AMI At Pacific Gas and Electric Company

Presented by Ann George
Pacific Gas & Electric Company
September 24, 2009

Pacific Gas and Electric Company®

Overview

- SmartMeter™ Overview/Updates
- Demand Response Updates/Findings
- Load Research Pilot Program
- SmartMeter™ Interval Data Challenges
- Summary
- Questions and Feedback

Pacific Gas & Electric Company SmartMeter™ Deployment Overview

- PG&E began upgrading gas and electric meters in 2006
- ~ 3.5 million gas and electric SmartMeters™ installed to date
- ~10 million gas and electric SmartMeters™ will be installed by the end of 2011 at a cost of $2.3 billion
- The SmartMeter™ program is the largest in the country

SmartMeter™ Background

- Part of a statewide effort driven by CPUC to upgrade California's energy infrastructure with automated metering technology
- Provides 2-way communication between the customer's site and PG&E using chosen secure wireless network technology
- SmartMeter™ system will provide for:
  - Faster power restoration
  - Faster problem resolution
  - New rate options for customers
  - Saving the environment – providing customers with information needed to conserve or shift energy usage resulting in decreased pressure on the power grid and fewer power plants
  - A core infrastructure that will bring intelligence to the energy grid

SmartMeter™ Updates

- CPUC approved PG&E's request to upgrade its SmartMeter™ technology on 3/12/09
  - Older power line carrier technology being replaced with newer mesh network technology
  - New mesh network technology offers:
    - Integrated Home Area Network (HAN) gateway
    - Ability to be remotely upgraded
    - Remote connect/disconnect – load limiting capability

Demand Response 2009 Updates/Findings

- SmartRate program rolled out in 2008 targeted residential and small/med commercial customers with active SmartMeters™
  - ~26,000 customers (primarily residential) enrolled to date
  - Provides customers with an opportunity to save on their bills by conserving or shifting electric usage from peak hours on PG&E called SmartDays™
    - Max of 15 SmartDays™ called during the summer months (6/1/09-9/30/09)
  - Average 4.4 MW savings in 2008 and 3.5 MW in 2009 ytd.
    - Lower 2009 savings attributed to:
      - milder summer
      - program expansion in areas with less air conditioning saturation
  - Improved interval data quality with new mesh network SmartMeter™ technology resulting in a 99.25% capture rate

Load Research Pilot Drivers/Objectives

- Dynamic Load Profiles (DLP) need to be posted within 7 days since 1998 (per 1997 CA Public Utilities Commission Order)
- SmartMeter™ data delivery path will introduce at least 1 day delay in receiving interval data
  - previous week needs to be finished by Friday
- Objectives of Pilot
  - Ensure that the interval data from PG&E's SmartMeter™ system is comparable to the interval data in PG&E's MV90Xi™ system
  - Ensure that the timing of the interval data delivery meets regulatory needs

Load Research Pilot Design

- Original Load Research Pilot called for:
  - 30 dual-socket sites to be installed by 5/1/09
  - Interval data collection from 5/1-9/30/09
- Final Pilot included:
  - 10 dual-socket sites installed by 6/1/09
  - Interval data collection from 6/1-9/30/09
- Conversion of current Load Research interval meters to SmartMeters™ scheduled for 1/1/10

Load Research Pilot Results

- Data very comparable ~90 percent of the intervals match (are within 10%) of each other.
- Data delivery seems to be reliable. We received 99% of the data on time (within 2 days.)
- Conclusion: Load Research Meters can migrate to SmartMeter™ System

Demand Response and Load Research Challenges

- Straddling of 2 interval data systems until SmartMeters™ are fully deployed
- Billing centric data collection
- Timeliness and accessibility of SmartMeter™ interval data
- Meeting regulatory reporting timeframes
- Current VEE rules may not be adequate – although current VEE rules met aggregate billing determinant needs, they may not meet Demand Response and Load Research interval data needs
- Data security
- Backup Systems
- Retention and storage of data

Summary

- The SmartMeter™ program will provide:
  - enhanced customer service and increased operational efficiencies to PG&E
  - additional customer energy savings potential and opportunities to opt in/out of Demand Response programs
  - in the future, via the HAN technology, for more end use data collection at a lower cost than end-use meter installations
  - real time or near real time information that will allow customers to better understand the exact impact appliance and air conditioning use have on the electric usage and bills
  - advanced sensing, communications, computing and control capability
  - a significant investment in California's energy infrastructure
    - Enhanced operational efficiency
    - Range of new benefits for PG&E, its customers and the State of CA
  - Improved power grid reliability
  - Potential interval data challenges

For any questions, feel free to contact

Michael Alexander
245 Market Street
San Francisco, CA 94105
maa6@pge.com
(415) 973-2932

Ann George
Pacific Gas and Electric
245 Market Street
San Francisco, CA 94105
aeg3@pge.com
(415) 973-5433

Leslie MacDonald
Pacific Gas and Electric
77 Beale Street
San Francisco, CA 94105
slm5@pge.com
(415) 973-4540