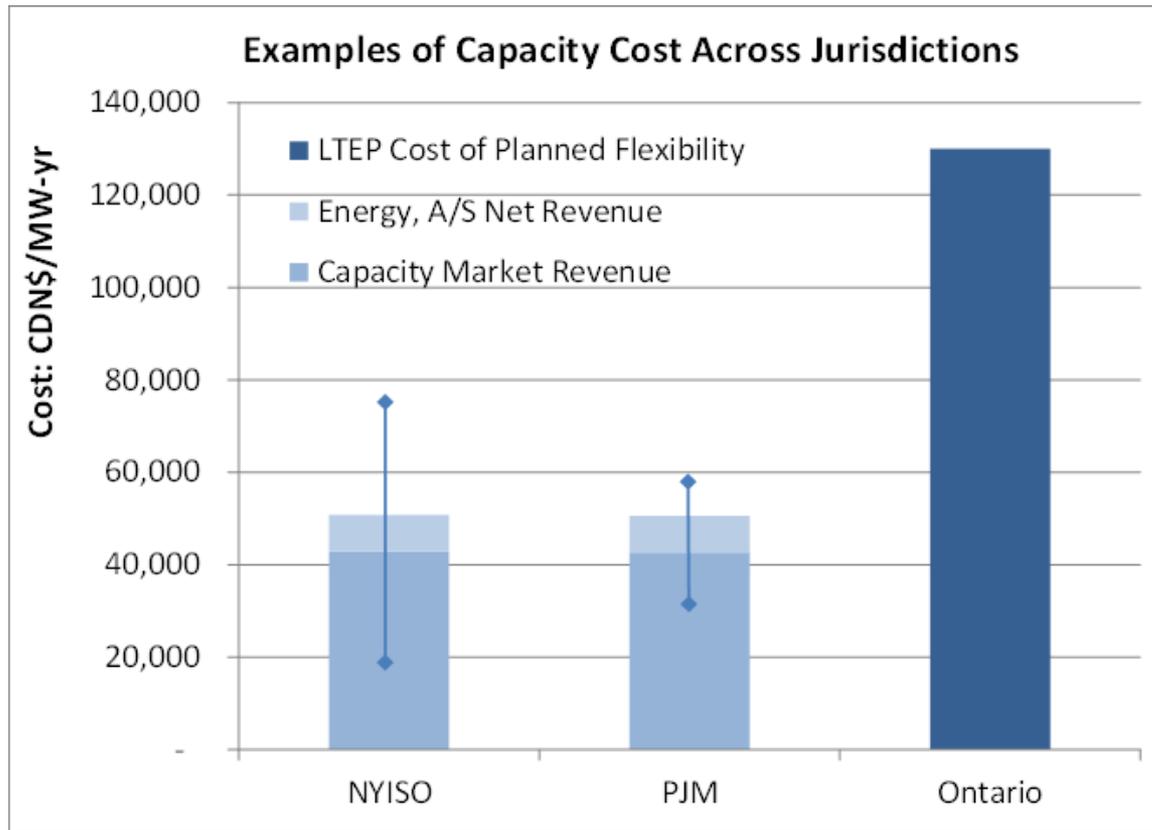
Long-Term Contracts

- Provides predictable pricing and supply of capacity but at a cost
- Long-term investment risk borne by consumers
- Contracts have proven difficult to adjust to changing market conditions

- **Reliability:** starting later this decade Ontario will need incremental MWs to ensure reliable supply
- **Flexibility:** uncertainty over the timing and amount of required capacity underscores the need for a flexible approach
- **Cost:** rising prices have emphasized the focus on identifying cost effective mechanisms to deliver the best value to consumers
- **Technology Neutral:** opportunity for all resources to compete in the market
- **Transparency:** provide a clear price signal for capacity for all resources to assist in planning purposes

Meeting Future System Needs



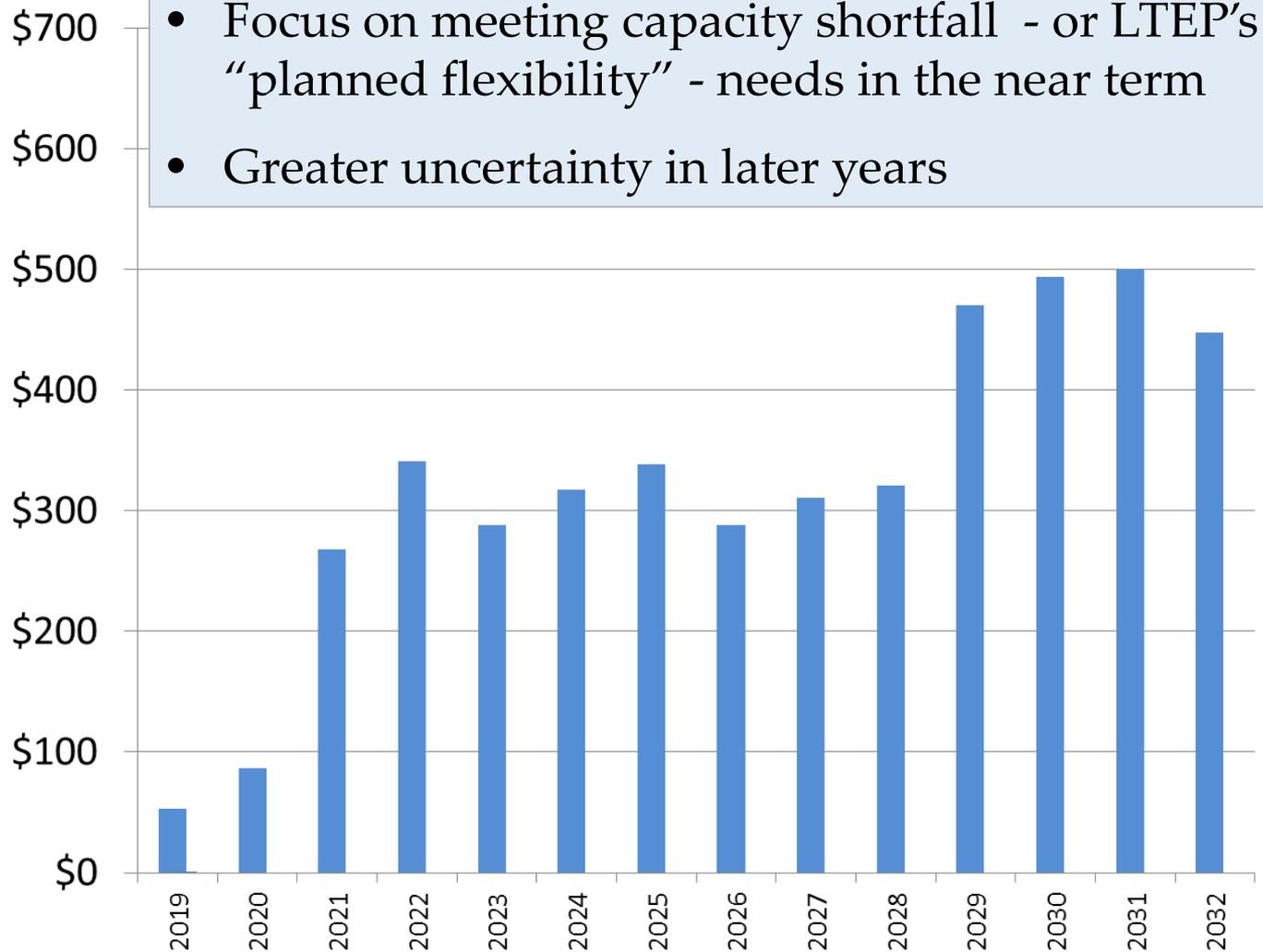


Note: Ontario based on 2013 LTEP for generic SCGT, U.S. costs based on average since 2009

Cost savings derive from:

- attracting new, low cost options
- maximizing the efficient use of existing assets
- deferring the need to invest in new conventional generation resources

Millions Real \$2012

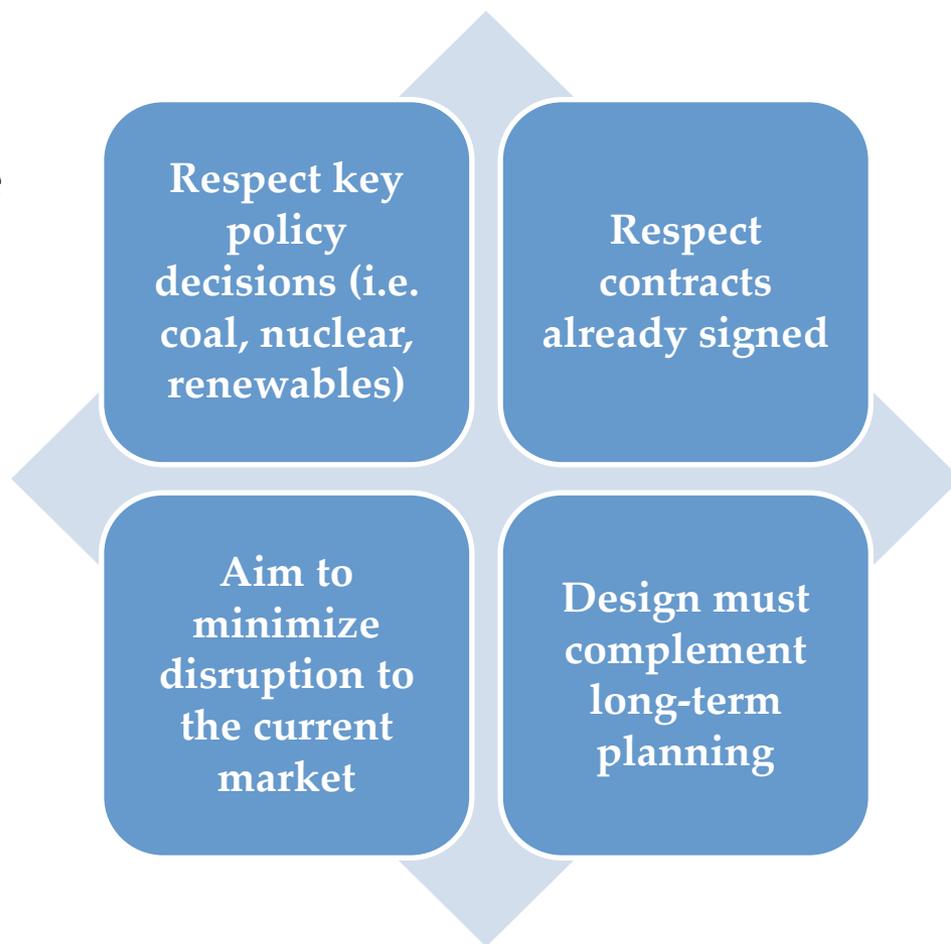


- Focus on meeting capacity shortfall - or LTEP's "planned flexibility" - needs in the near term
- Greater uncertainty in later years

- IESO analysis supports the case for developing a capacity market to meet Ontario's reliability requirements in a more cost-effective manner
- Allowing all resources to compete in a regular, established capacity auction has the potential for significant cost savings
- Range of additional benefits adds to the case
- Implementation costs are projected to be extremely small compared to the potential benefits, given future capacity needs
- Cost savings from increased competition will benefit all consumers

Four Key Objectives of Any Design

- IESO analysis indicates that Ontario would benefit from a competitive market solution to meet its own capacity needs and objectives
- Ontario based parameters will frame the design
- Ongoing stakeholder input will inform the design



TRANSPARENCY

- Facilitate transparent and efficient market signals

FAIRNESS

- Create equal opportunity for all technologies and resource types to contribute to meeting system needs

EFFICIENCY

- Provide appropriate incentives and minimize barriers for efficient participation in the market

COST

- Identify options to meet system needs at lowest cost over the long run

- “Capacity Market” – a mechanism that enables a resource that commits to being **available** to produce if needed and receive a payment in return
- A capacity payment does not include value associated with injecting **energy** into the grid
 - Energy related services are compensated accordingly through other IESO markets – Wholesale Market, Operating Reserve etc
- The value of a resource is reflected in the revenue it can earn in all available markets
- Well designed markets provide a fair, transparent, cost effective way to reflect the value of resources to the power system

Initial feedback from stakeholders provided guidance in what a “made in Ontario” solution could look like. At this stage, the IESO’s view is a Capacity Market:

...SHOULD <u>NOT</u> REQUIRE:	...SHOULD CONSIDER:
<ul style="list-style-type: none"> • mandatory participation by existing contracted facilities or regulated baseload assets • capacity obligations on local utilities (<i>Load-Serving Entity model</i>) • locational pricing for energy 	<ul style="list-style-type: none"> • incremental capacity needs not already committed through LTEP • expiring contract capacity • including all resources (e.g. DR, imports, storage, generation) • operating on a regional basis (<i>consistent with regional planning</i>) • Must-offer requirements for cleared resources • Inter-operability with other markets

- Clear understanding of Ontario's future needs and the potential benefits
- Well functioning spot markets for energy and ancillary service
- Opportunity to capitalize and build on experience from other markets
- Time to get the design right
- Established market structures and regulatory oversight



In Ontario these features are already in place and provide the foundation for an Ontario capacity market

- Early stakeholder input has helped to identify the potential scope for an Ontario capacity market
- Stakeholder consultation is essential in order to now develop a high level market design that can meet Ontario's needs
- Start with some basic questions on Design;
 - How would an auction run?
 - How would resources participate?
 - How would prices be established?
- Also need to fully understand any broader sector impacts, for example:
 - Contracts
 - Governance and oversight

- At a high-level these questions correspond to three areas of focus for the capacity market design;

1. Auction Parameters

Elements that determine the conditions under which an auction is executed

2. Eligibility and Performance

Elements that govern how resources can participate in the auction, their obligations and how are they compensated.

3. Demand Curve

Elements that are used as inputs into the construction of the demand curve used to clear against submitted capacity offers

- Under each of these design areas, there are more questions with increasing specificity and complexity
- Each are important “design elements” that require careful consideration - it is important for participants and the IESO to understand the “devil in the details”
- We also want to understand the issues and risks associated with each design element
- Our expectation is that only through dialogue with you can we identify a high level design that works for Ontario

Auction Parameters	Eligibility & Performance	Demand Curve
<ul style="list-style-type: none"> • Length of Forward Period • Annual/Seasonal Commitment Period • Locational-based Auction (Zones) • Rebalancing Auctions • Market Power Mitigation Measures 	<ul style="list-style-type: none"> • Resource Eligibility • Qualified Capacity • Registration Requirements • Resource Obligations • Non-Performance Penalties • Measurement and Verification • Compensation for New Resources 	<ul style="list-style-type: none"> • Profile of Downward Sloping Demand Curve • Net Cost of New Entry • Target Capacity Requirement • Maximum Auction Clearing Price • Min/Max Cleared Capacity Limits

- Putting in place any new market mechanism will require a full understanding of the broader impacts on the sector
- Impact on existing contract holders
 - Options for existing contract holders to participate
 - Any indirect impacts
- Understand the impact on the existing market review and change process

- Have we captured the right high level design elements:
 - Any other elements that should be considered?
 - Consider this to be an iterative, learning process
- Have we captured the broader impacts sufficiently?
- Are there any other issues you feel need to be addressed at this stage?
- Any other feedback?

- IESO has engaged The Brattle Group (Johannes Pfeifenberger and Kathleen Spees) to provide technical support to get into the detailed design elements of an Ontario capacity market
- Their expertise will directly support the stakeholder engagement, helping to consider the practical implications of a wide range of market design rules
 - Identify options for implementation
 - Provide perspective on how other markets have made choices on market design elements, as well as lessons learned
 - Highlight how some design elements may relate and the interdependencies of potential options

- The Brattle Group has significant experience in working with other ISOs in the development, evaluation, and improvement of the capacity market designs and resource adequacy reviews
 - Reviews of the PJM Reliability Pricing Model (RPM) (2008, 2011, 2014)
 - ISO-NE Capacity Market Demand Curve Development (2013)
 - ISO-NE Review of Forward Capacity Market (2009)
 - ERCOT Economically Optimal Reserve Margin (2014)
 - ERCOT Energy-Only Market Resource Adequacy Review (2012)
 - FERC Economics of Reliability Study (2013)
 - AESO Energy-Only Market Supply Adequacy
 - Italian Capacity Demand Curve and Market Design (2012)
 - MISO Resource Adequacy Review (2010)
 - California Resource Adequacy Construct Review (2012)