

Demand Response and Capacity Auctions for Ontario

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Market Design & Development, IESO

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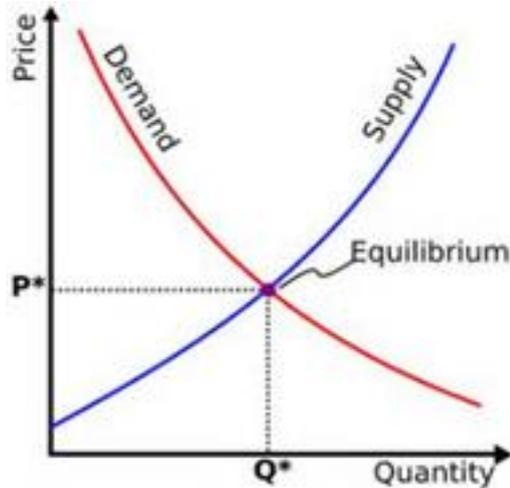
The IESO



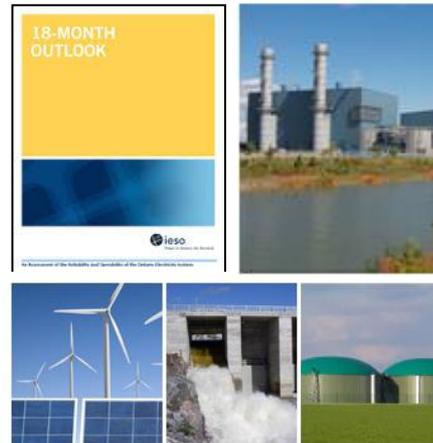
What We Do

The Independent Electricity System Operator (IESO) works at the heart of Ontario's power system

Market Administrator



Planning and Procurement



Conservation First

saveONenergy[™]

Conservation Fund

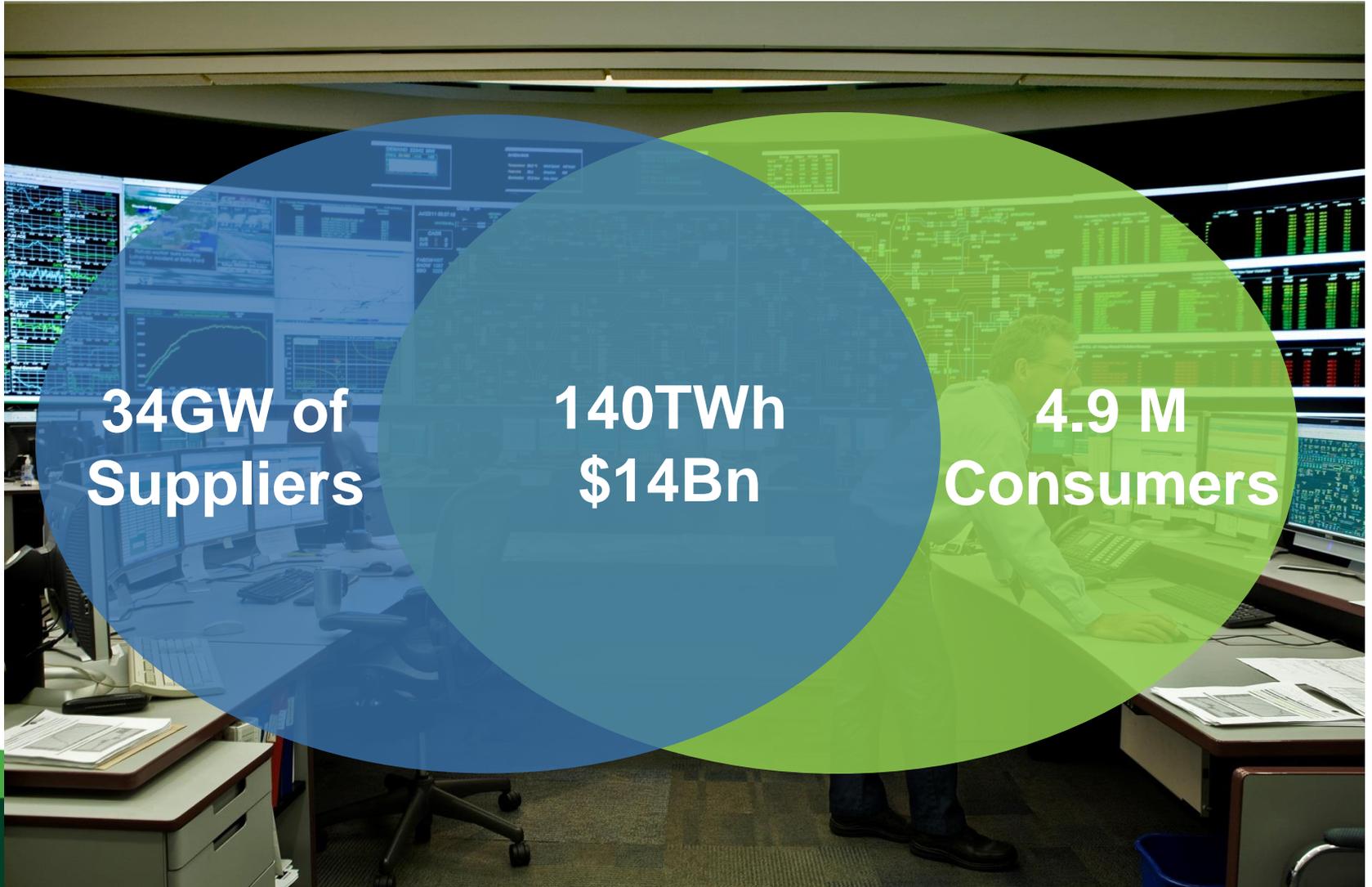
Ontario at a Glance

Installed Capacity	33,771 MW
Record Summer Peak	27,005 MW (August 1, 2006)
Record Winter Peak	24,979 MW (December 20, 2004)
Total Annual Energy Consumed	139.8 TWh (2014)
Total Energy Conserved	733 million kWh (2013)
Customers	4.9 million
Ontario Import Capability	4,800 MW
Transmission Lines	30,000 km (18,600 miles)
Interconnections	New York, Quebec, Manitoba, Michigan, Minnesota



The IESO is the reliability coordinator for Ontario and works closely with other jurisdictions to ensure energy adequacy across North America.

IESO Wholesale Energy Market

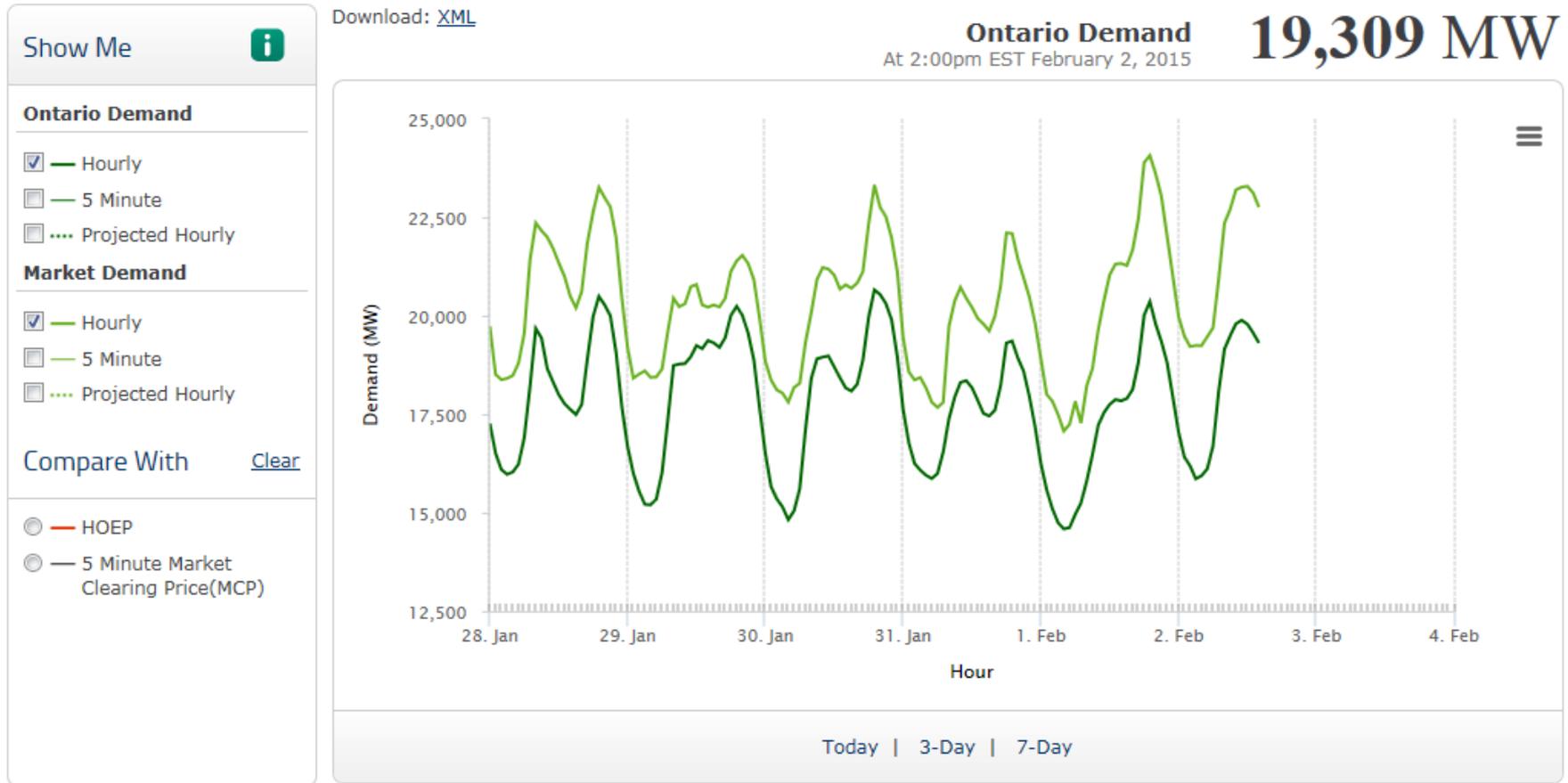


**34GW of
Suppliers**

**140TWh
\$14Bn**

**4.9 M
Consumers**

The Wholesale Energy Market



<http://www.ieso.ca/Pages/Power-Data/default.aspx#>

The Wholesale Energy Market

Download: [XML](#)

Market Demand
At 2:00pm EST February 2, 2015

22,756 MW

Show Me

Generation by Fuel Type

- Hourly

Nuclear

Hydro

Gas

Wind

Biofuel

Imports - Hourly

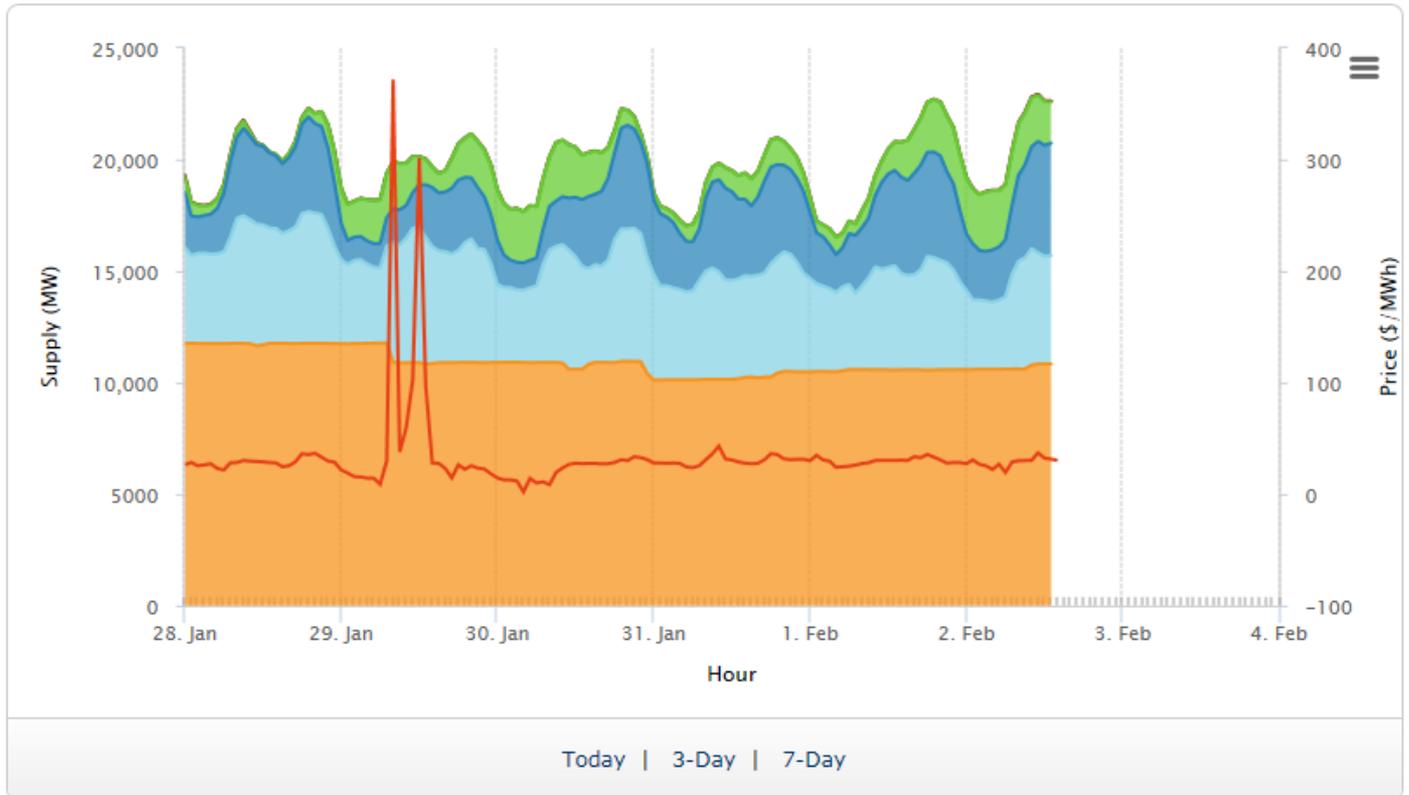
Exports - Hourly

Net Import/Export - Hourly

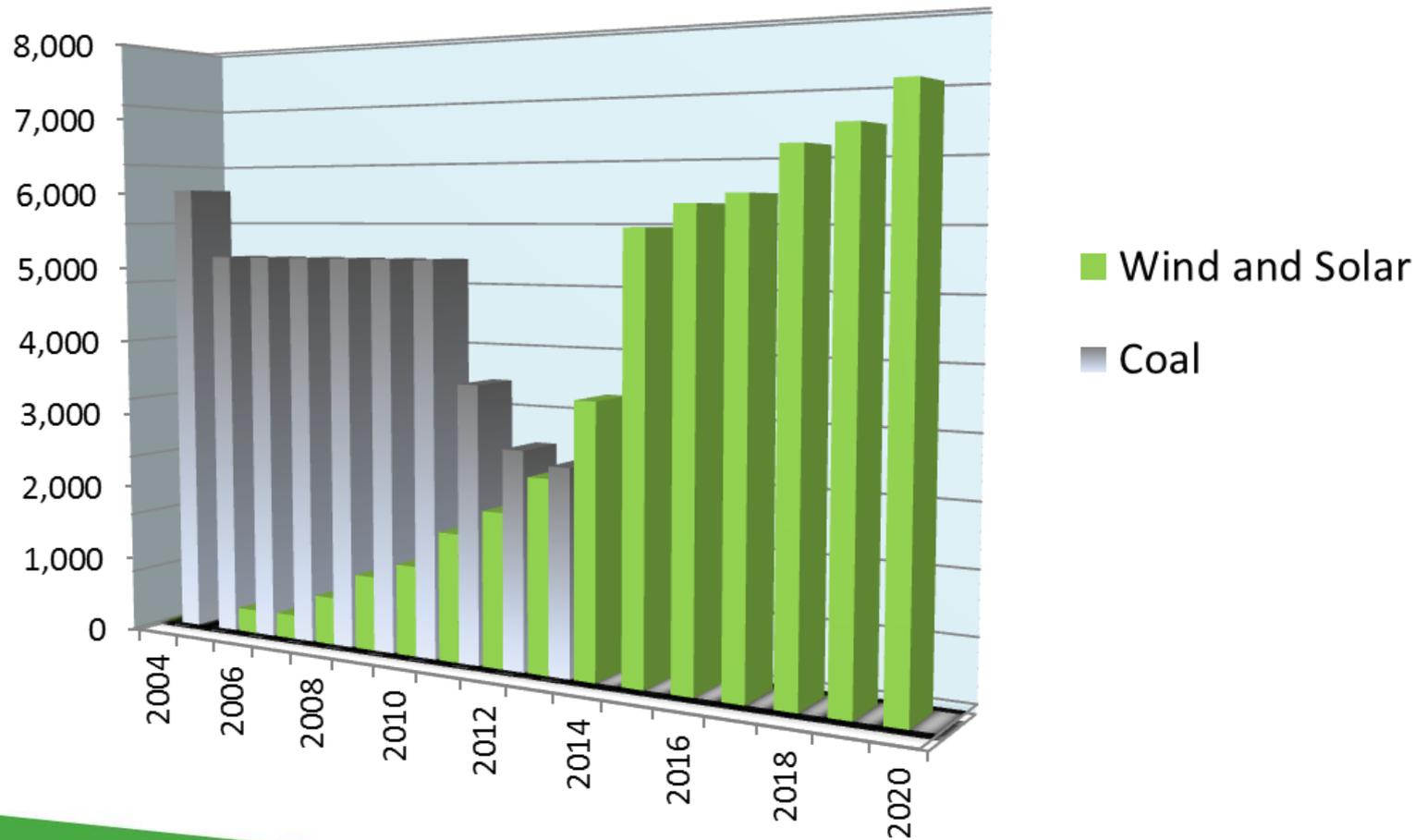
Note: When imports are greater than exports, the value will be negative.

Compare With [Clear](#)

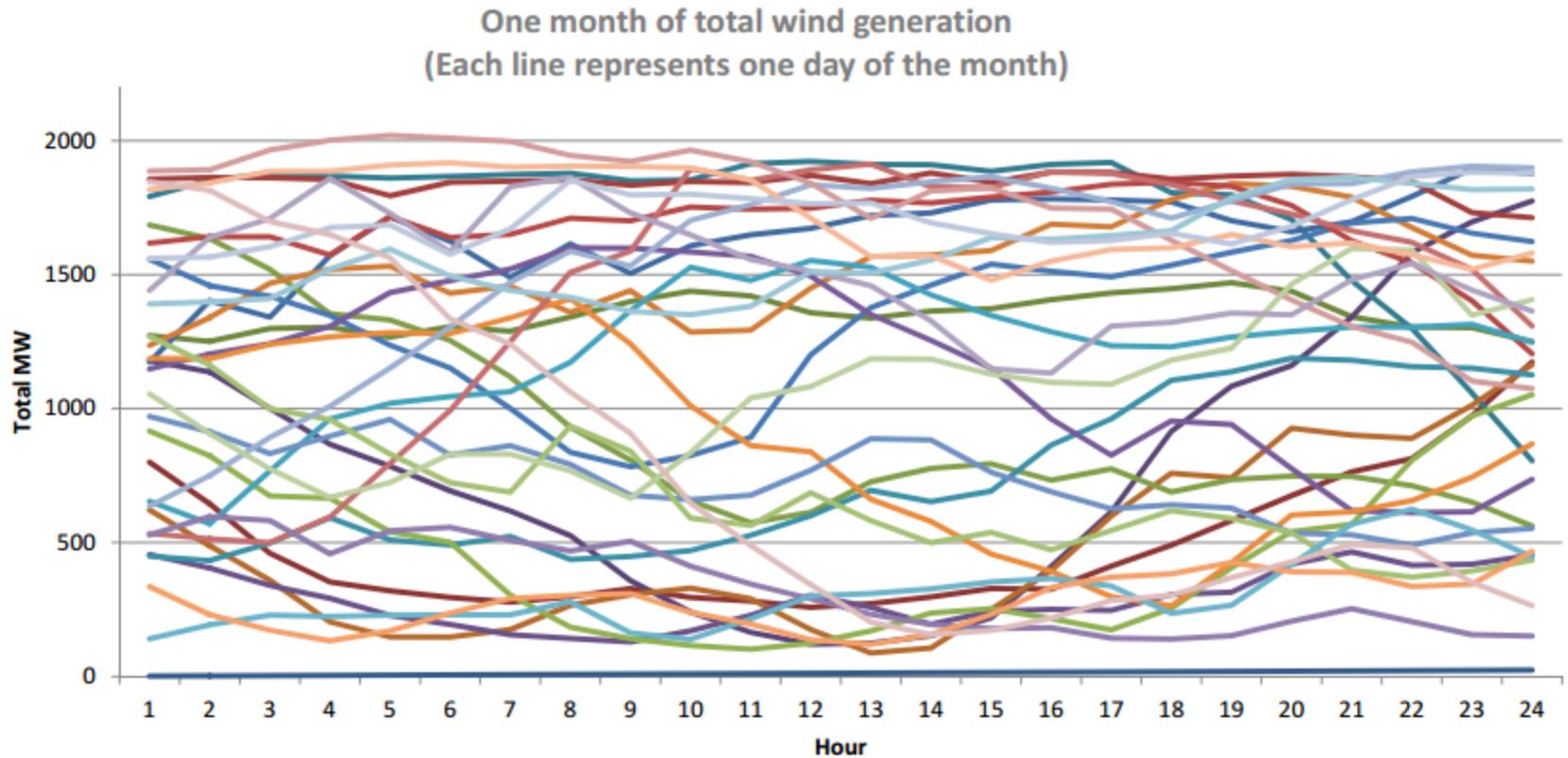
HOEP



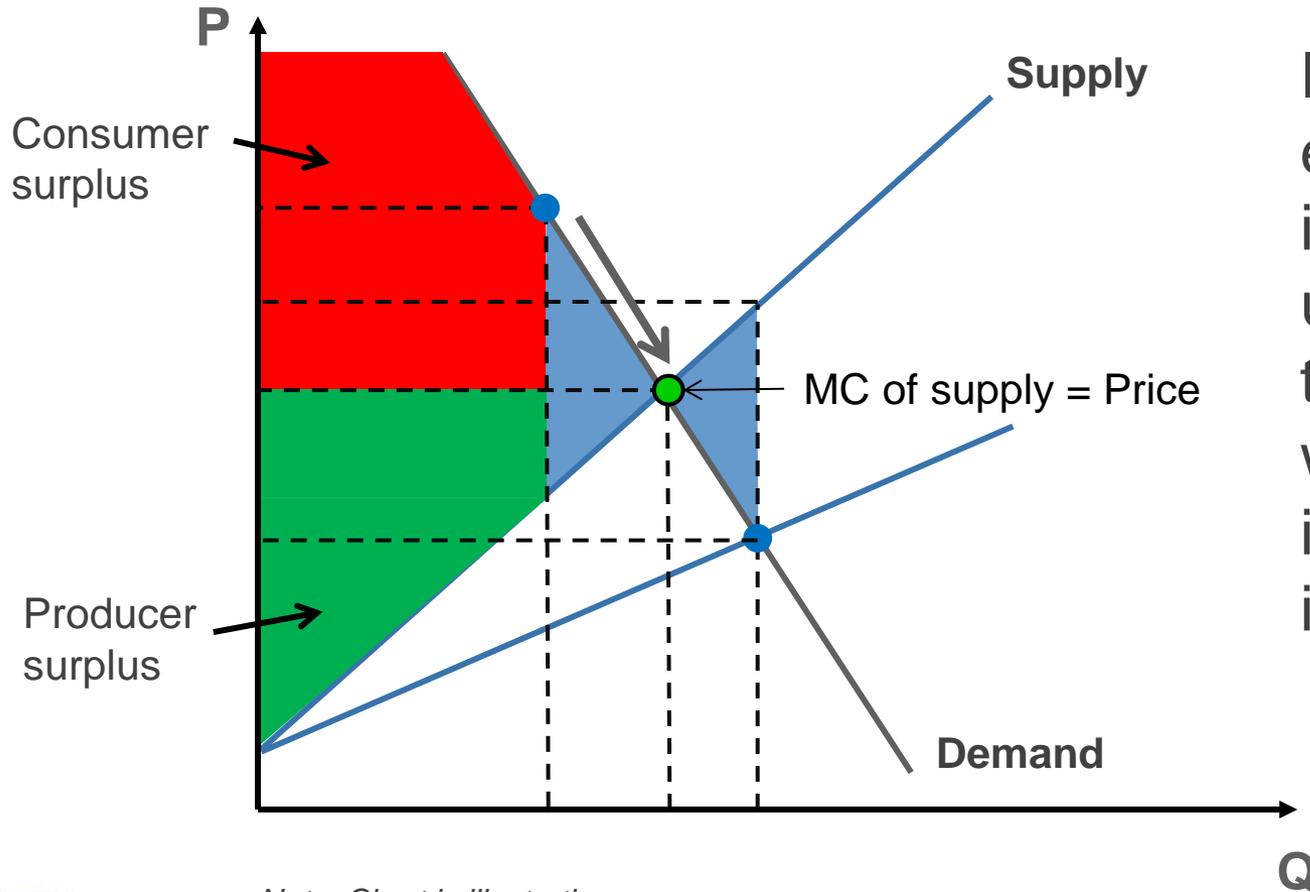
Changing Supply Mix



Integrating Wind Output



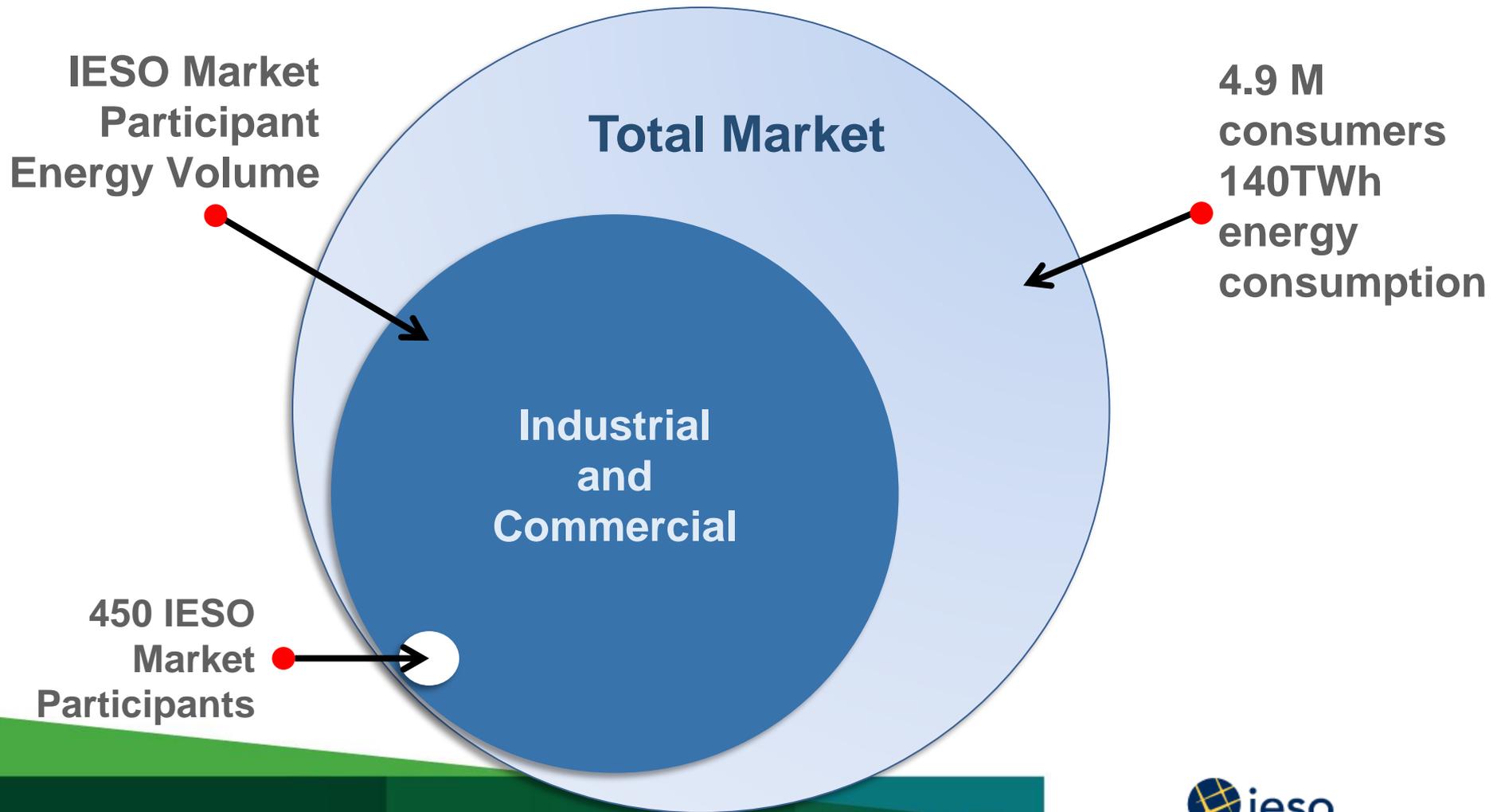
Market Design Goals: Improve Efficiency



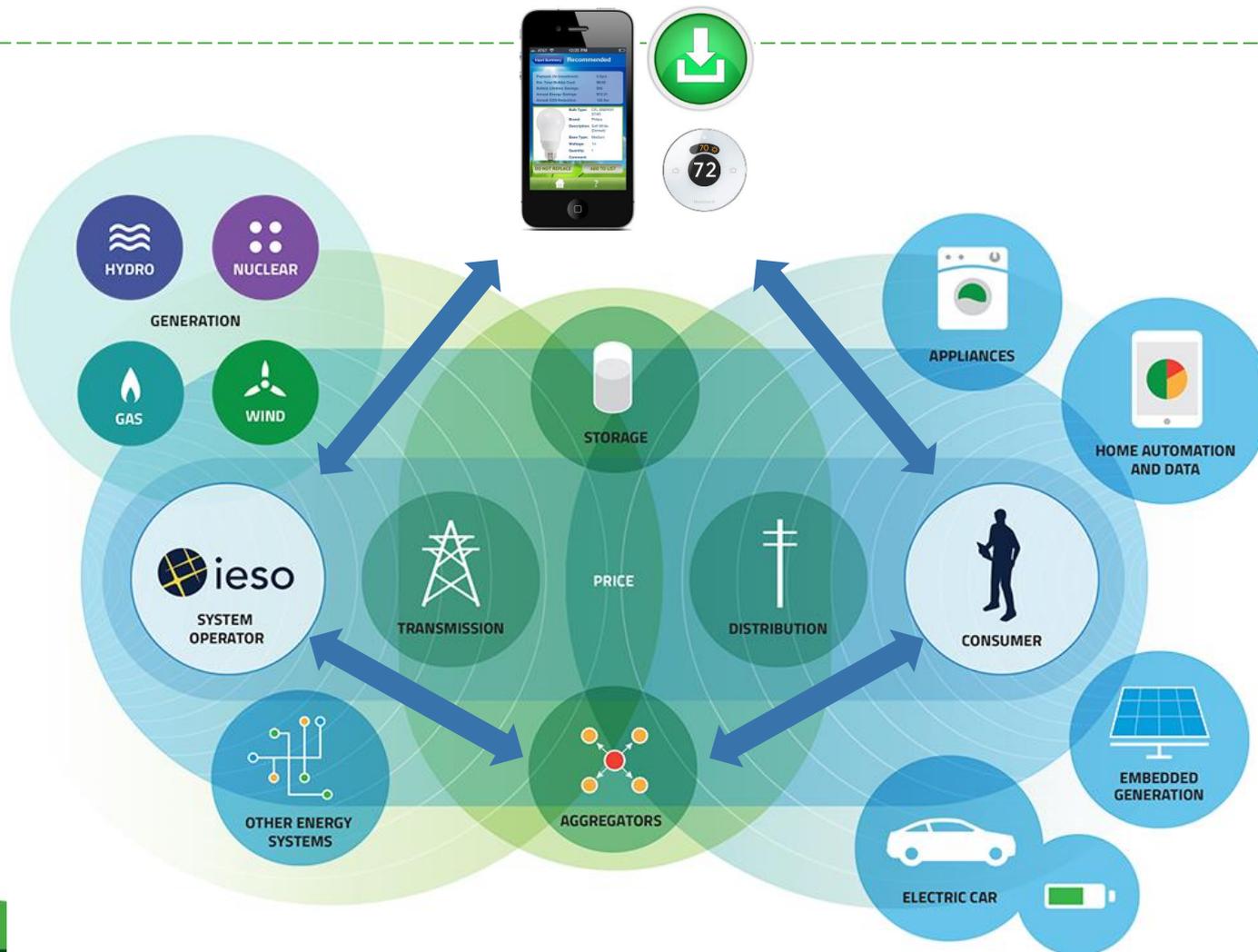
Note: Chart is illustrative

In addition to efficiency improvements, understanding the impact on wealth transfers is very important

Market Design Goals: Dynamic Efficiency through Increased Participation



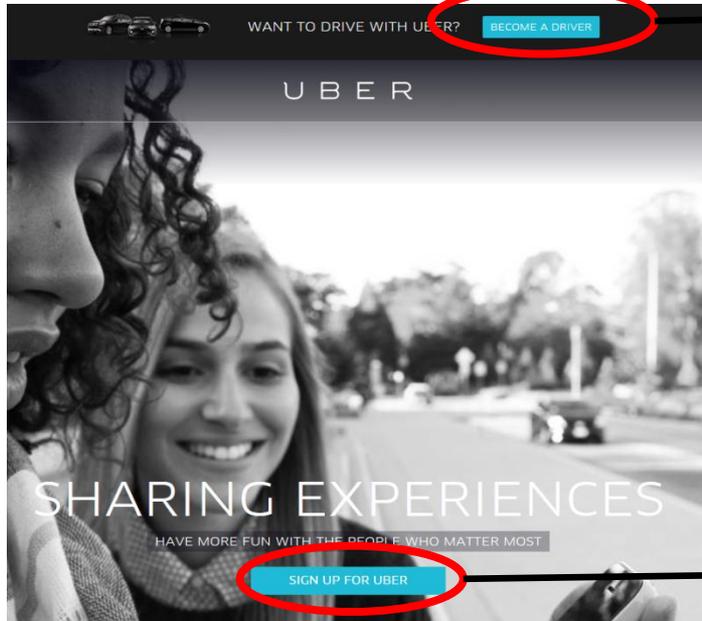
Technology Opening New Opportunities



On Demand / Sharing Economy



[topcoder]



Supplier



Consumer

- Growth of the “On Demand” economy driven by smartphone technologies
- Opportunities for Ontario’s “On Demand” Wholesale Energy Market

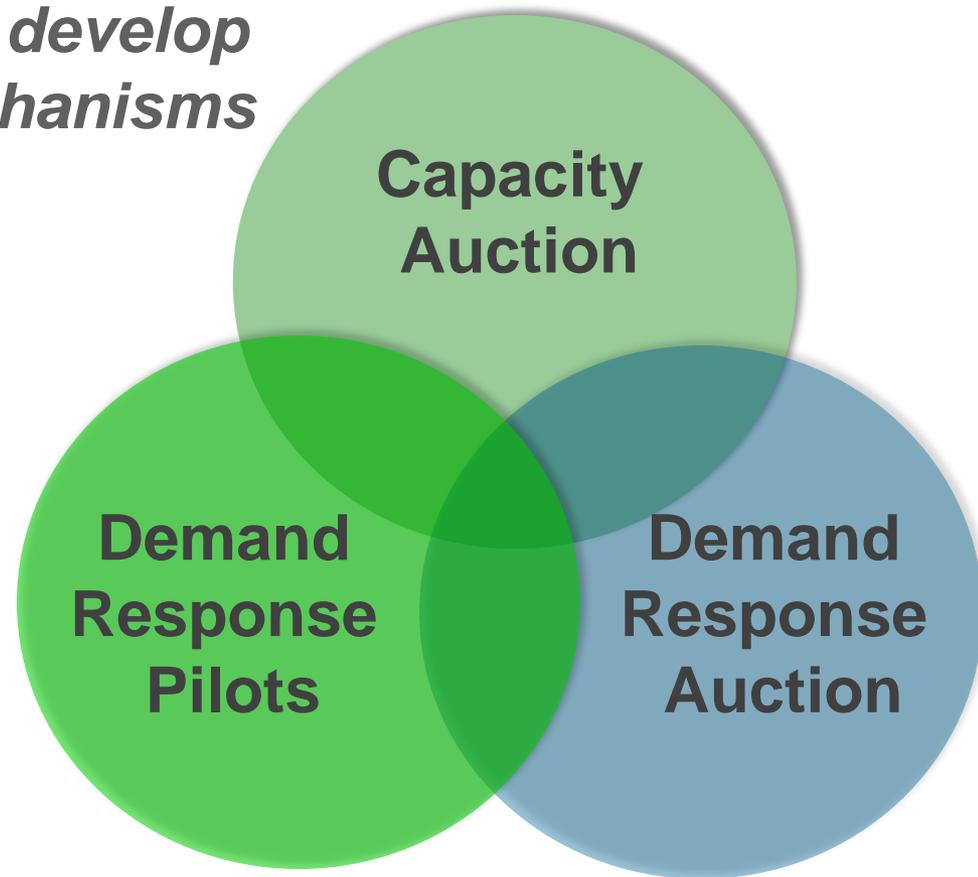
Market Design Goals: Dynamic Efficiency through Flexibility



Market Development Projects

IESO is actively working to develop efficient market-based mechanisms

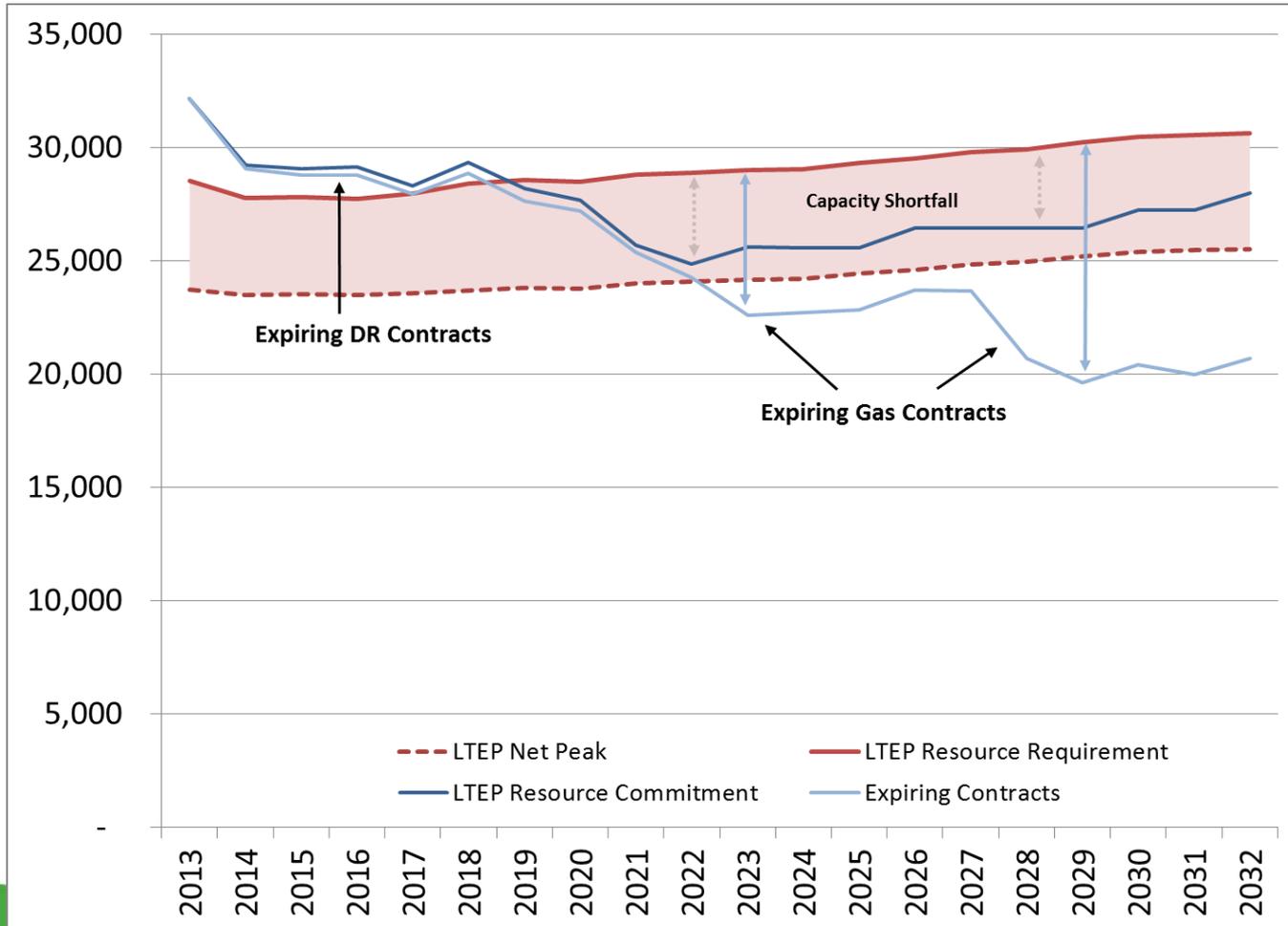
- Promote transparent and efficient price signals
- Equal opportunity for all resources
- Encourage competition to deliver cost effective solutions
- Efficient participation of available resources



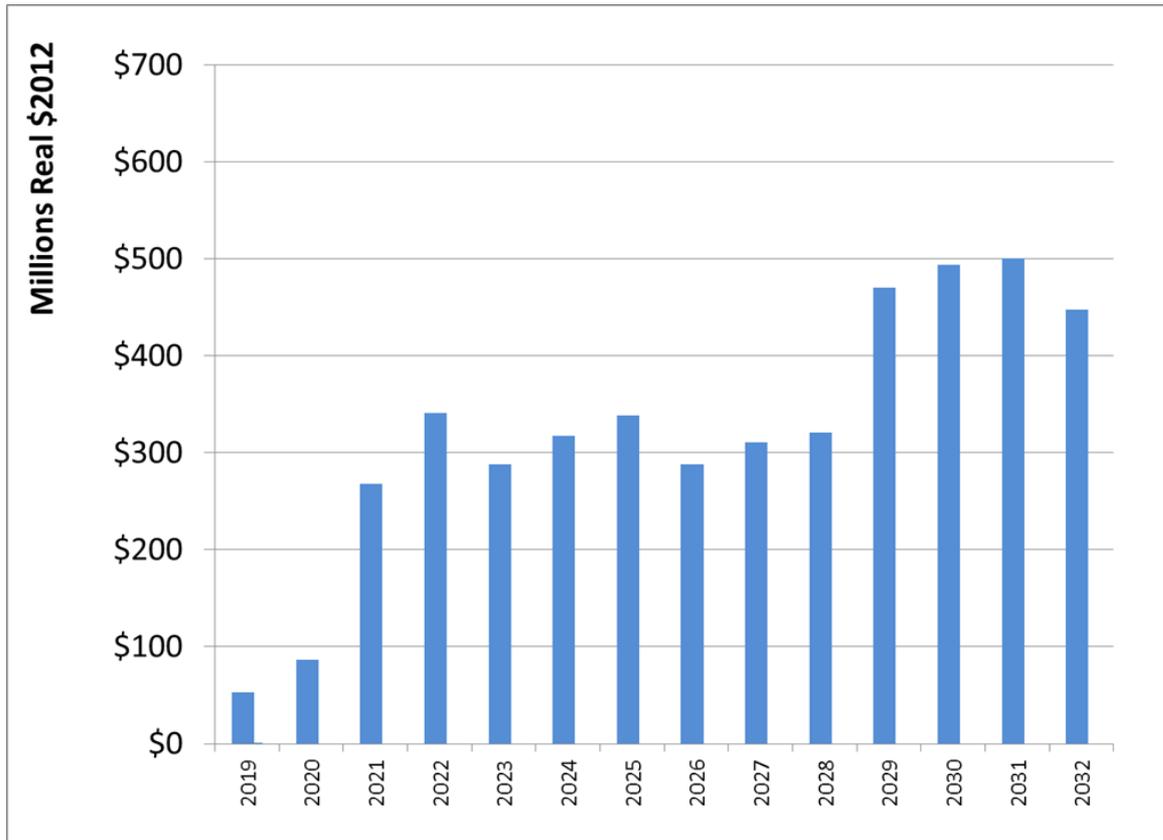
Capacity Auction



Capacity Auction: The Need for MWs



Potential for Cost Savings



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

Design Proposal: How It Would Work

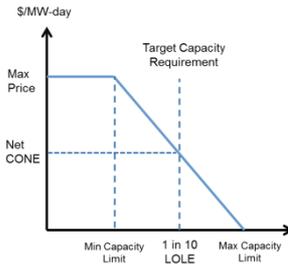
Pre-Auction Period



- IESO determine incremental capacity needs
- Capacity resources complete eligibility requirements and register for the auction



Base Auction



- Conduct auction for two six month commitment periods
- Zonal based
- Use a downward sloping Demand Curve



Forward Period



- Look out 3 to 4 Years called a “Forward Period”
- Undertake Rebalancing Auctions

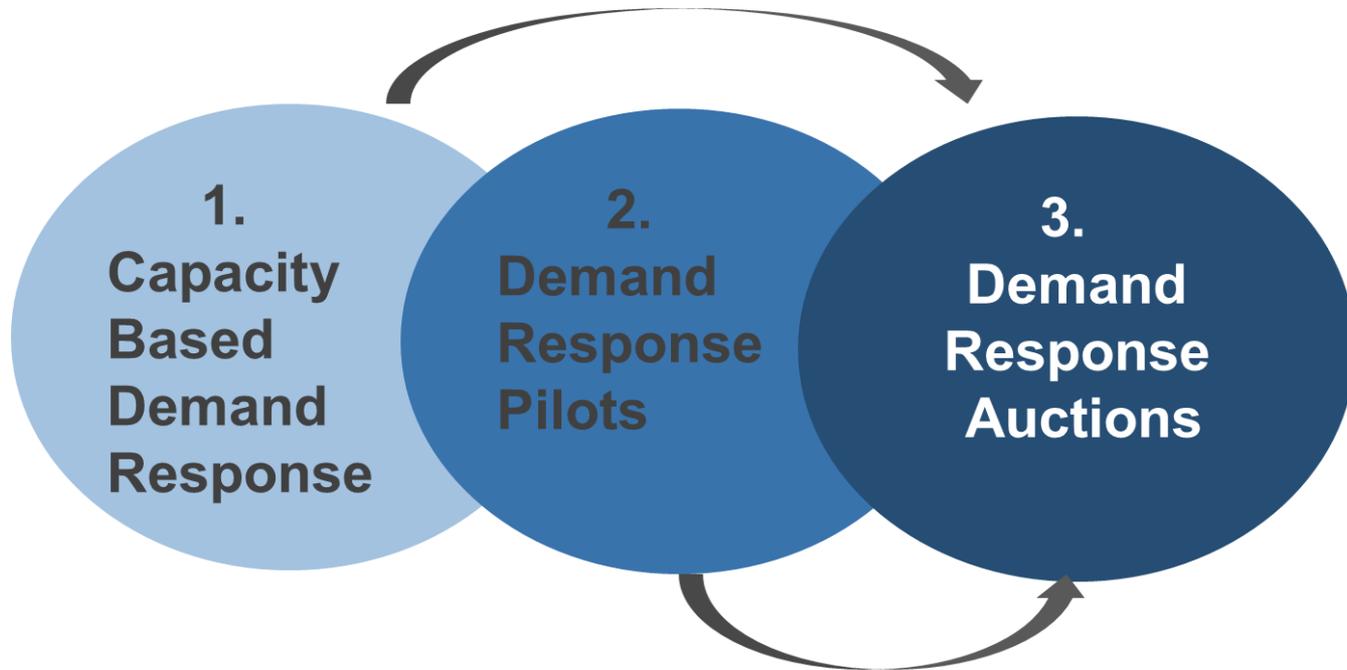


Commitment Period

Summer Season (6 months)	Winter Season (6 months)
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- Must Offer into the wholesale energy market in all hours
- Performance only assessed during peak hours

Demand Response Projects

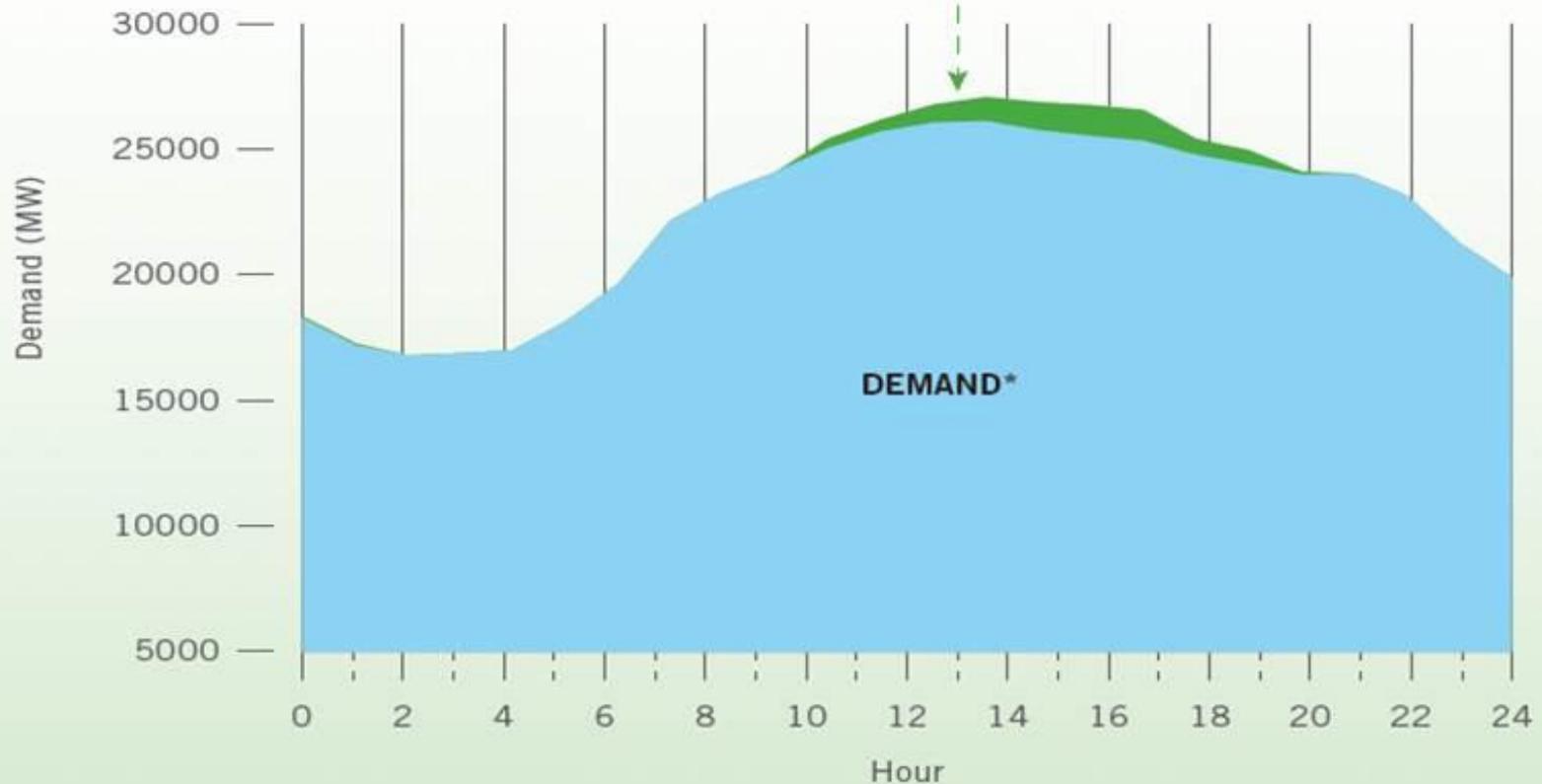


Grow Demand Response in Ontario by leveling the playing field with generation and integrating into the energy market

Demand Response in Action

DEMAND REDUCTION

Demand reduced as a result of price measures and demand response programs. Over several hot summer days in 2013, demand response helped reduce peak demand by an average of 1,200 MW.



Demand Response Auction

- The DR auction will be a mechanism to competitively procure DR resources
- The auction will replace the procurement of multi-year contracts and will allow for a competitive market to compensate DR capacity resources
- Be a simplified version of the capacity auction design
- First auction by the end of 2015 for delivery in the summer of 2016

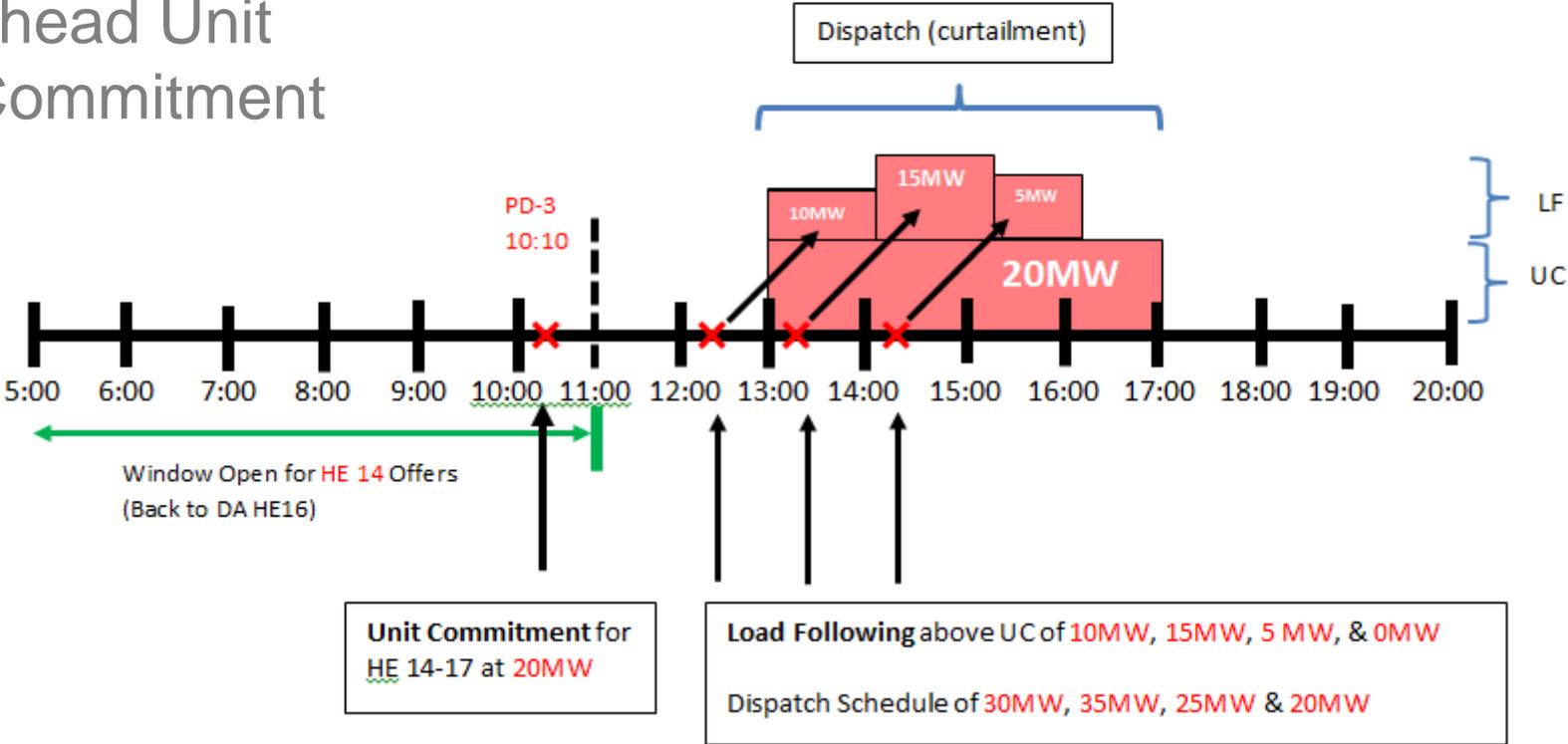
Demand Response Pilot Program

- Expose new participants to operation in the IESO administered markets in a controlled environment
- Pilot resources will deliver energy to the IESO administered markets through real-time dispatch scheduled in two timeframes:
 - 1 hour ahead
 - 5 minute dispatch
- To facilitate certainty the IESO is proposing a commitment and guarantee program that will operate in advance of these timeframes

How a Pilot Would Work - Example

1-hr Load
Following with 3hr
ahead Unit
Commitment

Day at Hand



More Information

Capacity Auction

<http://www.ieso.ca/Pages/Participate/Stakeholder-Engagement/Capacity-Auction.aspx>

Demand Response

<http://www.ieso.ca/Pages/Ontario%27s-Power-System/Reliability-Through-Markets/Demand-Response.aspx>

Thank You!

Any questions, please contact:

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