

# Smart Grid

## What have we learned?

- ▶ **Building a system that will support a business case life cycle. We are engineering the system for the life of the investment.**
  - Consumers Energy strongly participates in the industry in a push for Interoperability, security, and longevity of expenditures
- ▶ **Standards are not something one company, one state or one region can decide on. We are collaborating widely to reach an industry consensus that does not negatively impact our business case.**
- ▶ **Managing our corporate risk appropriately, not implementing too soon, and not being lost in analysis paralysis. Collaboratively helping others.**
- ▶ **Reducing risk from those with vested interests that don't align with our corporate interest controlling the future of our industry.**
- ▶ **We are reducing our total costs by sharing investments with many others who are working for similar goals and reducing our risk by having others implement first.**

- ▶ We are securing devices that are no longer just reading data
  - **Demand Response**
  - **Disconnect/Reconnect**
  - **Aggregated devices that have no perimeter**
- ▶ We are assuring consistent data across the environment
  - **Many vendors**
  - **Many paths**
- ▶ We are making systems and devices replaceable, interchangeable?
  - **How many Meter data systems, AMI vendors and other systems vendors will there be?**
  - **How many people might want to provide services over the web?**
  - **How do we say yes or no to some?**

- ▶ We are integrating to devices in the home ?
  - **How many manufacturers of devices are in your home that use energy?**
  - **How many network types are there that you can use in the home?**
    - **Wired (ethernet, homeplug, ds2, panasonic, etc..)**
    - **Wireless (WiFi, Bluetooth, ZWave, ZigBee,etc.. )**
- ▶ We are standardizing price and schedule communication?
  - **To cars, appliances, to generators, etc.**
  - **To commercial building control systems**
- ▶ We are communicating with devices that might move to or from other utilities.
  - **How many manufacturers of vehicles are there?**
  - **How many utilities are their in the country to travel through?**
  - **How many regulatory areas / RTO/ISO models / etc.**
- ▶ We are adding intelligent devices to the grid (lots of devices)?
  - **How many meter types do we want for the life of our company?**
  - **What if we install something that requires only one vendors devices?**
  - **When can you change to another provider?**

- ▶ It's not only about designing and deploying
  - **The immediate timeline to begin installing grid devices and customer devices**
  - **The 5 year timeline to get systems installed**
  - **The 20 year timeline to manage the lifecycle**
- ▶ Each of those timelines has very competing requirements and drive different organizational priorities
- ▶ Public Service Commission Interactions
  - **Provide information**
  - **Help in outreach**
- ▶ Work to understand customers better

- ▶ Credibility comes from outside not just inside
  - **Public Service Commission**
  - **Government Officials**
  - **Vendors and Consultants**
  - **Other Utilities**
- ▶ Switched from implementing as provided to collaboratively creating
- ▶ Technology oriented, customer connected, product design, strategy and architecture
- ▶ We can't control the smart grid it's too big
- ▶ We must build a basic environment that can be built upon

- ▶ Understanding security requires protecting aggregated devices and control systems
- ▶ Move of meter control entities from customer service into grid control
- ▶ Architects to design the system right the first time
- ▶ Geospatial analysis so that we don't "do it wrong the first time"
- ▶ Information modeling and management
- ▶ Less reliance on vendors to explaining "important standards and methodologies"

- The first crack at vital smart-grid technical standards are due next year and some companies are already **gumming up the works** by pushing their own ... technology, according to the government official shepherding the process
- “The need ... is urgent and the task is extremely complex”: George Arnold, the national coordinator for smart-grid interoperability at the National Institute of Standards and Technology (NIST)
- "We've never tried to anything of this magnitude before. It's more complicated than the Internet and Internet standards have been evolving for over 20 years.": George Arnold
- “ the Smart Grid Interoperability Panel ... is going to become something like the Internet architecture board, ... It's really being set up to develop the overall architecture and select which standards should be used.": George Arnold

- Referenced article can be found at -> [http://news.cnet.com/8301-11128\\_3-10403437-54.html?tag=mncol](http://news.cnet.com/8301-11128_3-10403437-54.html?tag=mncol)

- ▶ **Cisco is the worlds largest networking company**
  
- ▶ **"Our expectation is that this network will be 100 or 1,000 times larger than the Internet. If you think about it, some homes have Internet access, but some don't. Everyone has electricity access--all of those homes could potentially be connected,"**
  - Reference article can be found at -> [http://news.cnet.com/8301-11128\\_3-10241102-54.html](http://news.cnet.com/8301-11128_3-10241102-54.html)