
Pacific Gas and Electric Company

Advanced Metering Infrastructure

Third Quarterly Report on the Pursuit of Automated Meter Reading for
Water Meters

(A.07-12-009)



OCTOBER 15, 2009

**Pacific Gas and Electric Company
Third Quarterly Report on the Pursuit of Automated Meter Reading for Water
Meters**

In the California Public Utilities Commission's (CPUC) March 12, 2009 decision concerning Pacific Gas and Electric Company's (PG&E) proposed SmartMeter™ Program Upgrade, the CPUC stated:

In order to pursue automated meter reading for water meters, PG&E shall work with the water utilities in its service territory, either through multi-party workshops or direct dialogue. PG&E shall report back to the Commission on the status of its efforts and results of its discussions on a quarterly basis, beginning April 11, 2009, until completed. (D.09-03-026, p. 197 (Ordering Paragraph 11).)

This report is the third such quarterly report issued in compliance with the Ordering Paragraph.

Background

There are hundreds of water agencies in PG&E's service area. Most of these agencies are municipal utilities and are not CPUC-regulated utilities. The largest water distribution utility has about 400,000 customers while some of the smallest ones have as few as 10 customers. Some of these water utilities historically served their customers based on flat rates and without metering.

Progress since July 15, 2009 Quarterly Report

PG&E held a workshop in San Francisco for interested water utilities on September 14, 2009. Seventeen utilities attended the workshop, representing approximately 1.3 Million water meter endpoints. Representatives from the CPUC staff also attended.

The workshop agenda was as follows:

- Provide SmartMeter™ Project background including deployment plan and project architecture overview
- Discuss project status including:
 - Project benefits to customers, California, and the business operations source of utility benefits
 - Network profile and network performance statistics
 - Deployment challenges including network communication signal strength and meter location problems
 - Online energy use information
- Discuss possible automated metering benefits to water utilities including: enablement of water conservation, potential cost reductions and compliance with state laws.

The complete workshop presentation is attached, as well as a list of the water utilities represented at the workshop.

During the workshop the parties in attendance held discussion and provided comments regarding the following SmartMeter™ topics: technology selection, physical hardware installation, meter data presentation and access to water usage data. PG&E discussed the extent of potential service offerings and the potential for a pilot program in downtown Oakland. PG&E also discussed how data separation and delivery to respective utilities interfaces may occur.

Next Steps

In response to a request from the East Bay Municipal Utilities District (EBMUD), PG&E has started dialogue with EBMUD regarding a potential pilot that would leverage SmartMeter™ network technology. The pilot may test network to gas and water meter communications with the goal of identifying the relative network design requirements necessary to collect, parse and redeliver water and gas usage data from a common communication network. PG&E and EBMUD are currently discussing the scope and timeline of the pilot.

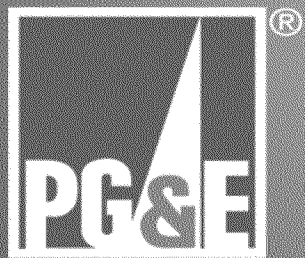
In addition, PG&E requested utilities in attendance at the September 14 workshop to provide the following information to help PG&E better understand water utilities' concerns and issues:

- Utility name and contact information
- Service area location within California
- The number of service points your utility serves
- Level of interest (high, medium or low)
- Your current stage of development

PG&E will aggregate inquiries and analyze responses from water utilities and communicate next steps by the next quarterly report.

PG&E's next report will be issued on or around January 15, 2010.

SmartMeter™ & Water Utilities Workshop



Workshop Objective and Agenda

Workshop Objective: Per decision 06-07-027, provide a forum for California Water Utilities to discuss opportunities to leverage the PG&E SmartMeter™ infrastructure for automated water meter reading

Agenda

Introductions

Redacted

SmartMeter Project

- Background
- Project Status

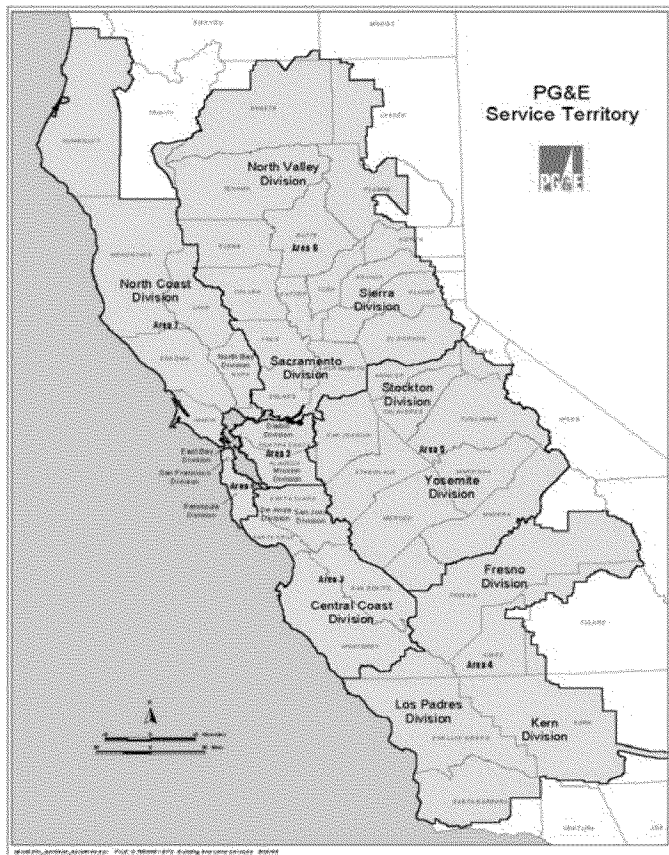
Jim Meadows

Automated water metering
Next Steps

Redacted



Pacific Gas and Electric Company



Energy services to 15 MM people:

- 5.1 MM Electric customer accounts
- 4.3 MM Natural Gas accounts

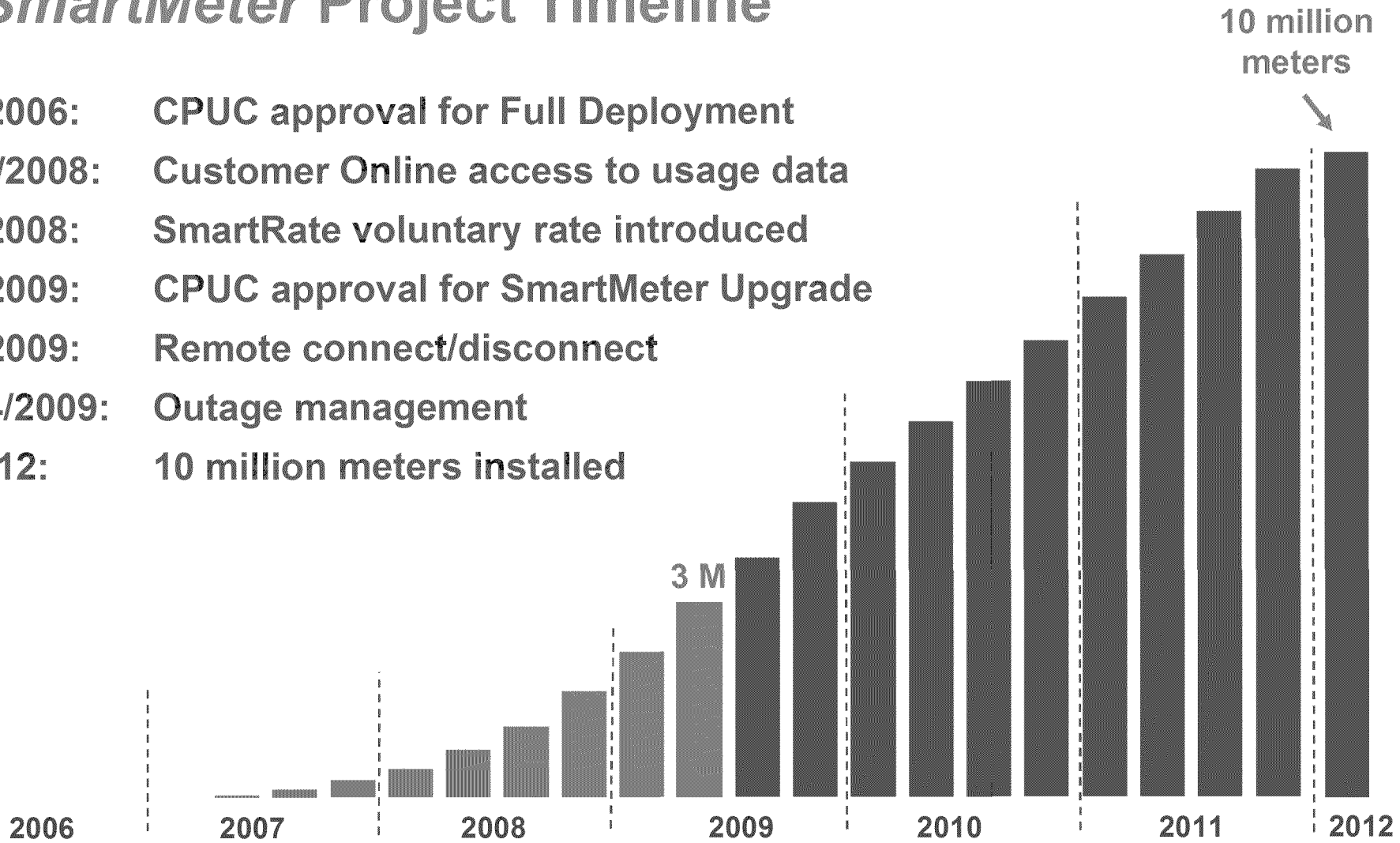
70,000 square miles with diverse topography

20,000 employees

A regulated investor-owned utility

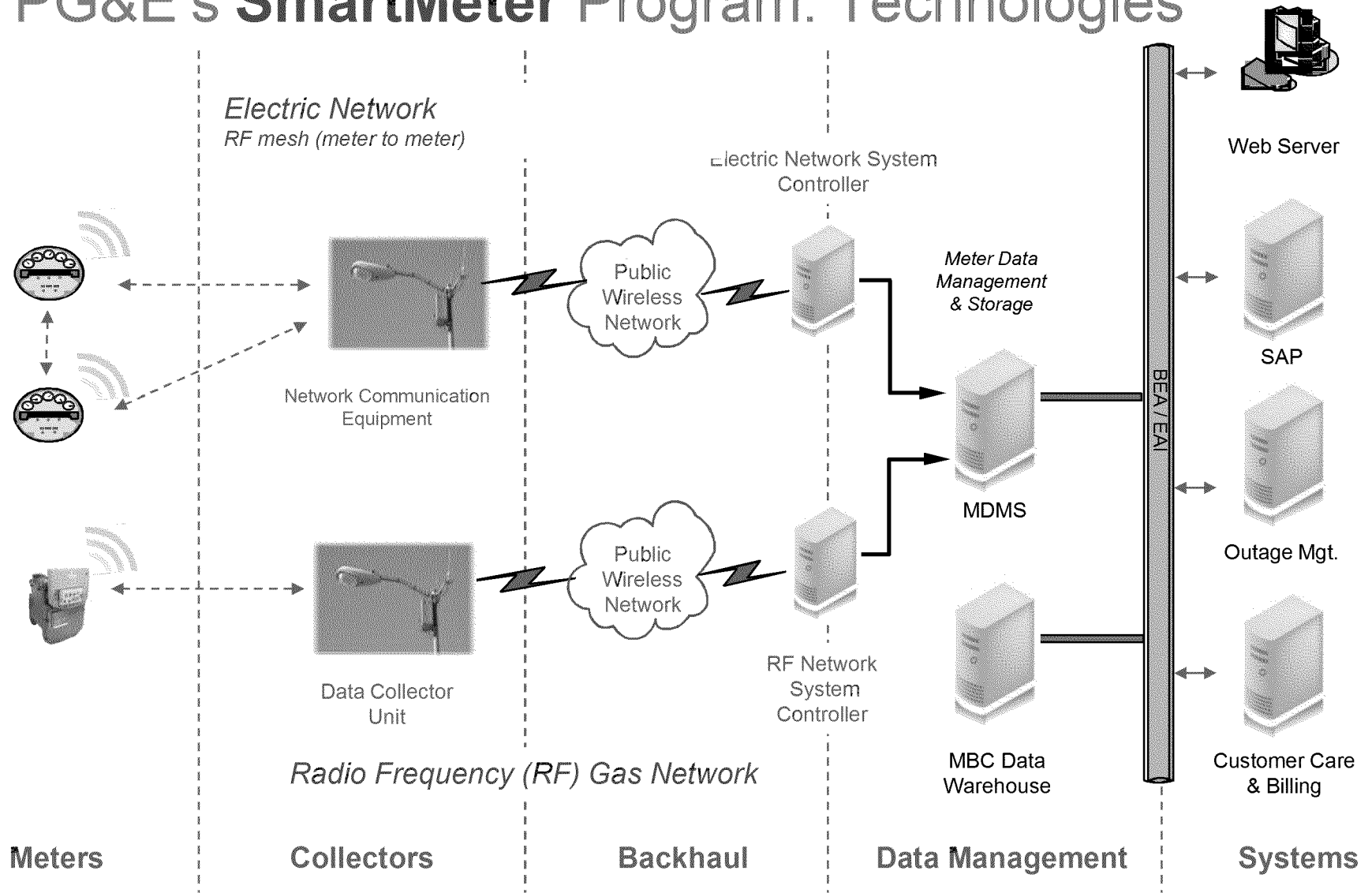
SmartMeter Project Timeline

- 7/2006: CPUC approval for Full Deployment
- 12/2008: Customer Online access to usage data
- 5/2008: SmartRate voluntary rate introduced
- 3/2009: CPUC approval for SmartMeter Upgrade
- 5/2009: Remote connect/disconnect
- Q4/2009: Outage management
- 2012: 10 million meters installed





PG&E's SmartMeter Program: Technologies





PG&E SmartMeter™ program benefits

★ Customers

- Receive usage information to better understand and manage their bills, and be able to participate in energy efficiency and demand response programs
- Experience less inconvenience and intrusion by no longer needing to unlock gates and tie up dogs for monthly meter reads
- Reduction in the causes of delayed, inaccurate and estimated bills
- Experience faster outage detection and restoration times
- Opportunity to turn service on and off remotely

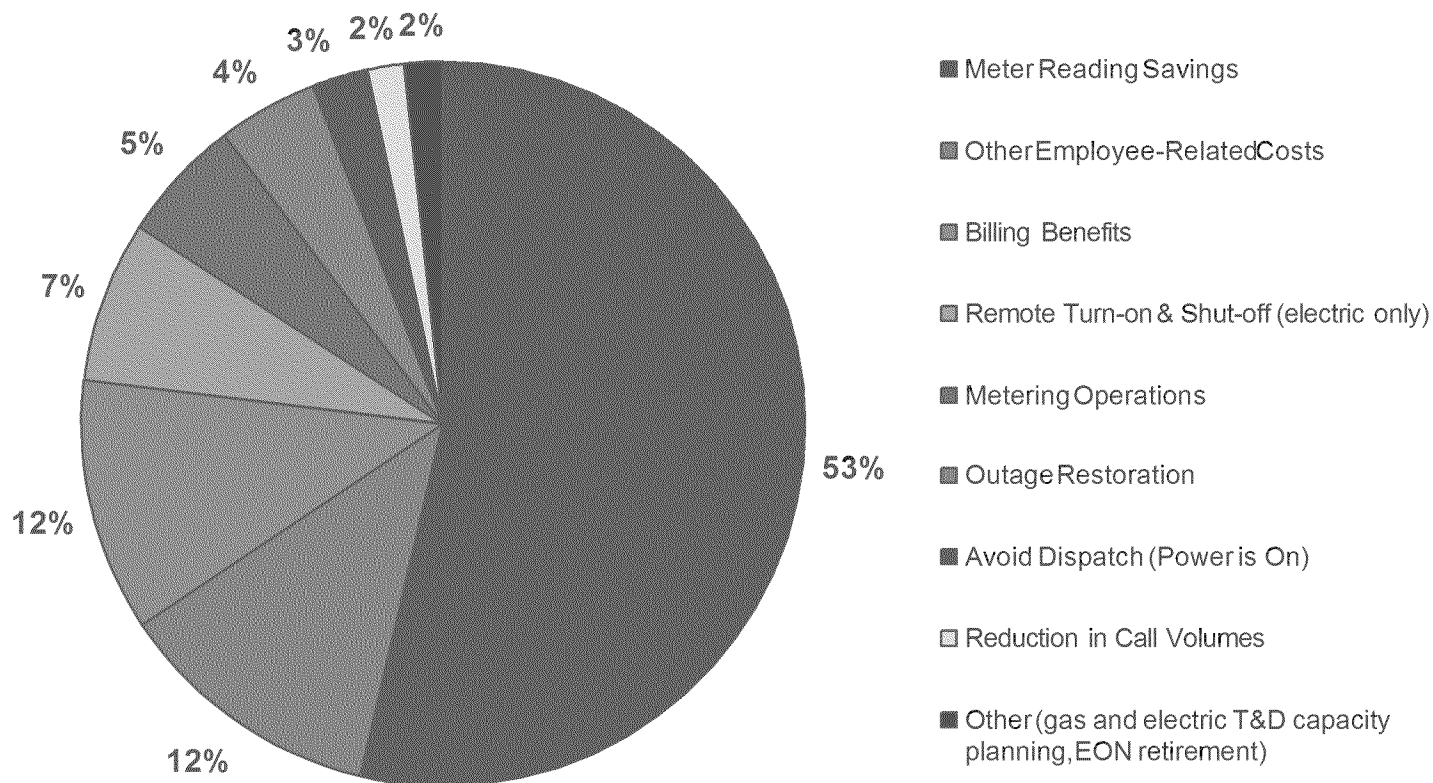
★ PG&E

- Experiences reduced operating costs
- Improved billing efficiency through reduced exceptions processing
- Experiences improved customer satisfaction
- Accomplishes goal of lower procurement costs
- Achieves reduced energy theft
- Provides improved outage management

★ CPUC/State

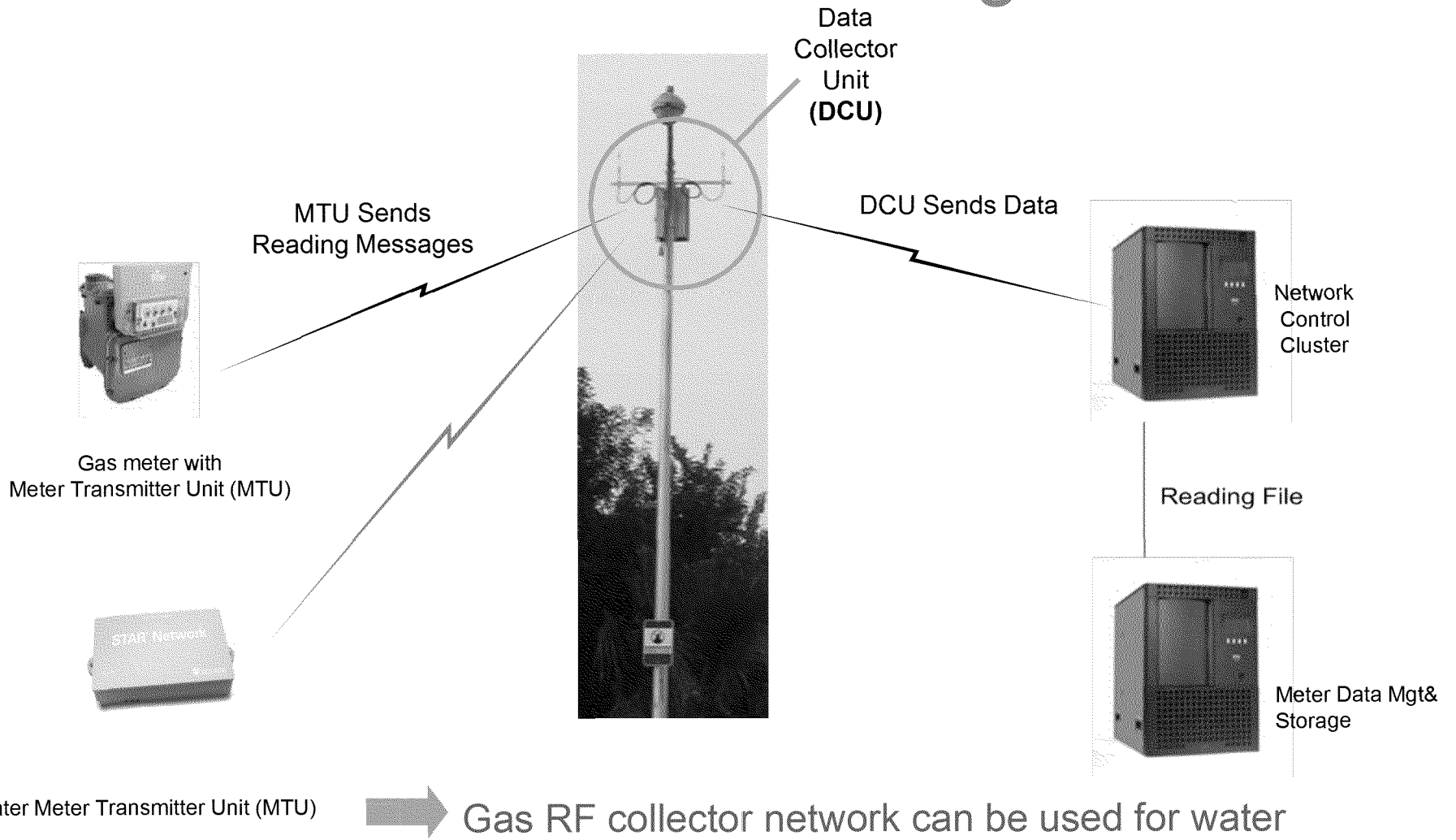
- Supports the CPUC's price-responsive tariff requirements

Annual SmartMeter Benefits from Operations (at full deployment)



- ➔ Operational benefits go well beyond meter reader savings
- ➔ Total annual benefit from operations = \$160.5 Million

Profile of the SmartMeter™ gas network

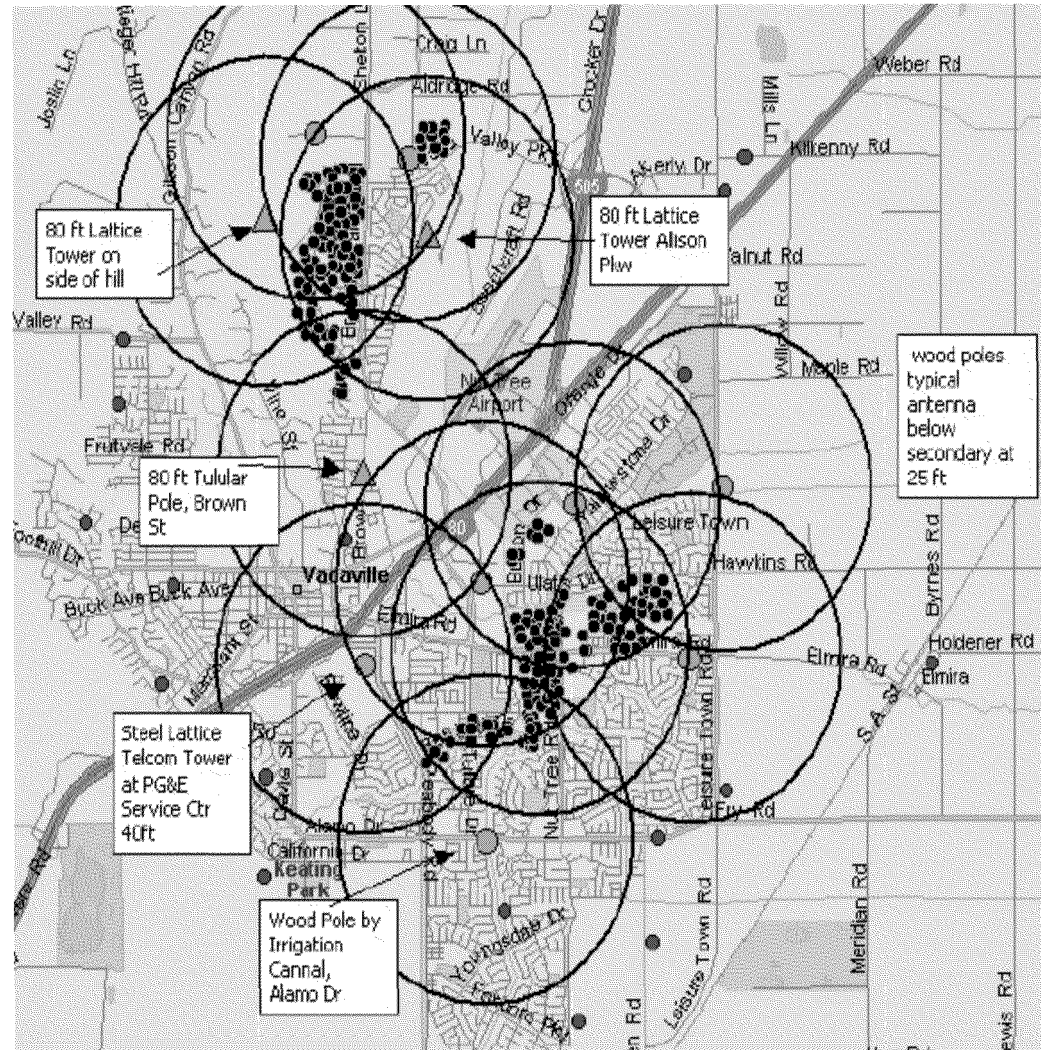


The gas network is designed for redundancy

On average, each gas meter will be read by at least 3 data collector units (DCUs)

The DCU reception range is approximately 1 mile

A single DCU can handle up to 50,000 meters



SmartMeter Project Status – Network Performance Standards

<u>Performance criteria</u>	Performance from Jan. '09 thru Jun. '09	Performance from Jul. '08 thru Dec. '08
1. Electric module failure rate	0.12 %	0.05 %
2. Gas module failure rate	0.45 %	0.05 %
3. Electric network failure rate	0.29 %	0.35 %
4. Gas network failure rate	0.24 %	0.20 %
5. Electric billing data collection failure rate	0.81 %	0.75 %
6. Gas billing data collection failure rate	0.20 %	0.13 %

The PG&E systems continue to perform as designed and within the specified system requirements



Challenges: Signal Strength Problems

meter installation and communication challenges at certain customer locations



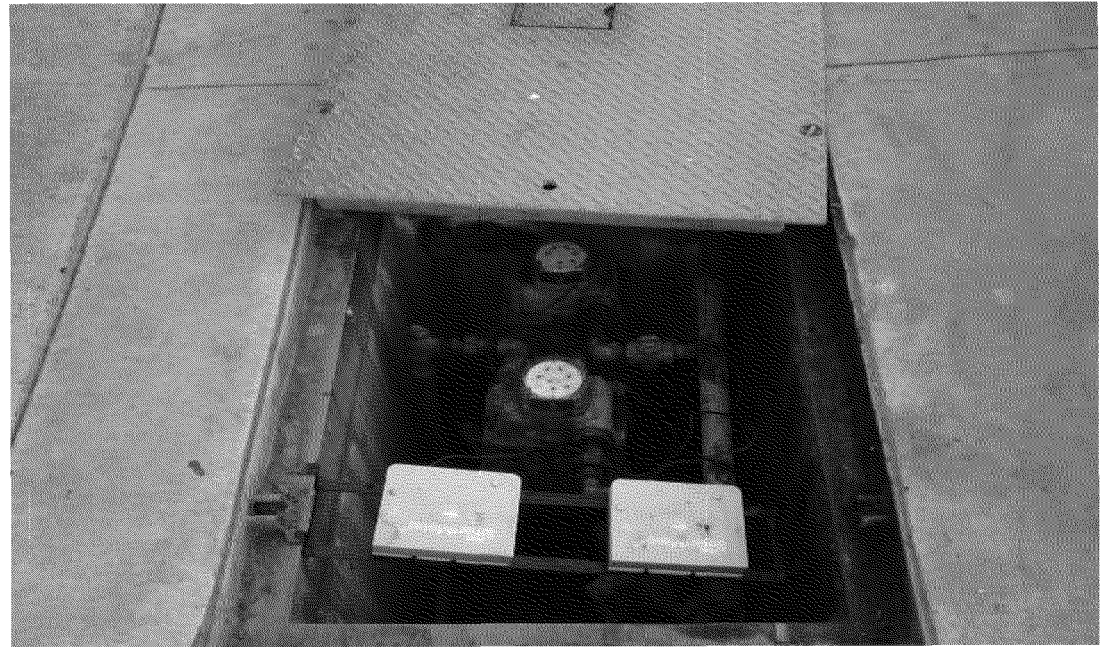
meters in metallic conditions, underground or near other radio transmissions can be problematic



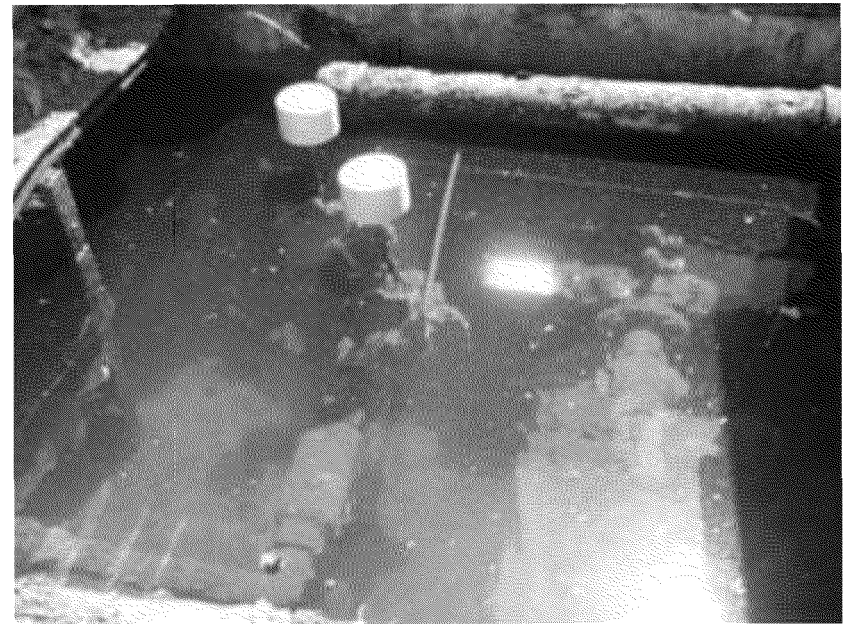


Challenges: Meter Location Problems

Meters in underground vaults have proven very difficult to read without a surface mount antenna



Meter modules used by PG&E generally do not work submerged



Challenges to overcome

- Compare PG&E network footprint to Water Co need
- Endpoint availability / compatibility
- Network accommodations for typically lower signal strength
- Test for any network performance issues
- Determine operational system coordination
- Data security in PG&E data center
- Standardize data interface capability to Water Co

Online Energy Use Information

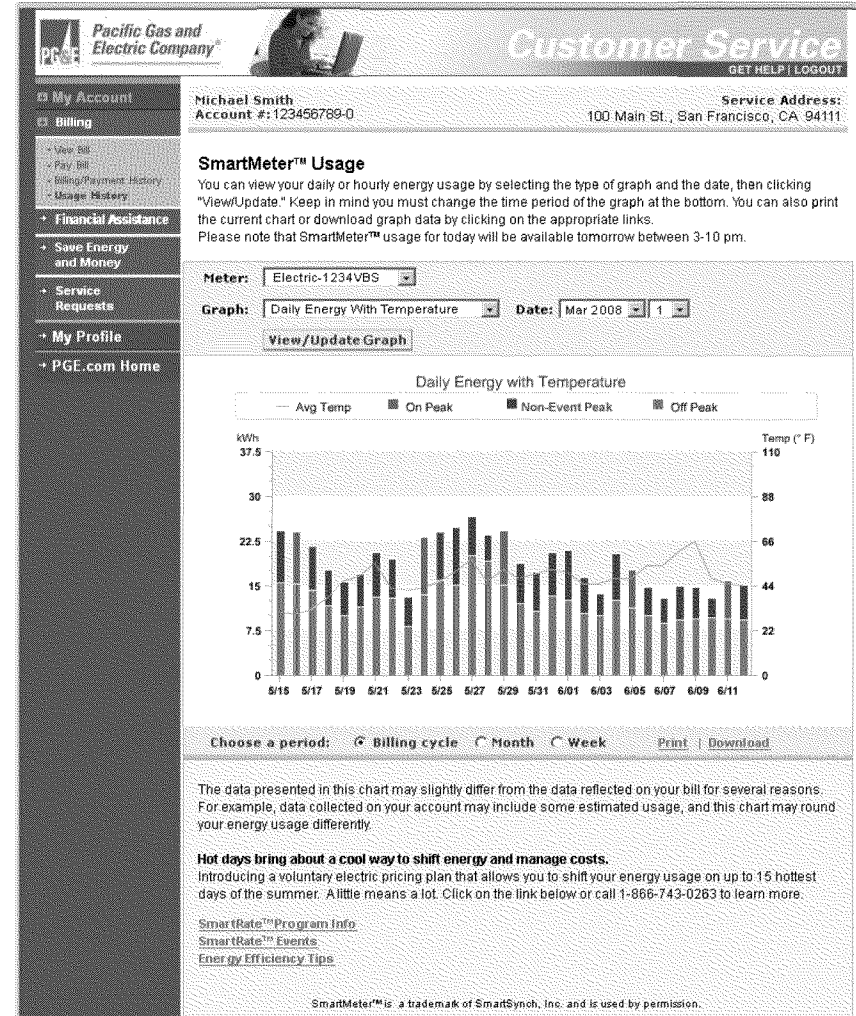
Secure customer access through PGE.com

Displays hourly electric use by day

Customers can view data by billing cycle, month, or week

Customer service reps can view same graphs

22% of customers on SmartRate Program accessed online tools to monitor daily energy usage



The SmartMeter program is really about information - getting the right information to the right people

* Customers

- Interval usage data for home and business energy management
- Real time energy usage data to premise from meter
- Building automation
- Home energy/bill management tools and systems
- Smart thermostat (programmable communicating thermostat – PCT)
- Appliance control and monitoring
- In-home displays
- On-line reports, tools, services and rate alternatives

* PG&E

- Direct load control (air conditioner, water heater, pool pump, etc.)
- CPP and other demand response programs and rates
- Targeted regional/area TOU programs
- Smart thermostat control (programmable communicating thermostat – PCT)
- Distribution planning
- Distribution voltage management
- Gas system planning
- Pre-pay metering
- Distribution fault detectors
- Capacitor bank controls
- Transformer load monitoring
- Meter health monitoring
- Preventive line maintenance data (momentary)
- Identification of facility performance or customer usage anomalies
- System load forecasting and settlement
- Enhanced outage data management
- Energy load research program flexibility
- Gas distribution maintenance (e.g. cathodic protection monitoring)

* CPUC/State

- Energy resource planning
- Data for ISO system control
- Load control programs
- Demand response programs

Value proposition for automated water metering

Enable Water Conservation

- Early leak detection
- Water conservation opportunities through TOU rates and customer access to real time consumption information
- Provides hourly data (while substitutes provide data on a monthly basis)

Potential Cost Reductions

- Saves Pumping energy costs
- Eliminates the need for water utilities to install fixed network and its associated risks
- Better water distribution system planning and maintenance through load data analysis

Create Additional Opportunities

- Enables compliance to State Law AB 2572 at lower cost
- Eliminates challenges of hard to read meters

Value proposition for partnering with PG&E

Meter reading network technologies developed and deployed

- Avoid capital expenditure for fixed network
- No additional city/county permits or CEQA approval required
- License agreements with third parties already negotiated and in place

With the proper meter module, meters can be read immediately

Allows surgical or phased deployment

- Positive business case for accounts with meter reading challenges

Partnering with PG&E provides water utilities the opportunity to realize incremental benefits from automated water metering based on a positive business case



Next Steps

Exchange of information to understand your concerns and issues

Please contact Redacted if you are interested in discussing opportunities to partner with PG&E in deploying automated meter reading technologies

Please note the following in your email:

- Utility name and contact information
- Service area location within California
- The number of service points your utility serves
- Level of interest (high, medium or low)
- Your current stage of development

Please note that PG&E will require a minimum aggregated meter commitment and a contracted period of commitment from utilities that decide to implement automated meter reading in partnership with PG&E



Questions?

Water Utilities in Attendance for 9/14/09 Workshop
Water Utility or Company represented
Alameda County Water District
Aquacue
Chevron Energy
City of Antioch
City of Davis
City of Menlo Park
City of Mountain View
City of Petaluma
City of Petaluma
City of Redwood City
City of Santa Rosa
City of Sunnyvale
City of Vallejo
City of Windsor
East Bay Municipal Utilities District (EBMUD)
Marin Municipal Water District
North Marin Water District
Sacramento Suburban Water District
San Francisco Public Utilities Commission
San Jose Water Company
Silverspring Networks