

# Roles and Responsibilities in the context of Ontario's Smart Grid

Ontario Smart Grid Forum  
Monday, February 22<sup>nd</sup> 2010




- This presentation is intended to foster a discussion about the roles and responsibilities of Ontario's electricity sector organizations in the context of the smart grid and the emerging Ontario smart grid policy road map.

- This slide deck briefly examines the dimensions of the “roles and responsibilities” problem presented by smart grids – in terms of:
  - The 7 NIST domains of the smart grid;
  - The 8 NIST layers of Interoperability; and,
  - The emerging Ontario policy road map

- Within the Ontario Context, there are various **types** of organizations that will all potentially have roles and responsibilities in developing, implementing and maintaining Ontario's smart grid:
  - Various branches of the Ontario government and its agencies
  - Various branches of the federal government and its agencies
  - Industry Associations
  - International Standards bodies
  - Ontario Electricity sector players
  - Third party service providers
  - Academia
  - Manufacturers of smart grid equipment, appliances and electric vehicles.

# Every organization has a role to play...



**Ontario**  
Ontario Ministry of Energy and  
Infrastructure



**Ontario**  
Ontario Ministry of Transportation



**Ontario**  
Ontario Ministry of Research and  
Innovation



**Ontario**  
Ontario Ministry of the Eco.  
Development and Trade



**ieso**  
Power to Ontario. On Demand.



Smart Metering Entity



**Ontario Energy Board**



Information and Privacy Commissioner,  
Ontario, Canada  
**Privacy Commissioner**



Industry Canada



Measurement Canada



Natural Resources Canada



**Electrical  
Safety  
Authority**




Standards Council of Canada  
Conseil canadien des normes  
**Standards Organizations**



Ontario Centres of  
Excellence









**Industry associations**



**Ontario Power Authority**



**Service Providers**



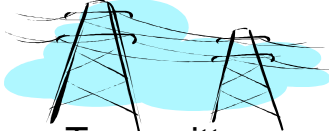
**"Prosumers"**




**Retailers**




**Academia**



**Transmitters**



**LDC's**



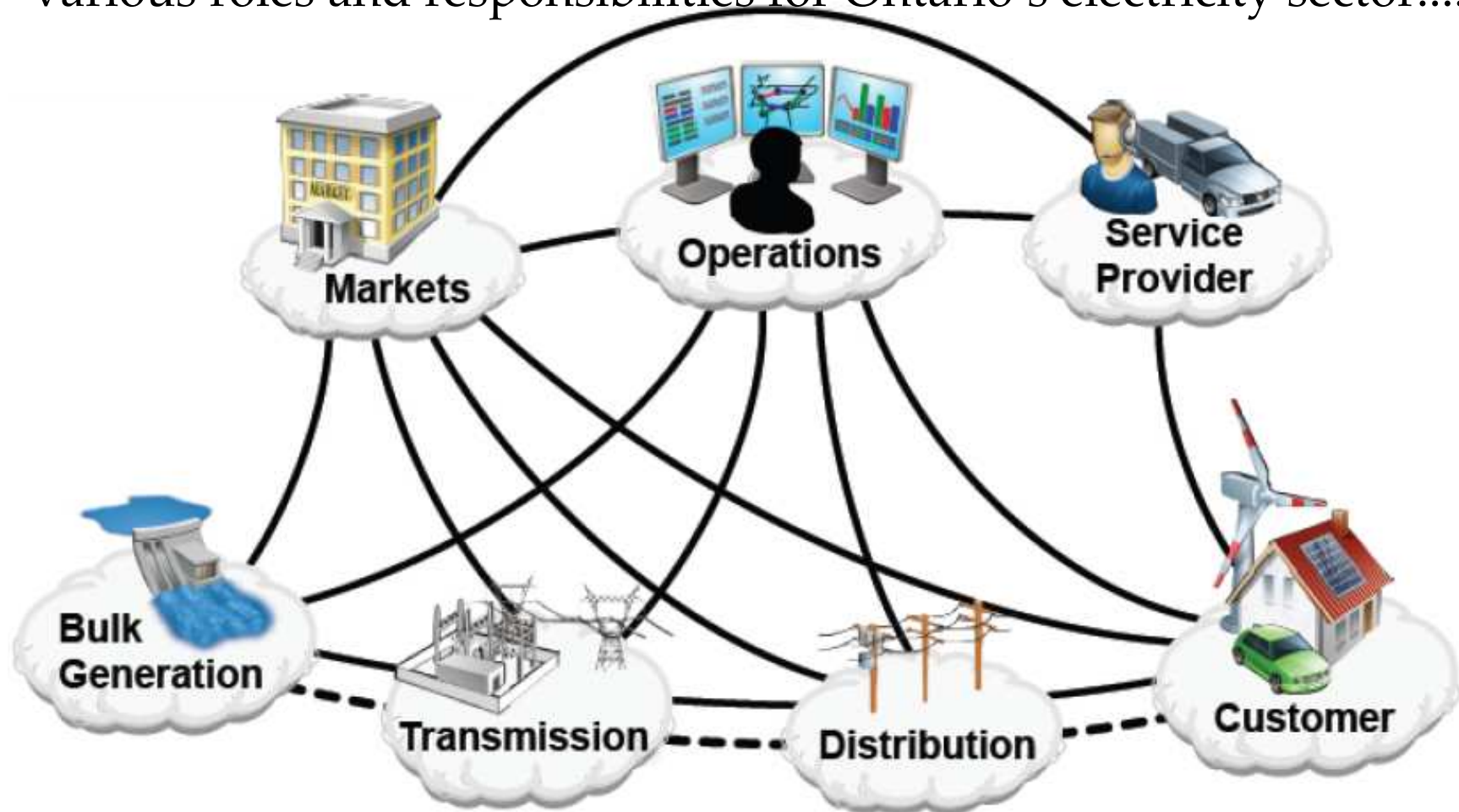
**Bulk Generators**

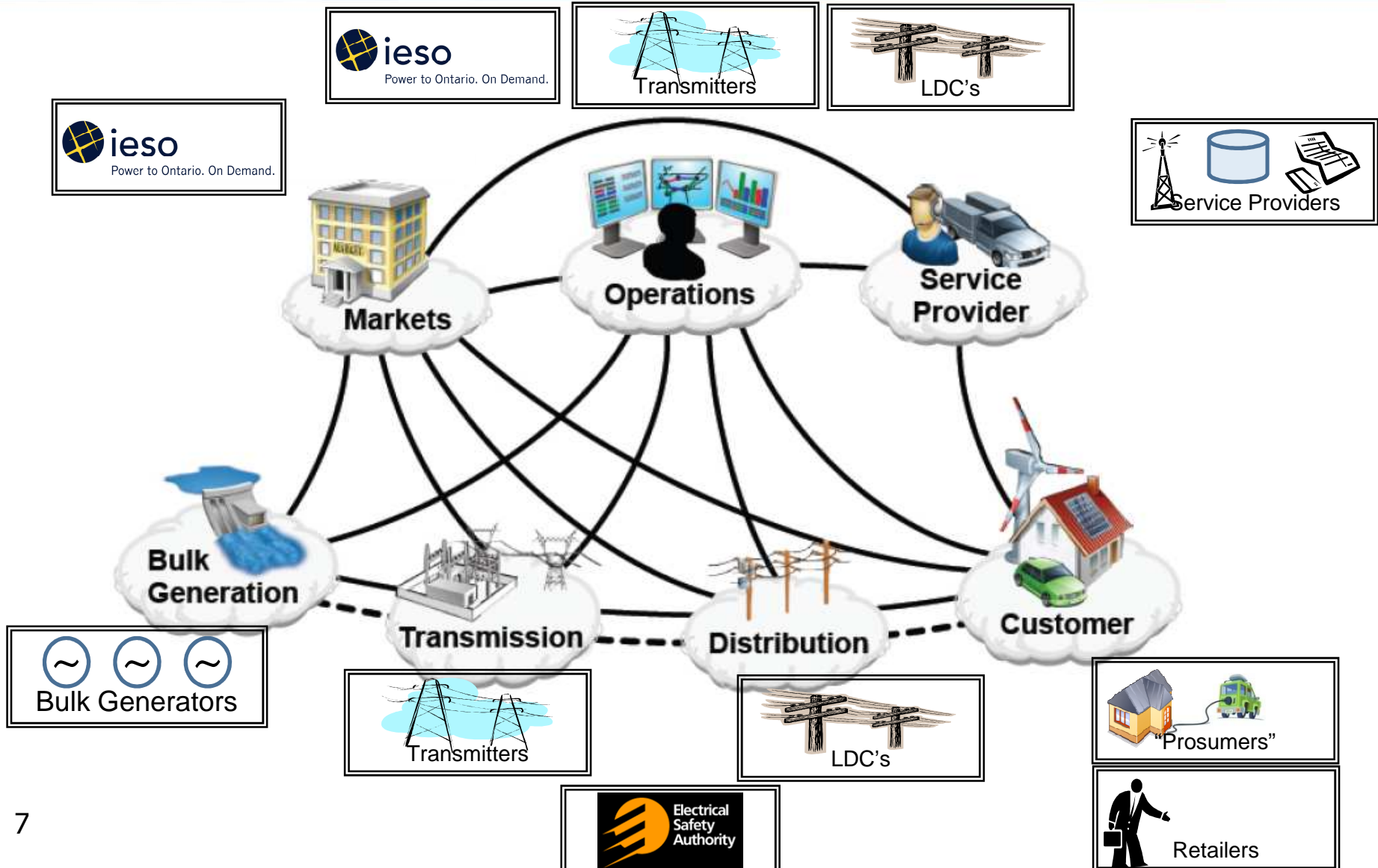


**Manufacturers**

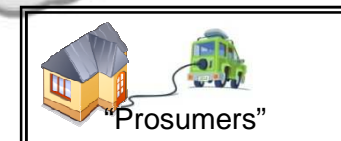
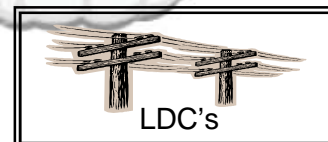
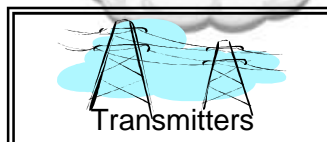
# NIST Smart Grid Domains

- The U.S. National Institute of Standards and Technology (NIST) maps the Smart Grid into 7 “domains” – each of which, implies various roles and responsibilities for Ontario’s electricity sector....

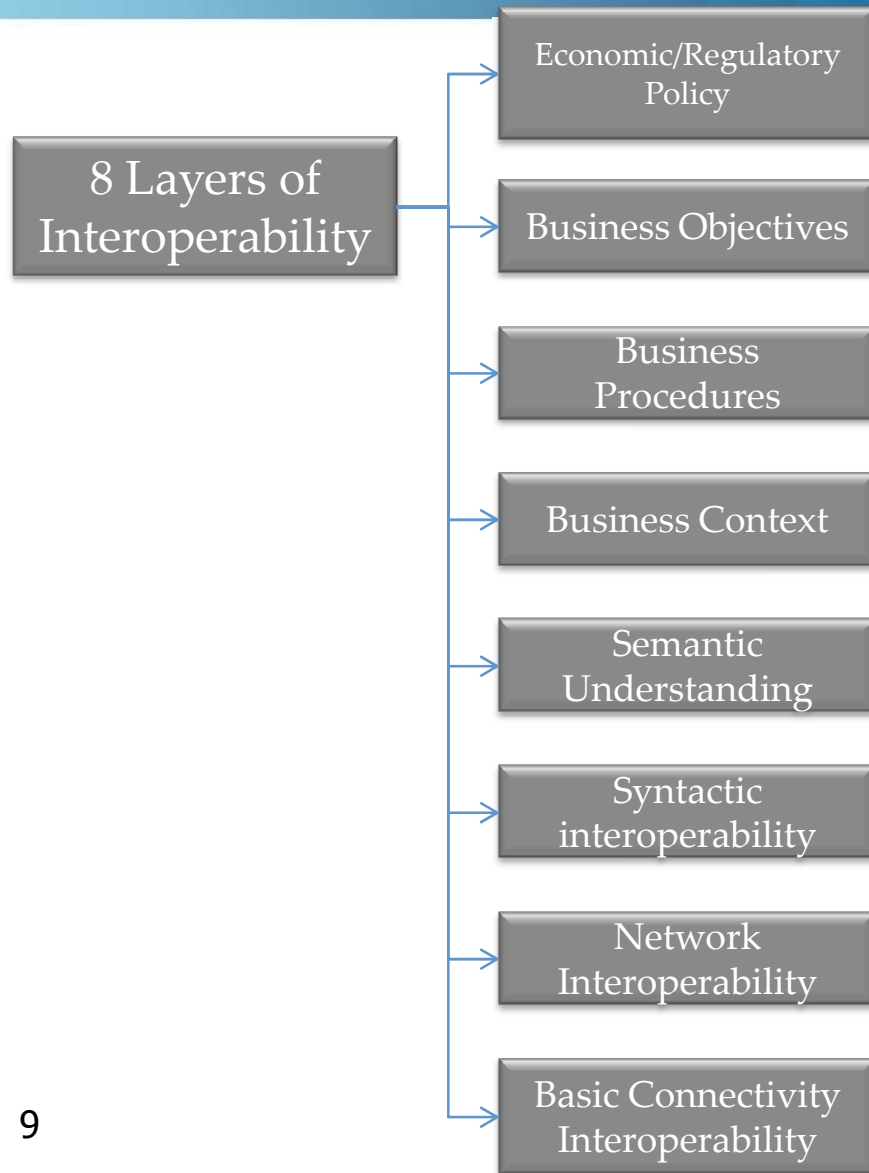




- The NIST smart grid domain definitions immediately present a challenge to Ontario's organizational framework, including the areas of:
  - Operational control authority
  - Markets
  - New types of third party service providers
  - Business context of various customer service interactions

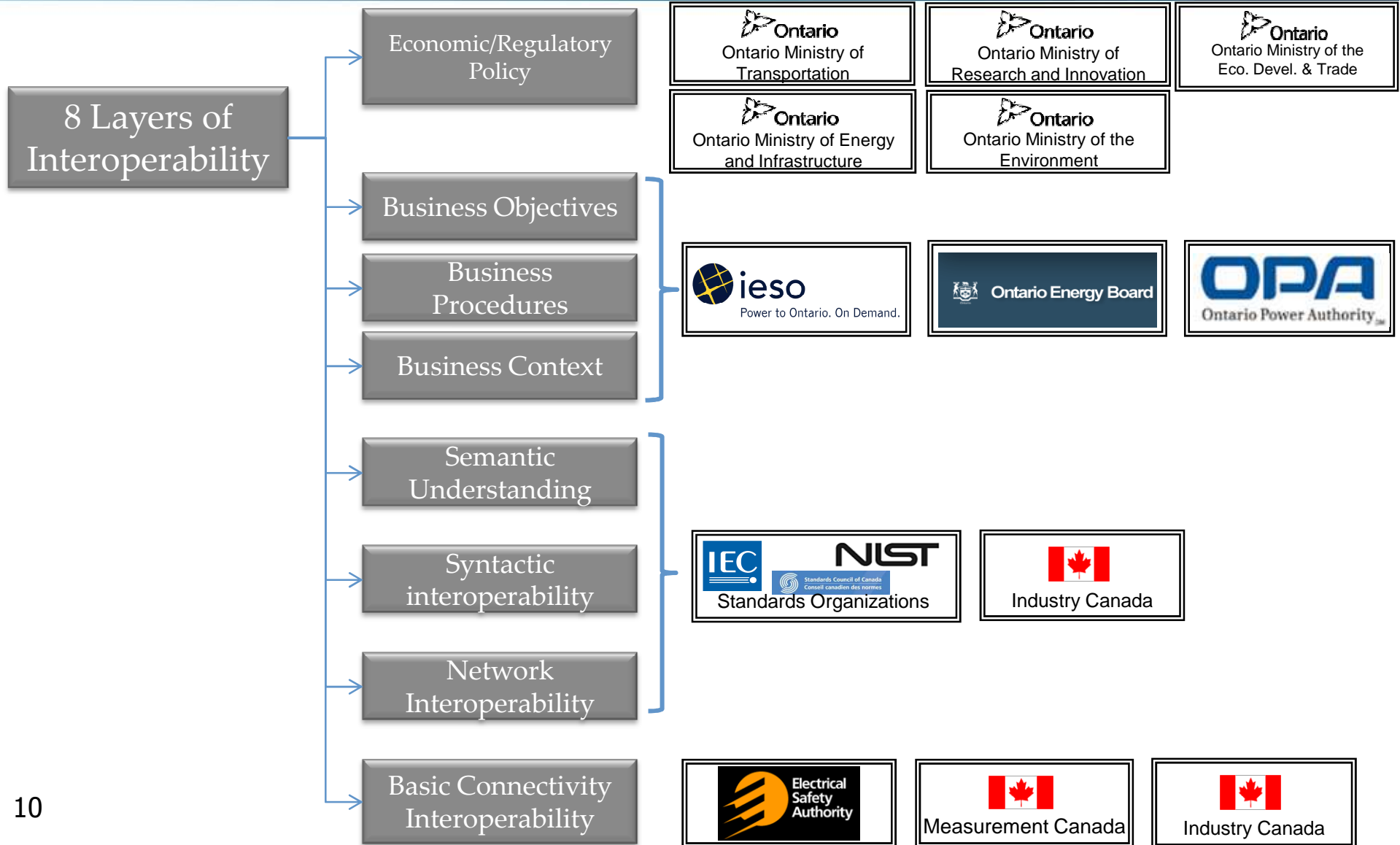


# NIST Layers of Interoperability

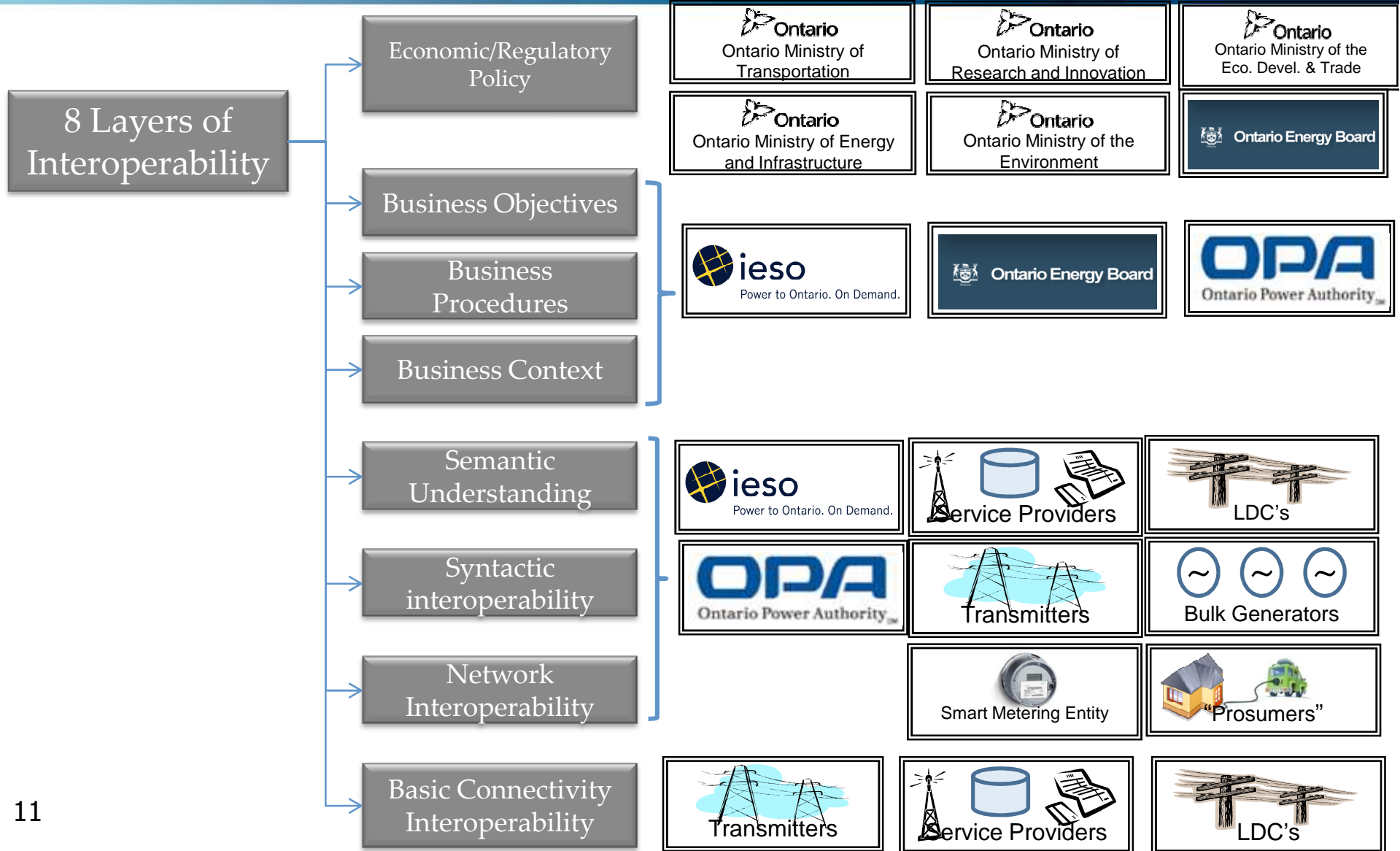


- The U.S. National Institute of Standards and Technology has adopted an 8-layer smart grid interoperability framework from the Gridwise Architecture Council (“the GWAC stack”)
- Accountabilities and responsibilities for each layer of the framework can be shared across a number of organizations....

# NIST Layers of Interoperability & Organizations with potential **accountability** in each area:



# NIST Layers of Interoperability & Organizations with potential implementation responsibility in each layer:



- Recall - 4 general topic areas:
  1. “Broad Principles of the Smart Grid”
  2. “Consumer Control”
  3. “Utility Flexibility”
  4. “Adaptive Infrastructure”
- Over the following slides we will examine each of these policy areas to draw out the following questions:
  - Which organizations are “accountable” and “responsible” for each of the policy objectives?
  - Are there jurisdictional gaps and/or areas of overlap that need to be addressed
  - Who else needs to be consulted and informed on the details of the policy framework as it is implemented and maintained over time?

# Generic Roles and Responsibilities for Each Policy Area – ‘R.A.C.I.’ Matrix

A ‘R.A.C.I.’ matrix assigns roles and responsibilities for each subject area in term of who is...

- **‘R’ - Responsible:** Parties who are responsible for doing the work to achieve the policy goal.
  - **‘A’ Accountable:** Parties who are accountable for achieving the policy goal and (usually) have decision making authority over the relevant policy itself.
  - **‘C’ Consulted:** Parties that need to be consulted for the purposes of amending various aspects the framework (i.e. 2-way interaction).
  - **‘I’ Informed:** Parties that need to be informed of various aspects of the framework.
- \*\*\***NOTE:** A given party can have any combination of the above roles in a given policy area.

## A further note about the following slides.

- The following slides include entries in a 'R.A.C.I.' matrix for each of the Ontario smart grid roadmap policy areas.
- In its current form, these matrices only include entries where such responsibilities/roles are implied by existing mandates for the organizations listed, or otherwise implied by the policy roadmap itself.

# Broad Smart Grid Principles

Topic Area	Accountability	Responsibility	Consulted	Informed
CUSTOMER VALUE	???	<ul style="list-style-type: none"> <li>•Prosumers</li> <li>•???</li> </ul>	•Prosumers	•Prosumers
COORDINATION	<ul style="list-style-type: none"> <li>•Ministry of Energy and Infrastructure</li> </ul>	???	???	???
INTEROPERABILITY	•???	<ul style="list-style-type: none"> <li>•Standards Organizations</li> <li>•Service Providers</li> <li>•LDCs</li> <li>•Transmitters</li> <li>•Generators</li> <li>•IESO</li> </ul>	???	???
SECURITY	<ul style="list-style-type: none"> <li>•Standards Organizations</li> <li>•Ministry of Energy and Infrastructure</li> <li>•???</li> </ul>	<ul style="list-style-type: none"> <li>•Service Providers</li> <li>•LDCs</li> <li>•Transmitters</li> <li>•Generators</li> <li>•IESO</li> </ul>	???	???
PRIVACY	<ul style="list-style-type: none"> <li>•Privacy Commissioner</li> <li>•???</li> </ul>	<ul style="list-style-type: none"> <li>•Service Providers</li> <li>•LDCs</li> <li>•Transmitters</li> <li>•Generators</li> <li>•IESO</li> </ul>	•Prosumers	•Prosumers

# Broad Smart Grid Principles – cont'd

Topic Area	Accountability	Responsibility	Consulted	Informed
SAFETY	<ul style="list-style-type: none"> <li>•ESA</li> </ul>	<ul style="list-style-type: none"> <li>•LDCs</li> <li>•Transmitters</li> <li>•Service Providers</li> <li>•Generators</li> </ul>	<ul style="list-style-type: none"> <li>•LDCs</li> <li>•Transmitters</li> <li>•Service Providers</li> <li>•Generators</li> </ul>	<ul style="list-style-type: none"> <li>•Prosumers</li> <li>•???</li> </ul>
ECONOMIC DEVELOPMENT	???	<ul style="list-style-type: none"> <li>•OCE</li> <li>•Ministry of Research and Innovation</li> <li>•Ministry of Transport</li> </ul>	???	???
ENVIRONMENTAL BENEFITS	<ul style="list-style-type: none"> <li>•Ministry of the Environment</li> <li>•???</li> </ul>	•???	???	???
EFFICIENCY	???	???	???	???
RELIABILITY	<ul style="list-style-type: none"> <li>•IESO</li> <li>•LDC</li> <li>•Transmitters</li> </ul>	<ul style="list-style-type: none"> <li>•IESO</li> <li>•LDC</li> <li>•Transmitters</li> </ul>	<ul style="list-style-type: none"> <li>•IESO</li> <li>•LDC</li> <li>•Transmitters</li> <li>•Generators</li> <li>•Prosumers</li> </ul>	<ul style="list-style-type: none"> <li>•IESO</li> <li>•LDC</li> <li>•Transmitters</li> <li>•Generators</li> <li>•Prosumers</li> </ul>

Topic Area	Accountability	Responsibility	Consulted	Informed
ACCESS	<ul style="list-style-type: none"> <li>•OEB</li> <li>•Privacy Commissioner</li> </ul>	<ul style="list-style-type: none"> <li>•LDCs</li> <li>•Retailers</li> <li>•Service Providers</li> <li>•IESO</li> <li>•Smart Metering Entity</li> </ul>	<ul style="list-style-type: none"> <li>•LDCs</li> <li>•Retailers</li> <li>•Service Providers</li> <li>•IESO</li> <li>•Smart Metering Entity</li> </ul>	<ul style="list-style-type: none"> <li>•Manufacturers</li> <li>•???</li> </ul>
VISIBILITY	???	<ul style="list-style-type: none"> <li>•LDCs</li> <li>•Retailers</li> <li>•Service Providers</li> </ul>	•Prosumers	•Prosumers
CONTROL	???	<ul style="list-style-type: none"> <li>•Service Providers</li> <li>•LDCs</li> <li>•OPA</li> <li>•IESO</li> </ul>	•Prosumers	•Prosumers
PARTICIPATION IN RENEWABLE GENERATION	<ul style="list-style-type: none"> <li>•OPA</li> <li>•Ministry of Energy and Infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>•IESO</li> <li>•OPA</li> <li>•LDCs</li> </ul>	<ul style="list-style-type: none"> <li>•IESO</li> <li>•OPA</li> <li>•LDCs</li> <li>•Prosumers</li> </ul>	•Prosumers
CUSTOMER CHOICE	???	<ul style="list-style-type: none"> <li>•Service Providers</li> <li>•LDCs</li> <li>•Retailers</li> </ul>	•Prosumers	•Prosumers
EDUCATION	???	???	???	Prosumers

Topic Area	Accountability	Responsibility	Consulted	Informed
DISTRIBUTED RENEWABLE GENERATION	<ul style="list-style-type: none"> <li>•OPA</li> <li>•Ministry of Energy and Infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>•IESO</li> <li>•OPA</li> <li>•LDCs</li> <li>•Generators</li> </ul>	<ul style="list-style-type: none"> <li>•IESO</li> <li>•OPA</li> <li>•LDCs</li> <li>•Generators</li> </ul>	•???
VISIBILITY	<ul style="list-style-type: none"> <li>•OPA</li> <li>•Ministry of Energy and Infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>•LDCs</li> <li>•IESO</li> <li>•IESO</li> <li>•Transmitters</li> </ul>	<ul style="list-style-type: none"> <li>•Prosumers</li> <li>•Service Providers</li> </ul>	<ul style="list-style-type: none"> <li>•Prosumers</li> <li>•Service Providers</li> </ul>
CONTROL AND AUTOMATION	<ul style="list-style-type: none"> <li>•OEB</li> <li>•LDCs</li> <li>•IESO</li> <li>•Transmitters</li> </ul>	<ul style="list-style-type: none"> <li>•LDCs</li> <li>•IESO</li> <li>•Transmitters</li> <li>•Service Providers</li> </ul>	<ul style="list-style-type: none"> <li>•Prosumers</li> <li>•Service Providers</li> </ul>	<ul style="list-style-type: none"> <li>•Prosumers</li> <li>•Service Providers</li> </ul>
{power} QUALITY	<ul style="list-style-type: none"> <li>•OEB</li> <li>•LDCs</li> <li>•IESO</li> <li>•Transmitters</li> </ul>	<ul style="list-style-type: none"> <li>•LDCs</li> <li>•IESO</li> <li>•Transmitters</li> <li>•Prosumers</li> <li>•Generatorrrs</li> <li>•Service Providers</li> </ul>	<ul style="list-style-type: none"> <li>•Prosumers</li> <li>•Manufacturers</li> </ul>	•Prosumers

Topic Area	Accountability	Responsibility	Consulted	Informed
FLEXIBILITY	<ul style="list-style-type: none"> <li>•Ministry of Energy and Infrastructure</li> <li>•OPA</li> </ul>	<ul style="list-style-type: none"> <li>•LDCs</li> <li>•Transmitters</li> <li>•IESO</li> <li>•OPA</li> <li>•Service Providers</li> </ul>	<ul style="list-style-type: none"> <li>•Service Providers</li> <li>•Ministry of Transportation</li> <li>•Manufacturers</li> </ul>	???
FORWARD COMPATIBILITY	<ul style="list-style-type: none"> <li>•Standards Organizations</li> </ul>	<ul style="list-style-type: none"> <li>•LDCs</li> <li>•Transmitters</li> <li>•IESO</li> <li>•Service Providers</li> </ul>	<ul style="list-style-type: none"> <li>•Manufacturers</li> </ul>	???
ENCOURAGE INNOVATION	<ul style="list-style-type: none"> <li>•Ministry of Research and Innovation</li> <li>•OC</li> </ul>	<ul style="list-style-type: none"> <li>•Ministry of Research and Innovation</li> <li>•OCE</li> <li>•Natural Resources Canada</li> <li>•Industry Canada</li> <li>•Academia</li> </ul>	<ul style="list-style-type: none"> <li>•Manufacturers</li> <li>•Academia</li> <li>•Industry Associations</li> </ul>	???
MANTAIN PULSE ON INNOVATION	<ul style="list-style-type: none"> <li>•Ministry of Research and Innovation</li> <li>•Natural Resources Canada</li> <li>•Industry Canada</li> </ul>	<ul style="list-style-type: none"> <li>•Ministry of Research and Innovation</li> <li>•OCE</li> <li>•Natural Resources Canada</li> <li>•Industry Canada</li> <li>•Academia</li> </ul>	<ul style="list-style-type: none"> <li>•Manufacturers</li> <li>•Academia</li> <li>•Industry Associations</li> </ul>	<ul style="list-style-type: none"> <li>•Standards Organizations</li> </ul>



ieso

Power to Ontario.  
On Demand.

Thank you.