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# Regulatory Framework Reform Planning Panel – Smart Grid

Jack Robertson  
VP and GM  
Elster Metering

# Topics

- Smart Grid
  - Ontario Status
  - Rest of World and Smart Grid
  - The Opportunity
  - Key Messages

# Ontario Status

- Ontario's biggest investment in Smart Grid has been Smart Meters
- Smart Meters are not the Smart Grid in themselves
- Smart Meters are a major building block for the Smart Grid
  - *New data and control capabilities never before available*
  - *Data is valuable but only if the data is turned into information and used to make change*
  - *Functionality only valuable if utilised*

# Ontario Status - Background

- 2005 – Ontario Government mandates Smart Meters for TOU – first jurisdiction in the world to do so
  - Perfect application for TOU and addressing Ontario energy concerns
  - Minimalist specification (TOU only)
  - LDCs have no need to justify (no business case= no operational goals)
- History will show (is showing) this was the still the right approach

# Rest of World?- Background

- **After Ontario, nearly all North American Utilities launch Smart Meter/Smart Grid Programs, with Europe right behind**
  - All have operational business case drivers, including;
    - Revenue Protection
    - Asset Management
    - Demand response
    - Loss reduction/system management
    - Outage reductions, Power quality
    - Reading costs
  - Typically once started, the business case is enhanced (ROI improved) as new opportunities develop and are realized with these networks

- Typical Smart Meter Business Case Drivers
  - Theft, Asset Management, Loss reduction/system Management, Reading costs, Outage reductions
  - Power Quality, Etc.
    - These drivers have enabled all Non-Ontario Utilities to justify Smart Meters on operational benefits alone (not necessarily TOU or DR)
    - What do all of the above drivers have in common for Ontario?
- They are all low hanging fruit for Ontario since Smart Meters and networks already exist! Further room for;
  - Enhanced customer experience
  - Operational savings
  - Improved reliability

# Ontario Status

- Ontario has deployed over 4 million smart meters that are being read every day and bringing back hourly interval for billing (plus much more, i.e. voltage, outage, etc.)
  - Leading the world in data gathering and billing from that data
  - Entire Province covered with communication networks
  - The opportunity to leverage this data is better than any other jurisdiction
  - But Regulatory Models today are built on traditional capital and operational needs
- Change is needed now to begin the ROI on Smart Grid Opportunities

# Ontario-Leveraging Investment



- To leverage the operational benefits of its Smart Meters and networks, Ontario LDCs need to invest in Smart Grid including people, devices, tools and applications such as;
  - Transformer monitoring (Revenue protection and Asset Management)
  - MDMs and Energy Management Systems
  - Distribution Automation Outage and loss reduction
  - Demand Response (In Home Displays, Load control)
- Wholesale change out and major investments are **not** required
  - The big investment (AMI) is already done
  - Implement Smart Grid on a targeted or replacement basis
  - Bootstrap returns from low hanging fruit

# Ontario – Multi Utility (Water, gas)

- The Ontario Smart Meter Roll out contemplated multi-Utility but did nothing further to encourage this
  - Electric Utilities concerned about regulations – hesitant to engage water and gas Utilities
  - Overlapping systems a colossal waste of funds and technology to taxpayers, not to mention added RF, privacy and intrusion issues
  - Water Opportunity Act (Bill 72) defines the need to manage water loss – perfect application for leveraging electricity Smart Meter Networks

# Regulations – Moving Ahead

- Ontario has a stated desire to be a leader in Smart Grid. e.g.(IESO) initiative, Green Energy Act
- A Major Smart Grid Investment has already been made in Smart Meters
  - Meter Data needs to be turned into information and used for decision making in future operational and investment decisions (Grid Modernization)
  - Smart Meter networks can be leveraged further for automation and Demand Response
  - Operations can be further enhanced
- Some further investments needed but with rapid ROI

# Smart Grid Requires Long(er) Term Thinking

- Building a Smarter Grid require different investment mentality than status quo
  - Higher initial cost
    - Systems, equipment
    - Skilled resources
  - Longer term benefits
- Take advantage of replacement and growth opportunities to enable future benefits
- We are stuck with non Smart Grid investments a long time.....

# Key Messages

- Ontario has enabled a standing opportunity with its Smart Meter infrastructure
  - Regulatory change needed to leverage and benefit from the operational opportunities
  - Need some investment and new thinking to realize these opportunities
    - Challenging paradigms and long term thinking AND planning are required
  - Wholesale change-out not required
- Encourage (force?) Multi-Utility sharing of networks – to everyone's benefit