Regulatory Considerations for Future Energy Systems

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Overview

• The Big Picture
  – Objectives
  – Structural Considerations

• Challenges

• The Alberta Example (time permitting)
• Future Energy Systems (FES) cannot (at least not without great difficulty) develop within the current utility business models and regulatory frameworks, but they are “the right thing” and will ultimately contribute to expected, near-term policy objectives.
Future Energy Systems (FES)

- Neither nor within current regulatory frameworks and utility business models:
  - Bundled: gas + electricity + heat
  - Bundled: energy + delivery
  - Unclear whether / what aspects should be regulated vs. competitive
The Big Picture

Objectives

Structure

Execution

Public
Policy Objectives

- Specific environmental targets?
- Energy efficiency / conservation?
- Innovation – for the sake of innovation or with a particular outcome in mind?
- Customer choice / enabling customer participation?
- Better reliability?
- Resource diversity?
• It needs to be clear who is responsible for:
  – Real-time operations (e.g. system stability and reliability)
  – Planning a sufficient / efficient delivery system to enable load and supply balance
  – Ensuring adequate supply
  – The obligation to provide service (e.g. default supplier)
  – Enabling a market for innovative technologies
  – Enabling information exchange and customer participation
  – Delivering on additional new policy objectives (e.g. specific environmental)
Structural Considerations

• Principles of Economic Regulation
  – Ensure reasonable rates for consumers and a reasonable return for utilities
  – Assign risk to those best able to manage it and provide earnings opportunities accordingly
  – Provide clear price signals to incentivize demand response and facilities development
  – Regulate only where there is a natural monopoly
  – Protect consumers (i.e. from monopoly pricing; with regard to safety & standard of service, etc.)
  – Incentivize competition where possible
Structural Considerations

• New Objectives…of Regulation?
  – Provide consumers the opportunity to actively participate
  – Grow markets for innovative technologies
  – Provide customer choice
  – Increase efficiency
  – Increase diversity of supply sources
Possible (very high level) Structures

• In addition to maintaining a reliable delivery system, utilities could be required to:
  – Enable integration of new technologies ("adapt to FES")
  or
  – Be required to invest in or seek out new technologies ("adopt FES")

• Either utilities or a third party “coordinator” could be given responsibility for establishing and operating an information exchange platform

• Under “adapt to FES” model, third party “coordinator” could be responsible for establishing and managing a market for innovative technologies
Challenges – With Any Model

• Increases in distributed resources and self-supplying consumers will:
  – Reduce usage of delivery assets
  – Cannibalize competitive wholesale generation markets where they exist, making them less efficient

• If one objective is lower prices, this won’t be realized for a long time given that delivery systems continue to be needed to provide reliability and backup service
Challenges – With Any Model

• Integration of different energy sources, delivery systems, information systems and storage systems, means:
  – Lines between customers, utilities and competitive energy service providers are blurred
  – Harder to unbundle financially and provide cost transparency for regulated components, and therefore difficult to know if pricing is efficient
  – More central planning and cooperation is required between energy supply and delivery systems, reducing ability to introduce competitive pressures

• Ultimately will require more cooperation between all components whether competitive or regulated which makes it difficult to provide the right risk / reward structure
Challenges – With Utility “Adopt FES” Model

• Utilities’ existing cultures and resources are not necessarily a good fit
  – Risk averse
  – Service rather than innovation-oriented

• How to consistently perform cost/benefit analysis whenever alternative to wires is proposed

• If cost/benefit approach is used case-by-case, may not evolve to a long-term sustainable market for innovative technologies

• Need to create new earnings opportunities that reflect meeting new objectives; not related to investment in wires
Challenges – With “Third Party Coordinator” Model

- Unclear what product the competitive market for innovative technologies is expected to deliver
- Requires high degree of cooperation from utilities to integrate with delivery, metering, and IT assets
The Alberta Example
Minister of Energy
Appoints AESO Board Members, MSA & AUC Chair

Electric Utilities Act
- Balancing Pool
  - Generation facility owners

Independent System Operator (AESO)
- Transmission facility owners

Alberta Utilities Commission (AUC)
- Distribution facility owners

Market Surveillance Administrator (MSA)
- Retailers
The Alberta Example

Reliable and efficiently priced wholesale electricity

Large industrial consumers

Retail consumers

Market Rules
Reliability Standards
Need Identification Documents
Wholesale Tariff

AESO

AUC Regulated

Generation
Transmission

Public
The Alberta Example

1 Most ISDs and large industrial loads that are directly connected to the transmission system are self-retailers

2 The energy component on a retail bill is not regulated unless it is provided by an RRO provider
Clarity is required about objectives and the structure to achieve them – ideally provided by policy-makers.

In support of FES, regulators may need to:

- Determine creative approaches to cost/benefit analyses.
- Develop an approach to utility earnings not related to investment but rather some other value proposition.
- Fill policy gaps (e.g. what is in the public interest) where legislation is not clear.
- Develop new processes and expertise.
- Consider transition mechanisms to manage increases in costs/rates.
Thank you