

FUTURE MARKET DESIGN CONSIDERATIONS

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April 19, 2016

Now is the Time to Modernize

- IESO believes now is the right time to move forward on market changes while we are in a period of stability
 - Ontario can benefit from the experience and best practices of other markets
 - Moving forward with change now will mean that Ontario is well-positioned to handle future needs (growth of distributed resources, contract expiries etc.)
- Market mechanisms with transparent price signals have proven critical in effectively bringing suppliers and consumers together, allocating risk, and supporting efficient decision making

Opportunities

Current market design is not as efficient as it could be in meeting the goals of electricity markets

- **Improve efficiency and transparency**
- **Send effective prices signals to enable informed decision making**
- **Ensure resources can recover many of their costs through market mechanisms**
- **Reduce administrative burden**
- **Reset boundaries between the markets and the participants**
- **Lower barriers to greater participation**

Times Have Changed Since 2002....

Ontario market was designed at a time when...

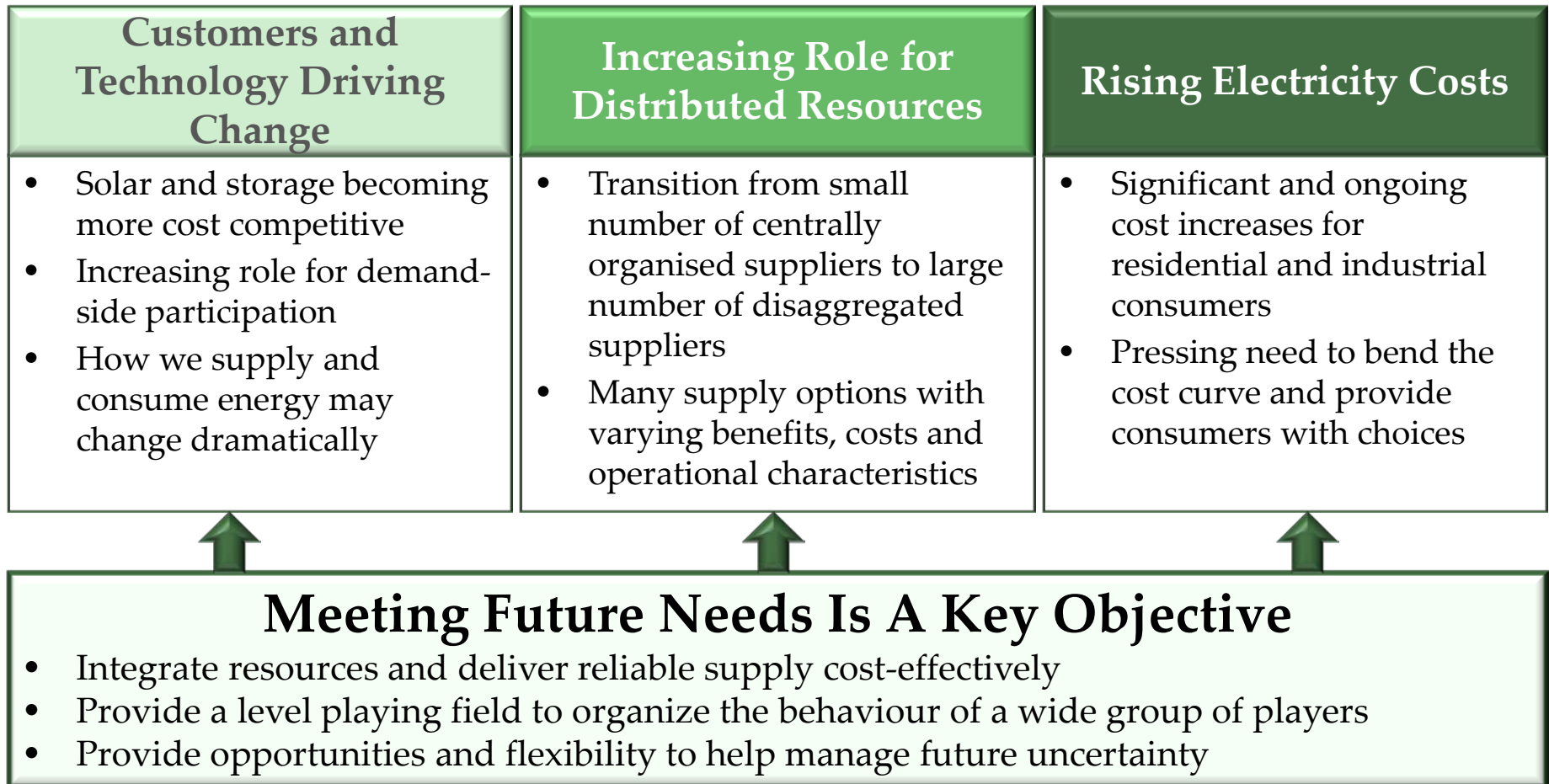
- Energy markets were “new”
- Dominated by traditional forms of generation
- Mostly passive consumers
- Belief that a real-time energy-only price was all that was needed
- Interaction with neighbouring markets focused on energy imports



Today...

- Energy markets and solutions are well established
- Supply is increasingly distributed and variable
- Consumers are more active and engaged in the market
- Capacity has emerged as a distinct product
- Greater opportunities (and need) for coordination with neighbouring markets

Market Development – Future Needs



Goal of Market Renewal

Address known market inefficiencies and lay the foundation for a more dynamic market place in the future

How?

- Focus on **practical solutions** to known issues to improve the efficiency of the marketplace
- Be cognizant of **emerging issues** and broader sector considerations
- Establish a **work plan** that lays out a series of projects to meet a clearly-**defined long-term goal**

Objectives of Market Renewal

Stability

- eliminate the need for ongoing band-aid solutions by addressing underlying design issues and providing enduring solutions

Flexibility

- enhance ability to realize efficiencies and provide new opportunities for participants to help meet evolving system needs

Efficiency

- reduce out of market payments and focus on delivering efficient outcomes through competition and transparent price signals

Transparency

- work together with our stakeholders to continue to evolve the market in a practical manner

Certainty

- provide clear, efficient price signals through stable, long-term market-based mechanisms

Components of Market Renewal

- The IESO is proposing several key projects to include in a work plan for market renewal
- Purpose of this engagement is to discuss these projects with stakeholders and receive feedback on the work plan
- The IESO plans to use this engagement to explore each of the proposed projects and how they fit together
 - The objective of the engagement is not to develop detailed design plans at this stage
- The following slides provide a high level summary of what the IESO is proposing to include in the work plan

Energy and Capacity

ENERGY

Evolving the wholesale energy market

- Address known issues and inefficiencies
- Opportunity to improve efficiency and flexibility
- Prepare energy market for future challenges

and

CAPACITY

Growing capacity as a market-based product

- Competitive and open to all resources
- Stable and enduring market-based solutions
- Growing DR and enabling capacity trade are the first steps

Energy: Two Schedule Replacement

Move to a pricing approach based on congestion pricing

- Transparent pricing that reflects congestion and hence eliminates the potential for unwarranted CMSC payments through strategically modified bid and offer prices
- Moving to a single dispatch and pricing system would open the door to other market improvements
- The IESO is open to various design and pricing options

Energy: Day Ahead Market

Introduce a Day-Ahead Market to provide greater certainty to market participants and the IESO

- Establishes a hedge against price volatility in the real-time markets caused by forecast errors, generator outages or other market imbalances
- Provides price incentives for resources with need for long start-up notifications and operational requirements
- Increases production certainty for dispatchable resources

Energy: Real-time Unit Commitment

Improve real-time unit commitment to optimize over multiple hours with known costs

- Optimizes over a longer time horizon rather than hour to hour
- Ensures start-up costs are included in optimization, resulting in more efficient use of resources
- Provides more production certainty for dispatchable resources and would lead to reduced operational costs

Energy: Inertias

Enhance inertia scheduling to improve efficiency and flexibility

- Achieves greater operational flexibility needed due to changes in supply mix
- Reduces price fluctuations and generator ramping from one hour to the next
- Provides more resource flexibility and availability to help manage the changes in generation output, especially from variable resources

Capacity: Evolve the DR Auction

The Demand Response Auction has established a platform to procure capacity resources

- Ongoing work with stakeholders through the Demand Response Working Group to increase participation in the auction
- Enhancements to the auction mechanics and zonal pricing to better reflect system needs
- Work alongside DR Pilots to test emerging technologies and capabilities

Capacity: Capacity Trade

Ontario has a healthy supply cushion providing a good opportunity to enable capacity exports

- Develop capacity as a tradeable product with our neighbours
- Opportunity to increase regional efficiencies and better regional coordination of resources
- Enable exports (in excess of Ontario's needs) in the short-term and imports in the long-term

Capacity: Incremental Capacity Auction

A capacity auction allows all resources to compete to efficiently ensure resource adequacy

- Work alongside contracts and regulation to meet anticipated future needs
- Uncertainty over when capacity need emerges but will coincide with expiring contracts in the mid-2020s
- Prudent to develop mechanism before need emerges and contracts expire
- High level design already developed with stakeholders in 2015

How to Implement Change

- IESO has identified several key changes to Ontario market structure
- Consider changes as a holistic set of projects that will result in a material increase in the efficiency of the Ontario marketplace
 - Provide IESO and sector visibility of the key market development work over the next several years
- **IESO wants to hear from stakeholders** on the proposed projects and how best to implement these changes
 - Committed to finding solutions that recognize practical impacts, resource constraints, etc.