

NERSC Participation Opportunities Workshop

PRESENTED TO

Ontario Non-Emitting Resources Subcommittee

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THE **Brattle** GROUP

Agenda

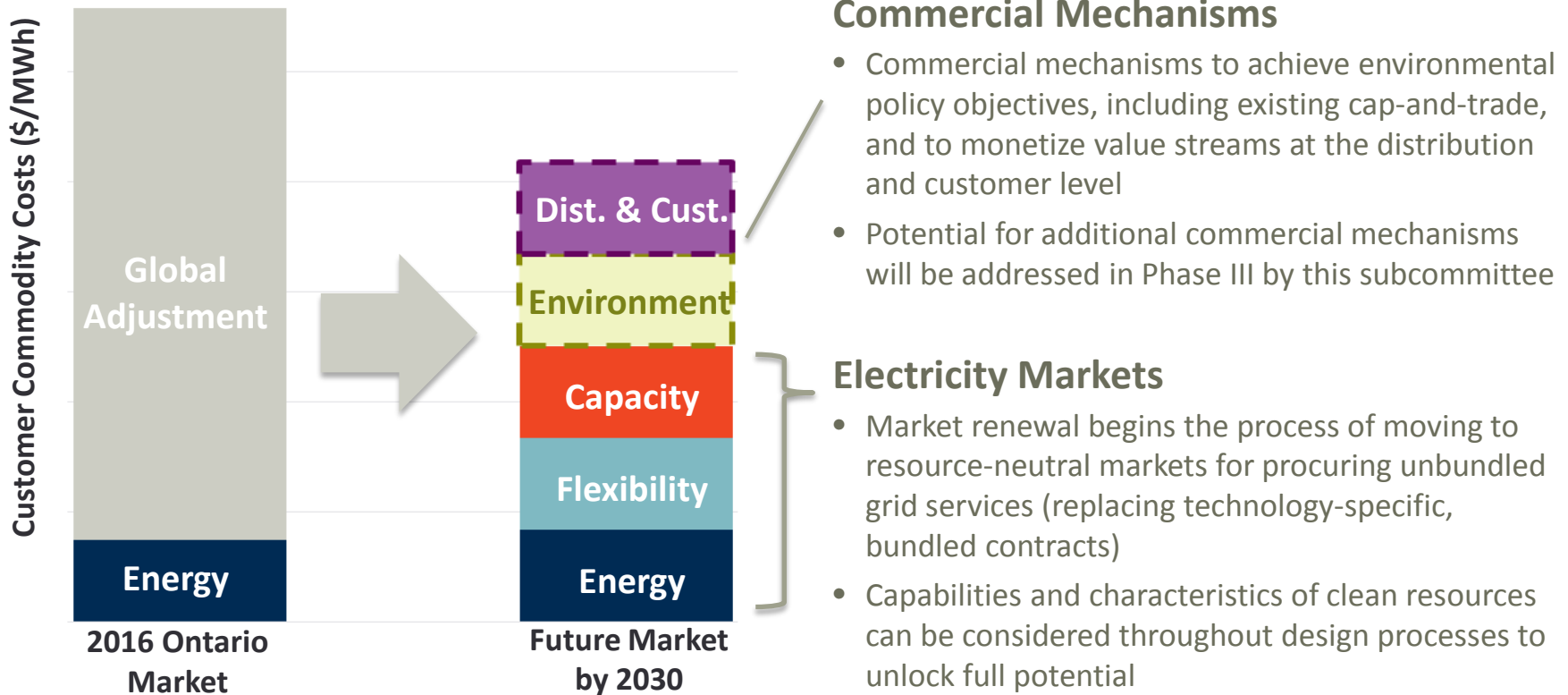
Start Time	Agenda Item
9:45 am	Introduction
10:00 am	Session 1: Your Vision for the Future Ontario Market
11:00 am	Session 2: Identifying Barriers to Realizing Value Potential
12:00 noon	Break for Lunch
12:30 pm	Session 3: Brainstorming Ideas for Breaking Down Barriers

Introduction

A Path to the Future Ontario Market

Vision for Ontario's future market is to rely on a comprehensive suite of competitive markets. Will enable a wide range of technologies the opportunity to "value stack" a business case based on unique capabilities

Ontario Market Components



Sources and Notes: Left: 2016 realized Global Adjustment and HOEP. Right: Illustrative representation of future market design, magnitudes not based on value estimates.

Introduction

What Services Can New Technologies Provide?

Starting point is to recognize the significant latent potential of clean and emerging technologies to provide a wide range of essential services to the grid. IESO's RFI will inform the capabilities and barriers

	Gas CC	Gas CT	Nuke	Hydro	Wind	Solar	DR	Storage	DER	EE	Interties
Energy	Yes	Yes	Yes	Yes	Yes	Yes	Some*	Some*	Some*	Yes	Yes
Flexibility	Yes	Yes	Some*	Yes	Some*	Some*	Yes	Yes	Some*	No	Some*
Capacity	Yes	Yes	Yes	Yes	Some*	Some*	Yes	Yes	Some*	Some*	Some*
Environment	No	No	Yes	Yes	Yes	Yes	Some*	Some*	Some*	Yes	Some*
Dist. & Cust.	No	No	No	No	No	No	Yes	Yes	Yes	Some*	No

*A specific focus of the outstanding RFI is to understand whether and how these resources can provide various grid services, and what participation barriers exist in Ontario

Yes

Some*

No

Introduction

What Services Will be Needed Now, in the Future?

A variety of unbundled services in each area enable the value created by clean and emerging resources to be harnessed to meet system needs.

	Energy	Flexibility	Capacity	Environment	Dist. & Cust.
Current	<ul style="list-style-type: none">•Real-Time	<ul style="list-style-type: none">•10-minute synch. reserve•10-min non-synch. reserve•30-min non-synch. reserve•Regulation	—	<ul style="list-style-type: none">•Carbon (Cap & Trade)	—
Future <i>(planned and potential)</i>	<ul style="list-style-type: none">•Day-ahead	<ul style="list-style-type: none">•Fast Frequency Response•Ramping/Load-following up and down	<ul style="list-style-type: none">•Summer Capacity•Winter Capacity	<ul style="list-style-type: none">•Clean Energy Attribute	<ul style="list-style-type: none">•Dist. system non-wires alternative•Avoided customer outages•Reduced customer GA costs

Your Vision of the Future Ontario Market

What do you see as the potential for your resource type in terms of meeting Ontario's electricity needs i.e MW and location in the Ontario system?

What value streams/services can your resource type provide?

- At the bulk level
- At the distribution level
- At the consumer level

Brainstorming Barriers to Realizing Value Potential

Are there value streams/products to which your resource can contribute that you are not currently capturing?

- In the current market
- In the future market as contemplated through Market Renewal

For such value streams/products, what is preventing you from capitalizing on the value you create?

- Technology?
- Wholesale market structure?
- Regulatory?
- Contractual?
- Other?

30-minute Break for Lunch

Session 3

Brainstorming Options for Breaking Down Barriers

What changes to the current market structure, or existing products would enable you to more fully capture the value your resource creates?

What changes to the future market structure, or new products as contemplated under Market Renewal would enable you to more fully capture the value your resource creates?

Are there any other factors that are important to identifying and addressing barriers as discussed today?