

Smart Grid Implementation in Colorado

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Dora

Department of Regulatory Agencies

Office of Consumer Counsel

- **Consumer Counsel since March 2009**
 - Represent public interest in energy and telecom proceedings
- **NASUCA Executive Committee Member**
- **Background both in government and private**
 - State and Federal civil rights
 - Assistant Attorney General
 - General Counsel, small freight forwarder
 - Public Policy Director for MCI involved in breaking up Bell System
 - Competition developed for unexpected reasons
- **Participant at DOE conference on smart grid privacy**
- **National Electricity Forum, D.C. and Amsterdam forums**
- **NARUC panel in July 2011**
- **Smart Grid task force in Colorado**
- **All smart grid dockets in state**

Colorado Smart Grid Task Force

- Members met monthly and included utilities, developers, academics, government, environmental and consumer advocates
- Report submitted to Governor, General Assembly and PUC in January 2011 per SB10-180 is available at: http://rechargecolorado.com/images/uploads/pdfs/Deploying_Smart_Grid_in_Colorado_Recommendations_and_Options.pdf
- Recommendations include incremental, moderate and transformational approaches to smart grid

Boulder, Colorado

95,000 residents
40,000 households
46,000 electric customers
23,000 AMI meters

An city unto itself although
Denver 25 miles away

Twice percentage of
college grads & those
below poverty than rest
of state

Nearly 4000 residents
per square mile vs.
fewer than 50 statewide



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Pilot Rate Programs in Boulder

- Three pilot rate options
 - Time-Of-Use option called Shift and Save
 - Critical Peak Pricing option called Peak Plus Plan
 - Rebate for reduced usage called Reduce Your Use
- Pilot runs from October 10, 2010 through September 30, 2013 to include three full summers of data
 - Behind Schedule – lack of smart thermostats
- Pilot available up to 7,000 of 46,000 customers although fewer than 3,500 participating and number decreasing
 - Only 60 currently have in-home displays
 - Target was 1264 customers
 - Company asked balance to be redeployed outside Boulder



Pilot Rate Programs in Boulder

- Participants of Shift and Save and Peak Plus Plan supposed to receive and can keep after pilot program
 - Programmable thermostat which can be access via Internet
 - 2 wall outlet plugs called “smart plus”
 - Public Service behind in distributing equipment
- Participants can switch among rate programs after 12 months on one particular program



SmartGrid Rate Option Analysis

Annual Bills (typical customer load profile)	400 kWh/mo	800 kWh/mo	1200 kWh/mo
Current Tiered Rate	\$451.20	\$956.40	\$1,479.60
Additional cost for Shift and Save	\$28.80	\$3.61	\$(39.59)
Additional cost for Peak Plus Plan	\$28.81	\$3.62	\$(39.58)

Consumer View of Smart Grid

- From Consumer's vantage point, two smart grids:
 - Utility side of meter
 - Consumer side of meter
- Consumers don't understand what smart grid means
 - About 25 percent understand either smart grid or smart meters –Consumer Electronics Assn 6-11
- Hope that utilities upgrading their side as needed
- Still, Energy Secretary Chu said last year that grid would be recognizable to Thomas Edison today

Reasons to Take It Slow

- Consumers concerned about cost and need for smart grid
 - SmartGridCity trial and “volunteers” rebelling
 - **Boulder Daily Camera, February 17, 2011, Boulder residents outraged by Xcel's 'mandatory' pricing pilot**
Thousands of customers receive SmartGridCity flier
 - Opt-in v. opt-out critical to consumers
- As with Bell system breakup, it will take time for consumers to understand benefits of smart grid
- Need to educate and demonstrate proposal value

Need for Information, Explanation

- Consumers need education and information, including detailed energy use to decide whether it makes sense to opt in to time of use, critical peak pricing or usage rebate
- Communication disconnect
 - Energy once marketed as too cheap to meter
 - Now told smart grid needed to manage and save energy and cost
- With telecom, cost and dialing inhibiting factor until equal access and advent of mobile and VOIP
- Cost and simplicity two important factors for acceptance

Technology needs to develop

- Smart meters
 - AMR v. AMI and consumer concerns
- In-home devices
 - Smart thermostats
 - Smart displays
 - Computer access
 - Mobile apps
 - Unknown
- Smart appliances
 - 15 – 25 year life of appliances so consumers only replace as needed

Issues of Concern

- Costs of conversion
 - Colorado – costs ballooned
 - Originally \$15M, Commission approved \$27.9M
 - In December 2011, Company filed request to recover \$16.6M more from ratepayers, docket 11A-1001E
 - California – outdated meters and community opposition
 - Illinois legislation overrode Governor and state Commerce Commission with \$3/month increase
 - Maryland – costs cut in half
 - Push back in other states



Issues of Concern

- Ease of use
 - Difficulty in Black Hills trial in Pueblo
 - Smart thermostats, display units
- Complexity of bills
 - Customers find current bill incomprehensible
 - Proliferation of surcharges
 - Lack of usage data
- Safety of meters
 - Hard wired v. wireless (radiation)
 - Redundant fiber in Boulder - \$20 million



More Issues to Consider

- Privacy - home as castle
 - Detailed usage information
 - 4th amendment protections against search & seizure
- Remote disconnect
- Who owns information generated?
 - Consumers or Utilities, see Colorado rules adopted in docket 10R-799E
- Cyber security
- Utilities in competitive marketplace yet advocate for financial protection as in Illinois
- Bottom line to consumers: Issue of trust



Final Words

- Perception is reality
- Expect the unexpected
- “We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten.” – Bill Gates



THE NEW YORKER



"These new regulations will fundamentally change the way we get around them."

FRIDAY
JUNE 3

Internet Links for more information

- For SmartGridCity™, go to <http://smartgridcity.xcelenergy.com/pricing-options.asp>
- For the Colorado Office of Consumer Counsel, go to <http://www.dora.state.co.us/occ>

