Energy Information Systems: A Utility Perspective

Keith Forsman and Theda Silver-Pell
Pacific Gas and Electric Company

17 March 2010

What is the utility perspective?

1) Secure cost-effective and robustly verifiable energy savings

2) Comply with regulatory requirements and objectives

Potential Benefits

Using EIS to secure savings

Energy information systems have the potential to secure and incentivize new kinds of energy savings

- Monitoring-based commissioning
- Automated fault detection
- Behavior change
- Difficult to calculate or new measures
- Smoother integration with demand response programs

Using EIS to Verify Savings

Energy information systems have the potential to improve verification of energy savings

- Simplification
- Cost-effectiveness
- Accuracy
- Extension of measure life
- Regulatory buy-in

Challenges

Establishing Accurate Baselines

Establishing and maintaining accurate baselines for energy use can be challenging

- Weather variation
- Use variation (occupancy, throughput, operating hours)
- Equipment changes

Overall Cost-effectiveness

The cost of energy information systems may be prohibitive

- For our customers
- For the utility (based on total resource cost goals)
- Can the same money be spent on something else for more savings?

Structuring Incentives

Providing incentives for EIS may present challenges

- Set up for one-time vs. ongoing payment
- Incentivizing the right things
- Double (or more) dipping with other incentives

Existing PG&E Use of Energy Information Systems and Tools

Monitoring-Based Commissioning

PG&E works with third party implementers to provide customers with monitoring based commissioning programs

- EnerNOC
- Enovity

Gives implementers ongoing opportunity to identify new projects through automated diagnostics, extend “measure life”, and market services.

Retrocommissioning Incentive Potential

PG&E does not currently claim savings or directly incentivize EIS, but:

- Costs associated with installing these systems may be included in overall project cost
- This could theoretically increase a capped incentive
- Customers haven't taken advantage of this yet

Customer Experiences

Adobe Headquarters

- Advanced control system (30,000 data points)
- Visual display of real-time activity
- Demand response benefits
- Identified swings in chiller demand

Customer Experiences

A different customer…

- EIS highly desired by chief engineer
- Quoted cost of required submetering is very high ($70,000+)
- Currently PG&E has not been able to find a way to offset cost
- Unlikely to be implemented
- Lots of other ways to use the money

Energy Assessment Tools

Potential audit tools being considered that would attempt to claim savings for behavior change

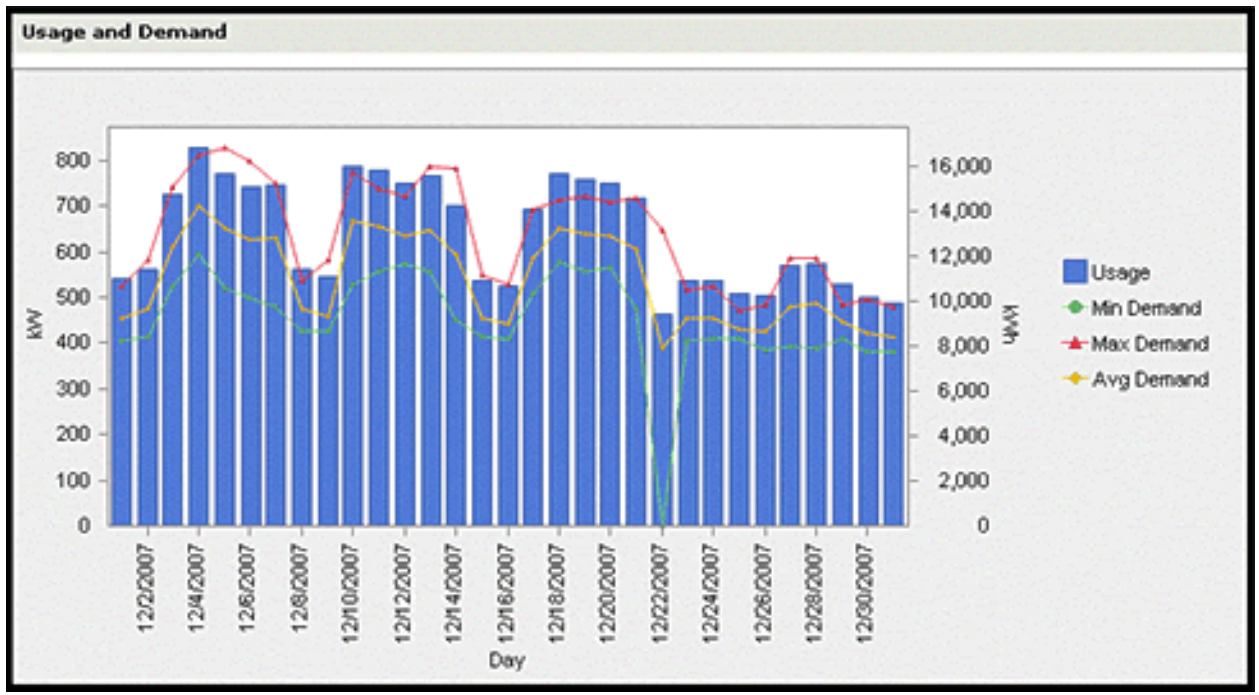
- Target small and medium businesses
- Interactive – customer can provide more or less information

SmartMeters

- Ability to capture interval data for customers not on time of use meters (<200 kW)
- Potential for behavior change, but meters do not currently have this ability

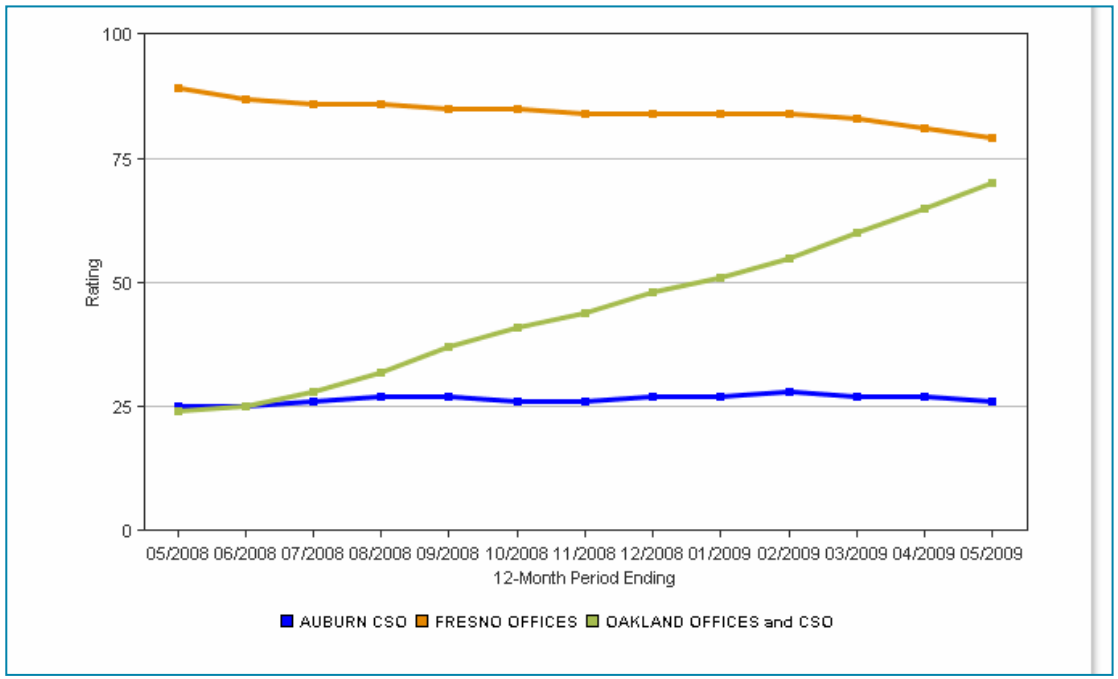
PG&E's InterAct Energy Management Tool

Provides detailed, interval, meter-level data with customizable reports and graphs



ENERGY STAR® Portfolio Manager

Customizable reports and graphs for whole building(s), 1 or 12 month data granularity



Data Granularity Costs and benefits

High-level energy information tools have advantages:

- Free or low cost
- Accessible (no additional hardware)
- Easier to understand/maintain

They may not be as useful for:

- Automated fault detection
- Real-time viewing of data
- Data for specific end uses

These tools should not be overlooked when considering the actual needs of a facility and desired outcomes.

Research Recommendations

Does this stuff actually get energy savings?

What is the potential savings?

- How should it be calculated?
- How much cost can it justify?

Net to Gross and Realization Rate

- Are the savings actually realized?
- What is the actual customer motivation?

Focus on "real-world" experience

Increase communication with equipment and software vendors

Business case and best practices of leading implementers

Identify the current market penetration and market potential

Identify the factors that would make a facility (or building fleet) a good candidate

Product Recommendations

Reporting Capabilities

Standardized report or other documentation that could be used by utility

Carbon tracking

High-level reporting capability that can be used for strategic energy management programs

Analysis for demand response

Normalize for Accurate Baselines

Establishing and maintaining accurate baselines for energy use is a very desirable feature:

- Weather normalization
- Use normalization (occupancy, throughput, operating hours)

Questions?

Keith Forsman
415-973-2380
kef1@pge.com

Theda Silver-Pell
415-973-2158
trsg@pge.com