Today’s Agenda

Technologies of today and tomorrow – a few examples

What opportunities and challenges do those technologies bring?

How are state public utility commissions responding to those opportunities and challenges?

Will the regulatory compact be a thing of the past?
Or are states rallying to protect that compact?
The Technology - Examples

1. Generation:
   • Cost-effective DG

2. Demand Side Management:
   • Consumerization
   • Demand Response

3. Storage:
   • Increased efficiency

The Challenges - Examples

Public Infrastructure
1. Ensuring continuation of safe, reliable and affordable public infrastructure but with diminishing revenues.
2. Accommodate emerging technologies

Private Infrastructure
1. Ensuring DER do not harm public infrastructure
2. Eliminate market barriers
Distributed Generation

DG: Canary in the Coal Mine
High Electric Rates
Highly Efficient Renewable Fuels
“San Diego Gas and Electric: If you’re not prepared for the change, it’s too late.”

Hawaii – Feb 25 2015
Distributed Generation

"Google is making its biggest play ever bet on renewable energy."

Source: Tracking the Sun VII, LBNL, Sept 2014
“With Onsite Biogas and Fuel Cells, Microsoft Data Center Says NO to the Grid”
DG: The Opportunity and the Challenge

**The Opportunities:**
- Drive down electricity costs for the consumer.
- Increase resiliency.
- Increase sustainability of the generation fleet

**The Challenges:**
- Utility has little control over when/where it is installed
- Reduction in load may cause reduction in revenues
- How can the incumbent utility continue to maintain the grid within declining revenues?

Threshold Regulatory Questions

**Will there continue to be a natural monopoly?**
- Where in the world?
- When in time?

If yes.....
will the regulatory framework continue to provide the utility with both the obligations and requirements of a monopoly (regulatory compact)?
What functions will be protected as a monopoly?

What functions will be opened to competition?

NY and MA are at the forefront of defining the distribution utility.

NY PSC – the Distribution System Operator with extensive distribution system planning.

MA DPU – 10 year distribution grid modernization plan.
How can we ensure sufficient revenues for safe, reliable and affordable infrastructure?

**Three Methods That Are Currently Popular:**
1. Decoupling
2. Lost Revenue Adjustment Mechanisms
3. Incentive Rates

Often used together or in combination with other tools.

**Incentive Rates**

Three Types of Performance Based Ratemaking:
1. Rate Caps
2. Revenue Caps
3. Benchmarking

MN and Xcel are investigating this option.
Other Examples of Bolstering the Remaining Monopoly:

**Increasing revenues** – moving away from Cost of Service Rates
- Services priced by value
- Fee based services

**Decreasing costs** – examples
- Load Shifting – reduce peak, through mandatory TOU rates
- Increase efficiency of the delivery system
- Targeted DSM to obviate need for new infrastructure
- Eliminate meters through internet portal?

**Demand Side Management**

*Load Shifting*
“What If Your Electric Utility Acted More Like Amazon.Com or Netflix?”

Demand Response

It Works!
Time Varying Rates

They work!

Customer Data – The Battle of the Century

Will the distribution utility be required to standardize and share customer data?
If so, only in an aggregated format?
What about customer specific data?
Should customers have to opt-in or opt-out customer data sharing?
Can customers opt to install their own metering devices if it provides accurate billing information for the utility?
Specific dockets on this issue in: MN and IL.
Storage

The Holy Grail

“Bill Gates and Other Business Leaders Urge U.S. to Increase Energy Research”

The New York Times
Where are We Headed?

Change is Inevitable

- Controlled Change Soon
- Or
- Uncontrolled Change
Taking No Action Is a Decision

- Utilities Cannot Attract Capital
- Declining Public Infrastructure
- Low-Income Customers – Unserved
- Stranded Assets

Source: GreenLightNational.com
Different Paths for Different Regions

Utilities: focus on
• Capital intensive and
• Critical infrastructure

Regulations: focus on
• Removing market barriers
• Safety, reliability and sustainability of public infrastructure

The Future

..........................is here.