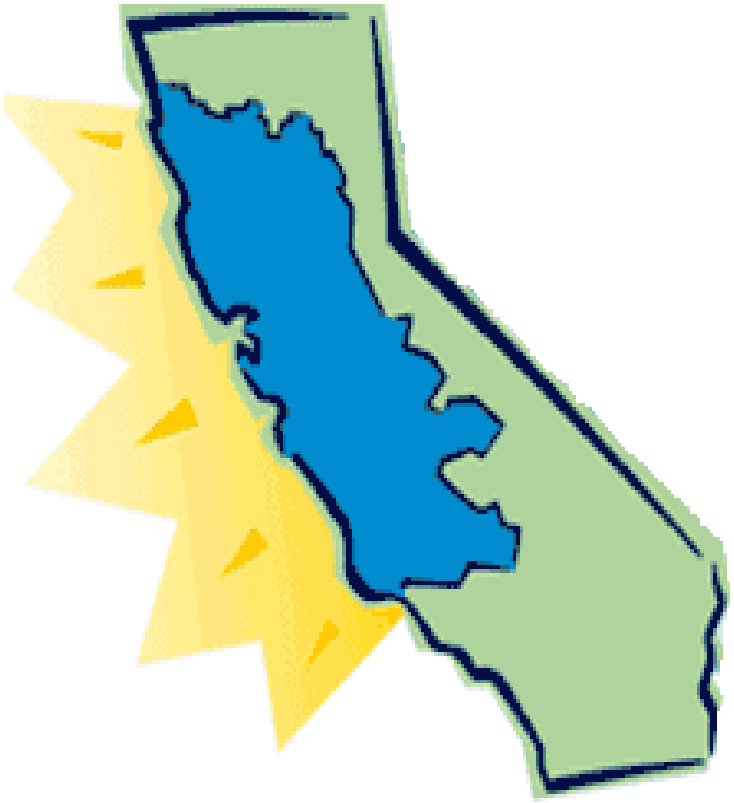
Overcoming Financial Barriers to Energy Efficiency

April 6, 2010

Overview

- PG&E and Energy Efficiency
- CA Energy Efficiency Regulatory & Policy Roadmap
- Financing Options for Efficiency & Demand Response
- Case Studies

PG&E Service Territory



- 70,000 square miles
- 15 million people
  - about 1 in every 20 Americans
- 6 million customers
  - 87% residential
  - 13% non-residential
- 139,000+ circuit miles of electric lines
- 45,800+ miles of natural gas pipeline

- Power Delivery Mix
  - ~47% Natural Gas
  - ~23% Nuclear
  - ~13% Hydro
  - ~14% Renewables

PG&E's 30 Year Efficiency History

- PG&E was one of the first utilities in the nation to establish an energy efficiency program. Today our programs are among the largest in the United States.

- Since 1976 PG&E's energy efficiency programs have:
  - Saved a total of 155 million MWh and 12.5 billion therms from installed measures (cumulative lifecycle savings)
  - Helped California avoid building 24 large power plants
  - Saved customers over $24 billion
  - Avoided 155 million tons of CO2 emissions

Keys to Energy Efficiency Success in California

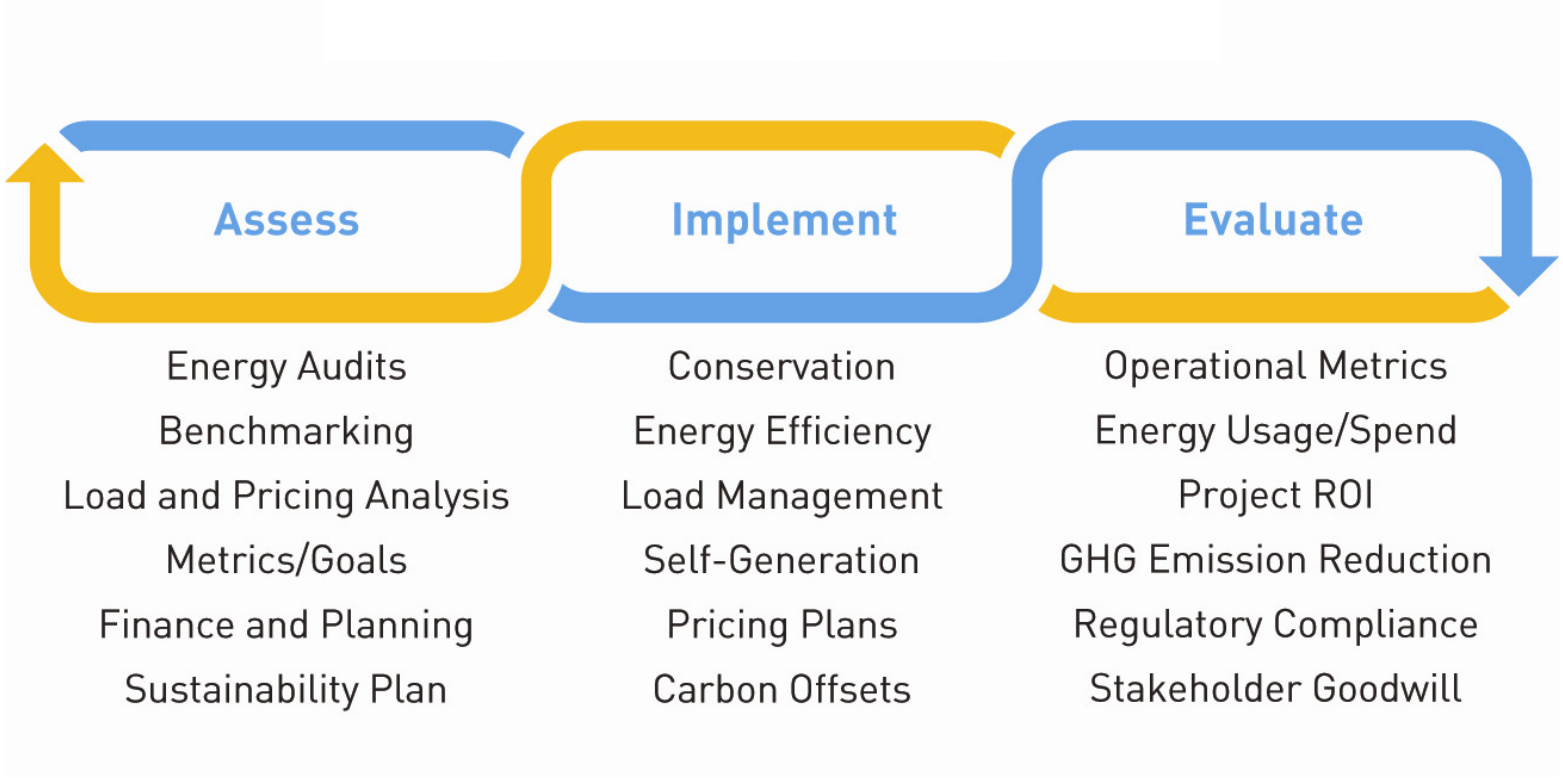
- Sustained commitment by regulators, lawmakers, utilities and other stakeholders
  - California's Energy Action Plan established a "loading order" of energy resources to guide procurement decisions made by utilities:
    1. Energy efficiency
    2. Demand response
    3. Renewable generation
    4. Cleanest available conventional generation
- Utility revenues are decoupled from sales
- Public interest in improving environment and mitigating climate change
- Aggressive improvements to building codes and appliance standards
- Efforts include customers, retailers, manufacturers and distributors
- Utilities recognized as energy efficiency and demand response experts

Why Does PG&E Support Demand Management?

- Our customers want it!
- Helps us mitigate impact of demand growth on infrastructure
  - PG&E expects to meet ~50% of its demand growth through demand management
- Reduces our long term bill impacts
  - Energy efficiency is less expensive than new generation
- Allows us to allocate capital to other needed infrastructure projects

PG&E's Approach to Demand Management

- Integrated approach to Demand Side Management:
  - Energy Efficiency
  - Demand Response
  - Distributed Generation (e.g. Solar)



Customer Financing Mechanisms: Part 1

- Rebates
  - For prescriptive EE measures
    - Example: Replace 200 light fixtures
  - Customers purchase eligible products, then apply for rebate
- Incentives
  - For customized measures, determined on project basis prior to install
    - Example: Replacement of customer built 3-story tall furnace
- On-bill Financing (Q3 2011)
  - Loans at 0% interest to cover 100% of upfront efficiency investment costs
  - Customer pays loan on monthly utility bill using savings in monthly energy costs from installed efficiency measures
- Utility Energy Services Contract
  - For federal agencies
  - Utility arranges financing to cover project capital costs
  - Financing repaid over the contract term from savings in monthly energy costs from installed efficiency measures

Customer Financing Mechanisms: Part 2

Demand Response

- Customers contribute to energy load reduction during times of peak demand in exchange for financial incentives

- Example Program: PeakChoice™
  - Participation Level—Determine level of commitment, e.g. guarantee load shedding or make a best effort
  - Advanced Notice—How much advanced notice required (e.g. hours, days)
  - Reduction Size—Amount of reduction to be accommodated
  - Timing—Select between weekdays from 1 p.m. to 7 p.m. or 24 / 7
  - Total Days—Select total number of days able to participate
  - Paid up to $1.00/kWh for load reduction

- Example Program: Automated DR
  - PG&E and facility energy managers identify demand reduction strategies
  - Customers provided funds to pre-program their energy control systems
  - PG&E automatically sends signal via Internet to energy control systems
  - Initiates pre-programmed, pre-authorized demand reduction strategies

Energy Efficiency Case Study: Safeway

- Customer Profile
  - Largest supermarket chain in CA
  - 200 stores in PG&E territory
  - Received **$38.4M** in rebates 1990-2009
  - **Total Energy Savings (2005–mid 2009)**
    - 8.5 MW reduced electric load
    - 65,000,000 kWh saved
    - 64,000 therms saved

- Store Remodeling Rebates
  - $1.7M – replaced inefficient refrigerated cases, controls, compressors, doors etc.
  - $450K – lighting retrofit of sales floor and refrigerator cases; cut consumption in half
  - $1M+ – replaced refrigerated door gaskets; saving 21.3 million kWh
- New Construction
  - Design incentives of $200,000 at 12 newly constructed stores to exceed energy efficiency required by CA's Title 24 commercial building energy standards
- Retrocommissioning
  - Initially selected 13 facilities targeting refrigeration, lighting, HVAC system controls, variable frequency drives, door seals, and doors.

Demand Response Case Study – San Francisco Marriott

- Customer Profile
  - 1.5 million square feet of space to light, heat, cool and ventilate
  - Variable energy needs in guest rooms, lobbies, corridors, banquet rooms, restaurants, lounges, shops, kitchens, fitness center, pool and parking garage
- Demand Response
  - Sample Measures Include
    - Turning off one compressor in one chiller
    - Shutting down fountain pumps
    - Shutting down 2 of 12 elevators
  - Dropped 300-800 kW between 2 p.m. and 7 p.m. during six of eight Energy Action days in one summer

Integrated EE & DR Case Study – E. & J. Gallo Winery

- Customer Profile
  - Leading US wine exporter
  - Must continuously refrigerate perishable products
- Demand Response
  - Installed automated controls
  - Increased DR capability from 250 kW to 4,400 kW at one facility
  - PG&E incentives covered $438,000* in capital costs
- Energy Efficiency
  - Implementing efficiency with PG&E since 1990
  - Measures include:
    - Retrofits to refrigeration system, process boilers, and oversized high-capacity condenser
    - Upgrades to lighting and air compressors
    - Installing variable speed drives on cooling towers
  - **1990 - 2007 Energy Efficiency**
    - 19,248,169 Annual kWh savings
    - 3,160 kW savings
    - 473,303 Annual therm savings
    - $1,653,927 Project incentives

*Based on dollars per kilowatt of verified load reduction capability

Questions?