

Electricity Management System Customer Focus Groups Top Line Summary Report

ET Project Number: ET11PGE4211

Project Manager: Ilyssa Lu
Pacific Gas and Electric Company

Prepared By: Dan Engel
Sarah Woehleke
The FSC Group
101 Montgomery Street, 15th Floor
San Francisco, CA 94104

Issued: March, 2012

© Copyright, 2012, Pacific Gas and Electric Company. All rights reserved.

ACKNOWLEDGEMENTS

Pacific Gas and Electric Company's Emerging Technologies Program is responsible for this project. It was developed under internal project number ET11PGE4211. Freeman Sullivan conducted this technology evaluation for Pacific Gas and Electric Company with overall guidance and management from Ilyssa Lu. For more information on this project, contact ijl3@pge.com.

LEGAL NOTICE

This report was prepared for Pacific Gas and Electric Company for use by its employees and agents. Neither Pacific Gas and Electric Company nor any of its employees and agents:

- (1) makes any written or oral warranty, expressed or implied, including, but not limited to those concerning merchantability or fitness for a particular purpose;
- (2) assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, process, method, or policy contained herein; or
- (3) represents that its use would not infringe any privately owned rights, including, but not limited to, patents, trademarks, or copyrights.

ABBREVIATIONS AND ACRONYMS

EMS	Energy Management System
DR	Demand Response
EIS	Energy Information System
ROI	Return on Investment
EE	Energy Efficiency

FIGURES

Figure 1. Decision Analysis Graphic..... 6
Figure 2. Energy IQ Website 12
Figure 3. EMS Enabling Tools 14

CONTENTS

EXECUTIVE SUMMARY 1

INTRODUCTION 1

OVERVIEW 1

Research Project Objectives 2

Focus Group Construct 2

Interview Construct 3

Key Findings 4

Energy Management Perspective 4

Customer Barriers 7

Testing Incentive Concepts 14

Feedback on Potential EMS-enabling Tools 14

Recommendations and Insights 16

APPENDICES 17

EXECUTIVE SUMMARY

This focus group study was conducted to understand the qualitative barriers to adoption for Energy Management Systems technology for PG&E customers.

PROJECT GOAL

The goal of the focus groups was to identify the different issues around technology adoption for Energy Management Systems and segment this analysis by business segment and customer type.

PROJECT DESCRIPTION

This is a market study conducted using focus groups and individual interviews. A number of customers from all business sizes and industries were gathered for an in depth group discussion to illicit specific feedback on how they view energy efficiency and leveraging EMS technology to achieve efficiency goals.

PROJECT FINDINGS/RESULTS

Please see expanded explanation in report.

PROJECT RECOMMENDATIONS

Please see expanded explanation in report.

INTRODUCTION

FSC looked into the perspectives that PG&E's medium and larger commercial and industrial customers hold in terms of adopting or upgrading existing EMS in their facilities with a series of focus groups and in-depth interviews.

FSC's goal is to present the insights gained to help PG&E improve the level of participation as well as resultant energy efficiency savings derived from any subsequent PG&E EMS programs, as well as identify customer characteristics that may allow PG&E to better target its EMS program marketing in order to maximize the value derived from the incentive dollars expended.

OVERVIEW

- Research Project Objectives
- Focus Group Construct
- Interview Construct
- Key Findings

- Feedback on Potential EMS-enabling Tools
- Recommendations and Insights

RESEARCH PROJECT OBJECTIVES

EMS Focus Group Objectives:

- Hypothesis: Energy efficiency enabled by EMS technology will ultimately benefit both the customer and PG&E
 - Customer benefits include – better control over electricity costs, increased customer/tenant satisfaction, improved responsiveness to customer/tenant needs, “green” product differentiation among competitive buildings, etc.
 - PG&E benefits include – improved load profile consumption, reduction in greenhouse gases, expanded uptake on energy efficiency investments, enhanced DR potential within participating EMS-enabled facilities, etc.
- Key Objectives
 - Explore overall level of customer interest in EMS investments.
 - Understand how best to encourage customers to “upgrade” existing EMS applications to include more robust functionality.
 - What type and size of customers should be targeted?
 - Solicit customer feedback regarding potential incentive designs.

FOCUS GROUP CONSTRUCT

Focus Group Methodology:

- Group Participant Selection: 3 levels of groups created
 - “aware” level – those who have shied away from investing in EMS
 - “basic” level – those whose investment is tied to a more basic EMS design
 - “sophisticated” level – those who have made an investment in a sophisticated EMS
- Discussion guide – attached as appendix

Focus Group Participant Matrix:

- Large, sophisticated participants (Sunnyvale – 7/26 am)
 - 6 participants
 - Max load ranging up to 26,914 kW
 - Institutional/Commercial participants: commercial property management, healthcare property management, local (city) government, high-end hotel, and seafood warehouse
- Medium Aware participants (Sunnyvale – 7/26 pm)

- 9 participants
- Max load ranging up to 187 kW
- Institutional/Commercial participants: commercial property management, church group, theater facility, car wash chain, and small restaurants/fast food franchises
- Medium Basic participants (Concord – 7/27 am)
 - 10 participants
 - Max load ranging up to 229 kW
 - Institutional/Commercial participants: commercial property management, church group, pool facility, parochial schools, professional guild, franchise hotel, small grocery stores, and food warehousing facility
- Medium Basic participants (Concord – 7/27 pm)
 - 7 participants
 - Max load ranging up to 171 kW
 - Institutional/Commercial participants: commercial property management, community outreach facilities, small restaurant, and church groups
- Large Aware participants (San Francisco– 7/28 am)
 - 7 participants
 - Max load ranging up to 2,716 kW
 - Institutional/Commercial participants: commercial property management, faith-based charity, hospital facility, distribution center, and warehousing facility
- Large Basic participants (San Francisco– 7/28 pm)
 - 7 participants
 - Max load ranging up to 2,411 kW
 - Institutional/Commercial participants: commercial property management, high-end hotel, residential property management, and public radio station

INTERVIEW CONSTRUCT

EMS Interview Objectives and Methodology:

The key objectives of the in-depth interviews:

1. Target EMS users and likely potential users in the medium and large business customer categories.
2. Target trade associations as a means of getting a more encompassing perspective.
3. Build on focus group conclusions on how to best identify and target customers likely to upgrade EMS.
4. Solicit customer feedback regarding potential future incentive designs and incentive designs they have felt were successfully employed in the past.

The interview guide is attached as Appendix A.

The interviewees for the in-depth interviews were as follows:

Trade Associations and Industry Experts

- 9/21 California Large Energy Consumers Association (CLECA) – Executive Lead
- 9/26 Silicon Valley BOMA – Executive Vice President
- 10/3 Silicon Valley Leadership Group – Director of Energy
- 10/3 QuEst Consulting – Principal
- 10/12 Lawrence Berkeley National Laboratory (LBNL) – Director, DR Research Center
- 10/19 International Facility Management Association (IFMA) – SF Chapter President (membership includes medium customers)

Large Customers

- 9/27 Cal Portland – Senior Energy Manager
- 10/6 NetApp – Site Operations Director
- 10/11 Genentech – Campus Facilities Manager
- 10/11 Facebook – Global Data Center Facility Manager
- 10/12 Chevron (San Ramon campus) – Project Manager

Medium Customers

- 10/14 Central Contra Costa Sanitary District – Associate Engineer

KEY FINDINGS

Overview:

- Energy Management Perspective and decision-making processes
- Customer barriers and how to break them
 - Current Economic Climate
 - Management and Personnel
 - ◆ Existing continuing education and industry resources
 - Technology
 - Industry and Market Segment-Specific Barriers
- Testing incentive concepts
- Summarized customer feedback and recommendations

ENERGY MANAGEMENT PERSPECTIVE

In the focus groups with customers of all sizes and levels of sophistication, it was clear that most participants recognize the benefits of effective energy management and EMS, however simplistic the system.

Customers with EMS are able to:

1. **Consistently monitor energy use, even remotely after hours** - One focus group participant was even able to make an important adjustment while away on vacation in Paris;
2. **Clearly and accurately calculate cost-savings** - One customer stated that after installing an EMS, his team "can see the savings based on their previous [energy usage] baseline to calculate ROI" on energy management improvement, and several others agreed that EMS and/or EIS are the ideal tools for supplying the data needed to support business cases for future energy systems and equipment upgrades;
3. **Reprogram the system immediately after a power outage;**
4. **Respond quickly to customer complaints and energy spikes** – Several participants noted that client/tenant comfort and sales always come first in the decision-making process and that "tenant comfort is derived from EMS." Companies with sophisticated systems noted that some of their daily energy management can be outsourced to third party providers who can inform them when to make adjustments, or make the adjustments remotely;
5. **Have a finger on the pulse of all their equipment to maintain and operate facilities in a reliable manner;**
6. **Reduce peak demand/implement Auto-DR** – Customers who participate in DR programs value EMS because, "if they get notification on [DR event days], it just takes one click to set the temperature higher for one building and to turn off lighting in non-essential areas";
7. **Ensure efficient usage of staff and controls** - Sophisticated participants have been able to use their EMS to program different lighting, temperature, and HVAC scenarios to maximize energy savings in a range of weather and usage conditions. 'Basic' and 'Aware' customers agree that "EMS would allow for less dependence on engineers and would help with tenant billing...[and] it would be easier to schedule and track their after-hours use." One interviewee noted that: "if you don't invest in the infrastructure, then you can't save on energy, which will just be a continuing effect on your bottom line";
8. **Attaining LEED or EnergyStar certification** – According to interview participants, LEED and EnergyStar are bigger motivators than energy conservation concerns when it comes to making EMS upgrades and investments. In fact, EMS is seen as a means to the end of attaining LEED or EnergyStar certification. Sophisticated EMS customers "look to EnergyStar for many of their decisions when it comes to investing capital"; and
9. **Get an edge on their competitors** - Commercial property management companies "benefit from being on cutting edge in energy management compared to [their] competitors" because "more and more companies are asking about efficiency certifications when it comes to leasing office space." One focus group participant attributes their constantly high tenant ratings ("4.8 out of 5") to their EMS and EnergyStar certification as well as contributing to their regaining the lead in the property management rankings among Bay Area building managers.

ENERGY MANAGEMENT DECISION ANALYSIS

When it comes to energy management and improvement investments, Energy Managers have varying degrees of power over project approval. Some Energy Managers will try "to squeeze little things into their overall budget when [they are] able to without approval."

PG&E's Emerging Technologies Program

Energy Managers from mid-size companies report that they are able to implement projects under \$10,000 with little or no higher approval, while more established/higher budget entities can get away with up to \$25,000 in energy management projects without senior management approval. In very rare cases of customers who work on large corporate campuses, energy experts can have up to \$10 million in discretionary energy spending. See Figure 1 for a visual on energy management decision analysis.

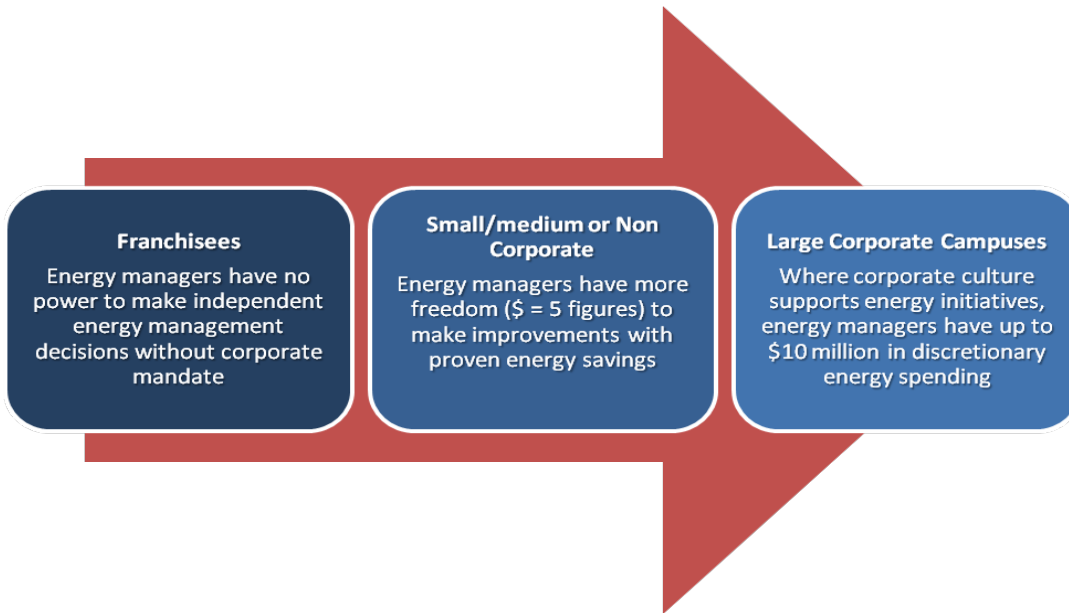


FIGURE 1. ENERGY MANAGEMENT DECISION ANALYSIS CONTINUUM

While most Energy Managers report that there has always been a “Pecking Order” issue in terms of where energy management stands on the list of capital investment priorities, they agree that recently energy management has moved up in the pecking order; it is now a “top 3” issue when it comes to how companies choose to invest their limited capital monies.

Arguably the most important issue in getting approval for an energy project, according to Energy Managers, is the expected payback periods or ROI on energy management investments. Nearly all of the interviewees and focus group participants agreed that ROI of less than one year is a “no-brainer,” but in the current economic climate, getting approval for projects with a payback of more than 5 years is nearly impossible. On the other hand, Energy Managers from well-established, financially-secure entities find that their companies are more comfortable with paybacks of up to 10 years or longer – but these entities are not the norm.

In uncertain economic conditions, companies want to be around long enough to enjoy the benefits of an upgrade. Consequently, the prevailing attitude toward ROI is that two to three year payback is the “sweet-spot”, with very few entities considering “what’s the benefit over 10 or 20 years.”

The final question about the decision-making process in implementing energy management projects was whether the major energy management decisions are going from the “top-down” or the “bottom-up.” In other words: who is championing new energy projects, upper management or the energy experts? In most cases, participants agreed that the energy experts were the ones generating new ideas for projects and pushing for their approval; very few corporate managers mandate energy investment without influence from below. However, with the recognition of the benefit of well-publicized “green” energy initiatives,

large corporations in the public eye are now seeing these kinds of projects being generated at the top.

CUSTOMER BARRIERS

Any new incentive programs need to take into account the number of barriers that today's commercial customers face:

1. **Barrier 1: Current Economic Climate**

For companies struggling with dwindling or flat revenue streams, "just finding the capital funds to make changes to upgrade their facilities" is now extremely difficult. This is especially true for commercial property managers' arena where tenant rental rates per square foot in Silicon Valley have dropped from \$6.30 to \$2.40, and property managers still have trouble maintaining reasonable occupancy levels. "Participation in programs will go down or is going down as people get overwhelmed with basic business activities of keeping the lights on."

Because so many companies are now faced with reduced resources (time and staff), they "focus on their knitting." In other words, customers perceive their electricity costs as being a relatively small component of their overall operating expenses; so with cut-backs and more placed on their work plates, the time devoted to tracking energy costs dwindles.

Customers in this climate also focus on maximizing tenure of existing assets. Commercial customers are trying to stretch the utilization of existing assets ("ride it out") while staying away from significant capital investments. In one participant's words, "Would you make a 10 year commitment if you weren't sure you'd be around in 10 years?"

The bottom line is that even with the potential incentives, investing in an EMS requires substantial capital dollars at a time when the economy is struggling and customers are especially risk-averse.

2. **Barrier 2: Management and Personnel**

In many corporations today, there is a lack of EMS interest and/or knowledge among senior managers. Several focus group participants noted that their "managers do not understand the concept [of EMS], and are only wanting to see money coming in." This leads to frustration among energy experts who agree with one customer's belief that "you need to have senior management be on board [with energy management investments], otherwise forget it. I can spend my whole life on this thing and I'll be wasting my time and talking to myself."

Within companies, energy experts also struggle with the reality of having reactive rather than pro-active management. While corporations aim to be proactive in their energy management and other major investments, customers agree that they tend "to get stuck between reactive and proactive decision-making; they tend to be reactive, but would want to be more proactive."

Customers in less electricity-intensive industries face a unique barrier. They find that upper management's interest in pursuing efficiency diminishes with the percentage of operating costs tied to electricity. According to one such customer, "efficiency...if tied to money-savings...is important in performance evaluations, but if energy consumption is only 5% of the budget in a building, energy consumption is not one of the main drivers."

Finally, participants with an EMS agree that their system is only as good as the person responsible for it. One participant pointed out that "there is a technology barrier [with] old-school maintenance guys who don't want a phone app to control the boiler." In another

case, the building manager avoids using the existing EMS controls equipment because it is "too dirty up there."

In some cases, the issue is that the person responsible for the system doesn't have the background to effectively manage the system. In one participant's words:

"People come into this field without any formal education in real estate management. They don't grant any degrees on this. So they come from different disciplines or different backgrounds, or they come with very little college education. And they learn through an apprenticeship, almost like a guild."

Customers agree that "education is powerful", but employees are coming into facilities without engineering experience; there needs to be an appropriate training/energy management boot camp to help get new employees up to speed.

3. **Barrier 3: Technology**

The implementation of EMS/EIS has created a surplus of available energy data, so customers with these systems are faced with being buried under mountains of data and trying to extract the actionable information. A participant highlighted the prevalence of the problem in this way: "cost is the #1 barrier [to energy management], which is followed by the ability to understand the system feedback and the ability to manage data once you are able to get your hands on it." Another participant agreed that "the real skill is being able to understand where variances in the data are coming from." Essentially, no one wants to deal with a large amount of raw numbers; there needs to be simple output and easy to qualify data, but "no one has found that magic solution."

Focus group participants also complained about the over-reaching claims of vendors; there is a mistrust of vendors because of a "history of vendors overstating energy savings." Customers have found that "finding the right vendors and getting good quality proposals" is a huge barrier.

More knowledgeable participants understand that the EMS product landscape continues to evolve quite quickly, with the accompanying concern that selecting an EMS approach now, may sentence them to having their solution suffer from a technology "leap frog" (i.e., the 8 track tape player). There is a prevailing perception that "pneumatic systems are hard to retrofit."

Additionally customers have experienced limitations with proprietary systems, in that "proprietary technology requires the [installing] company to make any modifications. All scheduling changes have to be done by software engineers because the system is proprietary, which is very inconvenient." Now when looking to upgrade:

"Most of them say, I want a new one, this thing's old and slow and I don't like it. They can't trend data; it doesn't have a lot of memory; I still have to do a lot of things manually - that's when they want to upgrade. So when they upgrade, most new companies are filling the open protocol systems, or their version of them anyway."

4. **Barrier 4: Industry and Market Segment-specific Barriers**

Customers in specific industries face their own unique barriers. For example, customers in leased spaces find that it is nearly impossible to make their own EMS improvements because of limitations in their lease agreements or disinterest from their property manager.

Property managers, on the other hand, are often prevented or disincentived from making improvements by individually metered tenants or tenants with strict expectations (especially in today's buyers' market).

Customers in healthcare services noted that they are limited in their realizable energy savings because of sensitivity around medical needs and the medical community's culture.

The highly bureaucratic atmosphere of the medical industry can put a year-long delay on any decision-making.

Like customers who lease their space, customer flexibility in a franchise environment is often limited. Franchisees, however, are limited by their franchiser's corporate policy regarding energy upgrades and general improvements. Similarly, customers in hotel/hospitality services are often limited by inviolate space treatment corporate mandates as well as guest expectations.

On the other side of the coin, large customers who may be affected by CARB (California Air Resources Board) and other future energy efficiency regulations don't want to make a move on energy investments until they know what the rulings are going to decide. So far there aren't any benchmarks for customers who may need to make changes to stay in-line with the rulings.

In general, medium and smaller customers have little awareness, little interest, and little time to devote to in-depth analysis of their energy consumption. Their experience with energy management is that "they read their monthly bills," and energy efficiency amounts to "nagging employees to close the walk-in freezer." When it comes to property management, "smaller to intermediate size property management companies fall through the cracks" when it comes to learning about incentive programs and other energy management resources.

5. **Barrier 5: Customer Confusion around Terminology**

In speaking with focus group participants and interviewees, it became apparent that what PG&E calls an EMS may vary between customers in its component makeup or just answers to a different name. Below is an outline of different energy management terms and their meanings:

- EMS – Energy Management System
 - ♦ The overarching term for any sort of hardware and/or software system that allows some measure of energy usage and/or centralized control of HVAC, lights, and/or other building/facility energy systems.
- EIS – Energy Information System
 - ♦ A specific term for an interface or user-made tool that allows the user to log and analyze energy usage in real time or other intervals; often integrated into an EMS.
- BMS – Building Management System
 - ♦ Often identical to an EMS but either lacking in an EIS or simply used as a tool for integrating building/facility control systems without reaping the energy management benefits.
- EMCS – Energy Management and Control System
 - ♦ An EMS with both energy monitoring and management capabilities as well as centralized building/facility controls; the system used by large/sophisticated customers.

Overall, BMS appears to be the preferred term among energy managers, especially of large campuses, even when they are identical to EMS. This is likely because BMS has been used to describe energy and building control systems longer than EMS has. According to one interviewee:

"...to be clear large buildings over 100,000 square feet typically have control systems that are often called Energy Management Systems. Part of the joke is they actually don't measure energy, they're just control systems. Sometimes we call them EMS, or EMCS, or building automation systems, or BMS, they're all basically the same."

Another interviewee clarified that “BMS is essentially a combination of hardware and software that facilitates us being able to operate large amounts of equipment through a display screen – control over fans, start knobs, temperatures, damper positions, etc.”

BREAKING BARRIERS

1. **Barrier 1: Current Economic Climate**

Because customers are being extra vigilant with the allocation of capital dollars, tying EMS and energy efficiency upgrades to investments that the company has already approved or deemed essential (retro-commissioning, renewable energy, end-of-life upgrades) could increase customer interest. In fact, some customers perceive retro-commissioning and EMS upgrades to be complementary:

“One of the things we found from our retro-commissioning side is that it only works if the company has some sort of EMS in place to show the savings. It’s just so raw you can’t justify doing some big project if you can’t show the change before and after in the immediate.”

In another customer’s experience, “other externalities sell the energy efficiency part: if the EMS can improve and reduce maintenance time or staff time, give them more ready access to data to answer the organizational issues...”

Across the board, energy managers are eager to upgrade to the newest, most energy efficient equipment, so packaging EMS with end-of-life upgrades for other energy systems (boilers, lighting, HVAC) would make EMS upgrades an easier sell. Meeting EnergyStar and LEED certifications is also consistently listed as one of the largest motivators in upgrading.

2. **Barrier 2: Management and Personnel**

Focus group participants agreed that to accomplish anything, management needs to “get excited” about energy management. More specifically, emphasizing the EnergyStar and LEED certification benefits of EMS can really help get EMS upgrade plans off the ground. One interviewee had especially positive experiences with EnergyStar:

“Some of the side benefits [of EMS] are the PR and the community benefits that you can get. One of the things that got our program really off the ground was...we’ve won the EnergyStar award for the last seven years in a row...EnergyStar has a pretty recognizable label and brand. And so when our senior executives were able to go to the awards ceremony and sit with the EPA Administrator and the Secretary of the Department of Energy that sort of got some notice, and it really helped us.”

To get investments approved, energy managers need to be familiar with available EMS technology and upgrades as well as incentive programs. One possible way to accomplish this is working with trade associations and industry groups who already have relationships with commercial customers and offer educational courses and seminars that would help PG&E reach more potential EMS customers. (See the following Energy Management Resources section for examples, which were recommended in interviews with trade associations and sophisticated EMS customers).

Breaking Barriers: Energy Management Resources:

PG&E can take advantage of their own customer relationships by equipping account reps with the materials necessary to inform their customers of new and existing EMS incentive programs.

- “Energy-Smart Buildings”
 - A white-paper completed by accenture for Microsoft’s Real-estate and Facilities Organization

PG&E's Emerging Technologies Program

- accenture analyzed smart building applications from 3 vendors across 13 buildings within Microsoft's main 118-building campus
- [Web-link to White Paper](#)
- "Building Energy Information Systems: State of the Technology and User Case Studies"
 - A resource completed by Lawrence Berkeley National Laboratory
 - [Web-link to LBNL Resource](#)
 - [Energy Information Systems' Webpage](#)

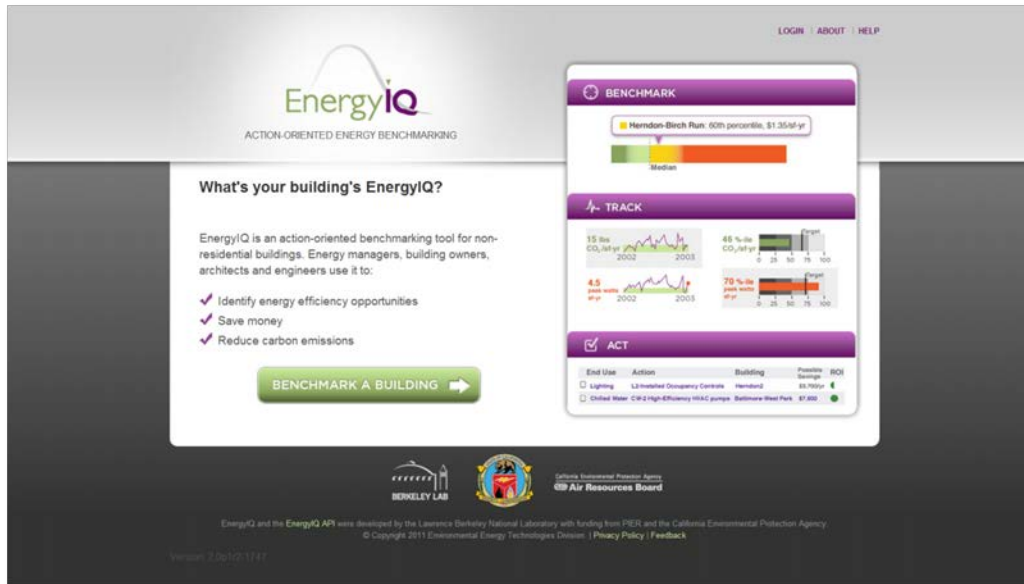


FIGURE 2. ENERGYIQ WEBSITE

■ Energy IQ Benchmarking Tool

- A resource for non-residential buildings completed by the Lawrence Berkeley National Laboratory
- The tool outputs graphs and visual comparisons of energy-usage benchmarks of comparable buildings based on a series of inputs including: building usage, age, square footage, location, etc.

■ Trade Associations and Continuing Education Opportunities

- Building Owners and Managers Association (BOMA - SV) *
- International Facility Management Organization (IFMA - SF) *
- Alliance to Save Energy (ASE)
- BOMI International
- Building Operator Certification (BOC)
- CoreNet Global - Northern California Chapter
- EnergyStar
- Silicon Valley Leadership Group (SVLG)
- U.S. Green Building Council (USGBC) – LEED

* BOMA – Silicon Valley and IFMA – SF are both eager to enhance their relationship with PG&E by offering EMS training to their membership through sponsored sessions or webinars

Once they have the knowledge of existing EMS technology/upgrade options and programs and other energy resources, energy managers need to have the tools necessary to communicate with upper management. One way to accomplish this would be providing seminars for engineers on how to create an effective business case for EMS and energy efficiency upgrades that can help them get approval. One focus group participant had this to say about getting approval from upper management:

"[Energy Managers are] obviously the experts but [management has] the same thing coming from the marketing department saying 'if you give us more money we'll also save you money by getting more customers.' So having continuing education...showing the importance of energy efficiency, what this will save you over time, I think that will help the energy managers drive the point home."

Another participant boiled the viewpoint of senior managers down to: "[they] look at energy efficiency measures as basically an accounting exercise at the end of the day: if you do x you get y."

Interviewees and focus group participants agreed that there needs to be a corporate culture that supports energy efficiency and "greening" if energy managers want to get the most out of EMS. In some cases, companies have instituted a revolving loan program where different departments within the company can "get back" the money they save by being energy efficient.

3. Barrier 3: Technology

Energy managers fear that they will get buried by data and/or will not be able to generate any actionable data, so a clear, user-friendly EIS within an EMS can do wonders for selling a system. According to one customer, you "can't improve what you can't measure. So putting in a measurement system in itself, without having any immediate savings, there's not an ROI with that."

Customers are wary of getting locked into proprietary systems, or simply systems that they don't understand or can show savings on. To help, PG&E can work with EMS vendors who have existing programs to sort out the different types of systems, so they can better recommend to potential EMS customers what type of system to invest in.

4. Barrier 4: Industry and Market Segment-specific Barriers

There is interest in all customer segments in having PG&E develop and provide a list of reputable contractors that provide the spectrum of EE assessment and implementation services.

For medium-sized customers, there needs to be a "training wheels" approach to help move them up the energy consumption awareness continuum. Customer outreach can help small and medium customers become aware of resources such as InterAct that are cost-effective and make sense for companies with less space and usage. There are also trade associations that work with medium-sized customers (IFMA) that already have customer relationships and can help PG&E make customers aware of incentive programs that medium customers may benefit from as well as continuing education training courses. In addition, industry-specific experts can help to develop "Top 10" improvements to explore with customers who don't have a dedicated account representative.

In the service industry, hotels are often really several different businesses on one property (hotel, meeting area, bar, restaurant, caterer, etc.), so the ability to control energy usage by zones wirelessly could prove invaluable to that specific group of customers.

Targeting commercial property managers is a great way to get EMS not only large spaces, but to involve all of the PG&E customers who lease those spaces and involve them in energy efficiency and awareness of EMS. This will reach customers who lease spaces and are also interested in EMS, but can't make the improvements themselves.

PG&E can take the initiative to define cost-effective and technically feasible CO2 solutions for customers who will be affected by CARB. These customers are looking for a way to incorporate Climate Disclosure Projects and sustainability goals into EMS.

TESTING INCENTIVE CONCEPTS

The customer interest around the potential EMS-enabling tools is limited based on size and EMS familiarity. The largest customers are already up-to-date on upgrades and the latest EMS technology and are ahead of the utilities in their energy management knowledge and level of implementation. On the other hand, only select sophisticated medium and large customers have sufficient EMS understanding, as well as existing basic EMS, upon which to build an upgraded, more inclusive system. However, even the smallest customers are interested in finding new ways to manage, optimize, and ultimately lower their energy bills.

Incentives should be structured to target customers of each size and level of EMS sophistication. There is no "one-size-fits-all" option.

FEEDBACK ON POTENTIAL EMS-ENABLING TOOLS

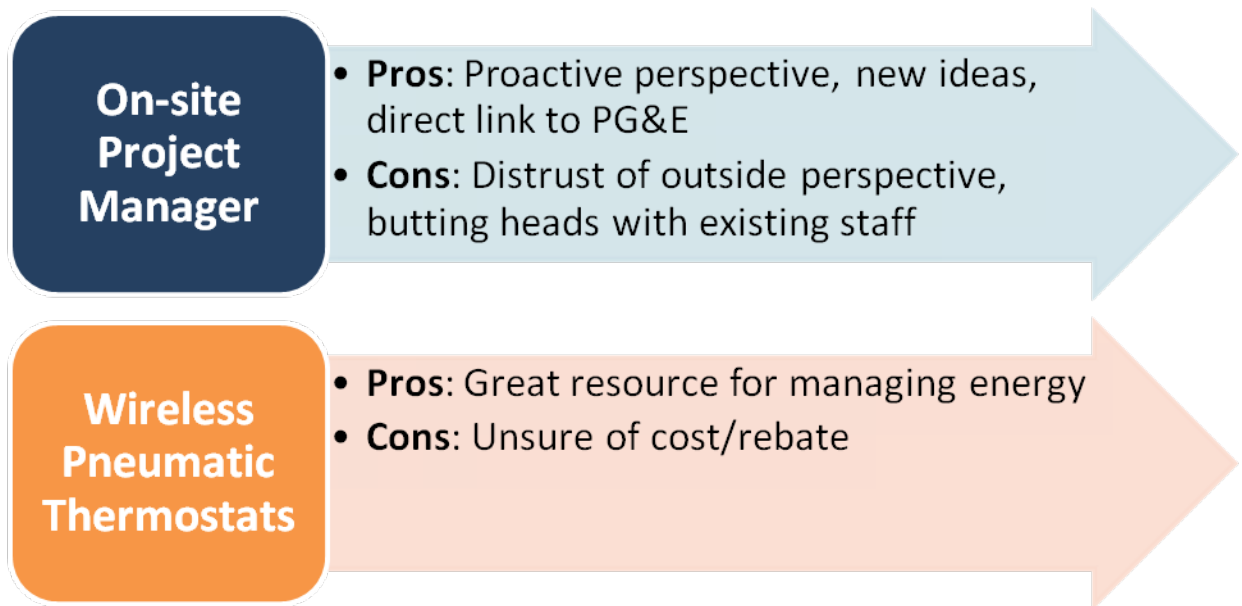


FIGURE 3. PROS AND CONS

In-House Project Manager

Feedback from participants who were for the option:

- ◆ One participant who had an outside EE project manager in the past:
 - *Thought that "the concept was great and worked well."*
 - *PM "helped them process rebates for capital improvements."*
 - *"Some \$250,000-range projects were implemented" with help from PM (boiler, cooling, lighting).*
- ◆ "Would like a liaison with PG&E and the timely responses that it might facilitate, as well as accurate rebate information."
- ◆ "I like the idea very well because I would like to give the ball to someone else."
- ◆ "For one year it would be helpful to get the ideas from the person if I could get the financing to implement the projects. It would be great to have someone to fine-tune things."

PG&E's Emerging Technologies Program

- ♦ Interview Feedback: "[Energy Management has to] be somebody's job, they have to know the basics. There are third party services you could go to, so that's a potential model."

Feedback from participants who were wary of the option:

- ♦ "Not sure about having a [PG&E-sponsored] PM at a project site, but having a proactive perspective would be great."
- ♦ "I'm afraid this person would take my job."
 - "I want ideas, but I don't want someone from PG&E to do my job."
- ♦ "I foresee a bit of stressful situation between the current building engineers and new PG&E project manager."
 - "I would like to get this kind of help from our existing account manager."
- ♦ "I'm afraid that utility costs would go up to make up for [the PM's] salary."
- ♦ "For old buildings and mom & pop operations and 'clunker' buildings, this would be a no-brainer (get the low-hanging fruit), but for people who have it together when it comes to EMS it would do no good."
 - "I would love to be identified as a clunker and get this resource."
- ♦ "I am always open to bringing in someone else's ideas, but sometimes they only work on paper."

Wireless Pneumatic Thermostats

- Customers want to know exactly how much of the rebate they will receive:
 - ♦ "It depends on how close we would be to the deemed savings. I don't like the unknown savings of this program."
 - ♦ "The rebate wouldn't be a factor in our performance metrics, so getting only 50% of a rebate would not go over well at all. Any deemed savings plan would go under very heavy scrutiny by the company."
 - ♦ "We are already distrustful of existing savings information, so we would assume that we would get only 50%. I would like to be able to go into PG&E's system and figure out the variance on my own because I don't like (trust) PG&E's projections."
 - ♦ Participants suggested a rebate structure of 50% guaranteed plus a bonus based on additional energy savings.
- From a participant with wireless pneumatic thermostats
 - ♦ "I love the boxes because of the visibility, alarm capability, and the ability to respond to comfort issues."
- Medium participants were generally enthusiastic about the wireless pneumatic thermostats as a part of their energy management strategy, but it all depends on the bottom line:
 - ♦ "It sounds great, but it all comes back to costs and finding whatever the magic number is."
- Large customers already have pneumatic thermostats or have moved onto DDC (direct digital controls) systems:
 - ♦ Interview Feedback: one large customer completed a business case that showed a 44% reduction in energy usage in a building with DDC vs. an identical building with pneumatic controls.

RECOMMENDATIONS AND INSIGHTS

What Else Do Participants Want from PG&E?

- Greater access to pricing and energy usage information
- Industry specific experts who can provide lists of approved vendors and relevant energy management resources
- Better responsiveness...like what they get from SF Energy Watch
 - ♦ Viewed as providing much more attentive customer service and hand-holding
- For commercial property management types, they would like one PG&E representative to cover all their buildings
 - ♦ Participants want to avoid the headache of having different representatives for every building who are constantly changing
- How to make new programs more enticing
 - ♦ "If PG&E were to package their rebates by the number of square feet and the type of system they are looking to install – that would be helpful."
 - ♦ "Being able to justify cost against usage is the most important. A helpful alternative would be to have an outside consultant take a comprehensive look at the facility and figure out how to come up with the money to justify the investment."
 - ♦ "They need to look not only at energy management, but also demand response and energy efficiency as a package."
- EnergyStar and LEED get mentioned over and over again by customers who have successfully implemented EMS:
 - ♦ Modeling PG&E incentive programs to help customers reach EnergyStar and LEED status would be a huge motivator for customers.
- Customers would like to have some idea of how to benchmark their usage:
 - ♦ "Only forward thinking entities really have invested in monitoring type technologies that give them a real awareness of what their systems and buildings are using and what they can do. There's just a dearth of information out there of which you don't have any awareness of what the next guy's doing similar to you or others in your industry or neighborhood."
 - ♦ PG&E can encourage usage of existing LBNL benchmarking tool and use it to create more user-friendly output for PG&E customers.
 - ♦ PG&E can use benchmarking to incentivize customers who can maintain levels of usage 5%, 10%, 25%, etc. below their given benchmarked usage.
- Customers would like to be able to use their EMS to enable Auto-DR
 - ♦ *They want to invest in something that doesn't just reduce kWh, but also peak demand in order to lower their demand charges.*
- Customers want continued incentives to encourage them to monitor their energy even after they've upgrade their EMS
 - ♦ *Past energy efficiency programs have promised lower demand charges for customers who consistently monitor their energy usage and keep working toward further energy efficiency 2 or 3 years after they've upgraded their systems.*
- EMS is not likely a viable option for most small/medium customers; instead, they need a "training wheels" set of options

- There was interest in using InterAct or smart meters to get “day late” feedback on energy usage rather than waiting for a monthly bill
- Having an industry-wide energy management expert for small food service and other small businesses who could provide a “Top-10” list of basic or non-EMS EE measures could be well-received and result in greater EE and cost savings for motivated participants
- Targeting corporate franchisee and other holding companies which have performance metrics associated with their building assets could result in uniform change across independent franchises
- Having available resources and programs directed at specific industries is a great way to reach a larger number of customers

APPENDICES

- Focus Group Appendices
 - FG-1: Focus Group Recruitment Script
 - FG-2: Participant Recruitment and Attendance
 - FG-3: Focus Group Overview
 - ◆ Presented via email to recruited participants to help solidify their participation
 - FG-4: Focus Group Discussion Guides
- Interview Appendices
 - I-1: Interview Recruitment Script
 - I-2: Interview Discussion Guides

FG-1: Focus Group Recruitment Script

Hello, this is _____ calling on behalf of PG&E. Can I speak with _____ (or the person who makes decisions regarding your company's investments in energy systems and software tools)?

We at Freeman, Sullivan & Company have been contracted by PG&E to develop and facilitate a series of paid focus groups with larger commercial/industrial customers like you. The focus group we are asking you to participate in will consist of approximately eight customers from companies similar to yours and is designed to gain your collective insight on making PG&E's Energy Management System programs more attractive to business customers. The focus group will last between 90 and 120 minutes. In appreciation of your time and participation, there will be a \$200 cash honorarium. May I ask you a few questions to see if you are suitable for the discussion?

S 1. Please confirm that you are the individual within your organization that is the decision-maker or decision- shaper when it comes to whether or not your facility invests in energy efficiency or energy management tools.

= Yes

= No...then can you put us in touch with the right person at your firm? Obtain contact information, and when reaching out the identified individual, reference that their name was provided by the first respondent.

S 2.

First of all, has your company ever considered installing an Energy Management System? [If customer does not know what an energy management system is, read description].

EMS Description:

It is a combination of building management systems and advanced software solutions. Energy management systems can assist business customers in managing the building functions in a more energy-efficient way.

- Yes
- No (THANK AND TERM)

S 3.

Has your company installed an energy management system of any kind?

- No / not yet – invite for NO EMS
- Yes

S 4.

How extensive is the system you have in place? Please stop me when I read the statement that best describes the extent of your company's energy management system.

1. It is a comprehensive digitization and IP enable to the field device.
2. It is an aggregation of all controls into a central Building Automation System or Building Management Systems.
3. Or you may know them by name such as Suregrid by Siemens, Metasys by Johnson Controls, Honeywell, Trane or Cisco Mediator.

The less extensive system may be

4. Our building is partially digitized, maybe only light or only HVAC system is digitized
 5. We have a centralized Building Management System for controls but does not control all field devices.
 6. Or you may know them by name such Jace by Honeywell, EnNet or Field Server.
 7. Other specify
-

PG&E's Emerging Technologies Program

If answer = 1, 2, 3 – invite for HI EMS

If answer = 4, 5, 6 – invite for LO EMS

If answer = 7 – tell customer we will call again once the Project Manager has decided which group the customer should be invited to.

Your group is scheduled for:

Date:

Time:

City:

Will you be able to attend?

- Yes
- No (Is there someone else in a similar role who can attend? If not, thank and term.)

I will email you the facility's detail and a brief overview of the materials that will be discussed during the session so that you may have time beforehand to formulate constructive input.

May I please have an email address? _____

May I have a cell phone number? _____

May I have your name and job title?

Name: _____

Job title: _____

As I mentioned, the discussion will be approximately 90 to 120 minutes. If you wish to donate the \$200, please bring the information for the charity or organization along.

Breakfast / lunch [depending on time of focus group] will be served.

Thank you in advance. We look forward to your input! If you have any questions, please call me at 415-948-2314.

ONLY IF NECESSARY: The PG&E Program Manager who can verify that the FSC is in fact conducting the focus groups for PG&E is:

Name: Elina Shcop

Telephone: ***-***-****

PG&E's Emerging Technologies Program

FG-2: Focus Group Sign In

REDACTED FOR PUBLIC REPORT

PG&E's Emerging Technologies Program

FG-3: Focus Group Confirmation Email

Dear _____,

Thank you for agreeing to participate in PG&E's Energy Management Systems Focus Group.

You will be joined by several other business people who also work in their organizations around the issues of energy and energy management controls.

The purpose of the focus group will be to discuss your thoughts about:

- How energy management controls or systems work at your facility.
- Which attributes you find most helpful, as well as the least helpful.
- How energy management investments are considered within your organization.

PLEASE BRIEFLY REPLY TO CONFIRM YOUR ATTENDANCE.

When: **Tuesday-July 26th**

Time: **8:30 am**

Duration: 2 hours (breakfast will be provided)

Incentive: \$200 cash

(If you wish to donate, please bring Charity info)

Location:

Nichols Research, Inc.

333 W. El Camino Real,

Suite130

Sunnyvale, CA 94087

(408) 773-8200

*Free on-site parking

[CLICK HERE TO CUSTOMIZE YOUR TRIP USING GOOGLE](#)



If you have any questions please call 1-800-777-0737 or email pgefocugroups@fscgroup.com.

See you there!

Sincerely,

EMS Focus Groups Recruiter

Freeman, Sullivan & Company

E-mail: pgefocugroups@fscgroup.com

Tel: (800) 777-0737 (Caren Leong)

FG-4 Focus Group Discussion Guide

PACIFIC GAS AND ELECTRIC

2011 ENERGY MANAGEMENT SYSTEMS

FOCUS GROUP MODERATOR'S DISCUSSION GUIDE

AWARE – TRIMMED FINAL

July 18, 2011

FOCUS GROUP LOGISTICS

To manage costs, goal is to run two focus groups per day at a given facility. With target audience being business customers, groups to be offered with one at the beginning of the work day preceded by a continental breakfast, and a second in the early afternoon, preceded by a light lunch. Target is 3 types of groups per each of two size categories of customers- medium and large; (i.e., 1] aware of but having no investment in EMS; 2] basic EMS systems in place; 3] sophisticated EMS systems in place). The proposed schedule would be as follows;

7/26 – sophisticated EMS group (LG) in a.m.; only aware group (M) in p.m. (Sunnyvale)

7/27 – basic EMS group (M) in a.m.; basic group (M) in p.m. (Concord)

7/28 – only aware EMS (LG) group in a.m.; basic EMS group (LG) in p.m. (SF)

Facilities contracted for through Nichols Research.

On each day, a continental breakfast will be available for the morning session participants as they arrive in advance of the 9:00 a.m. scheduled start time; invitation calls out being there by 8:30 a.m.

On each day, the afternoon focus group participants will be asked to arrive at 12:30 p.m. for a light lunch, followed by the focus group starting at 1:00 p.m.

PG&E's Emerging Technologies Program

PG&E observers to arrive early (8:00 a.m. to 8:30 a.m.) and already be “behind the glass” prior to start of the focus group. We have planned for up to six PG&E observers to attend; FSC's Liz Hartman will also be observing and assisting with all logistics and note-taking. Dan Engel will moderate the focus groups.

The focus group facility will log in the participants prior to the sessions and distribute the honoraria afterwards.

1. Introduction of focus group leader and ground rules (10 minutes)

A brief introduction period will take place at the outset of the focus group(s). The introduction will explain who Dan Engel is [FSC AND NO DOG IN THIS HUNT] and his role... to **guide the discussion** and make sure that **everybody has a chance to speak** their mind on the issues that are raised.

Engel to share a quick personal thank you for agreeing to **actively** participate. This is an opportunity to provide frank feedback regarding how they viewed their decision-making around investing in a basic “energy management system” and what would enable them first to be more aggressive related to their EMS opportunity, and second what PG&E could do to enhance your interest level in the more involved systems . **Your input will be instrumental** in helping PG&E determine what tools and resources to provide to assist in this matter.

The following logistical information and focus group guidelines will be discussed.

- The focus group discussions will last approximately **2 hours**;
- The discussion will be **recorded** for the sole use of the research team to help us review and summarize your input;
- For those of you who have been in focus groups before, you'll remember that there are individuals (including PG&E staff) **observing this discussion**;
- **Responses** during the focus group will **not be directly attributed** to any given participant in any of our summary reporting;
- There are **no right answers** to the questions posed - (this meeting should be a wide-open discussion with all items open to consideration);
- In pulling this focus group together, we had to **balance trying to limit your travel time with getting a cross section** of (as appropriate for the given group) business customer participants. While you may recognize a competitor of yours in the room, we hope that you will be as forthcoming and open as possible....**WITHOUT SHARING ANY COMPETITIVE INFORMATION.**
- There is a **common thread** as to why each of you was asked to participate. Each group was built around some macro-level criteria, and in your case it was:
 - customers who have looked at, and invested in basic energy management systems, meaning those where you have some centralized control over the various energy consuming assets (processes, HVAC, lighting, etc.) within your business;
 - An effort to group similar types of businesses together in a given group.
- This is **1 of 6 focus groups** being held on this topic with PG&E customers;

PG&E's Emerging Technologies Program

- About half way through our time together, we will take a **short break** to let you stretch your legs; it will also allow me to check in with the observers to see if there are some specific follow-up questions that they want to pursue.
- It is kindly requested that all **cell phones be turned off**; and
- Lastly, the **restroom** facilities are located nearby (point them out).

2. Focus Group Participant Introductions (10 minutes)

We will go around the room and have each customer tell us;

- **who they are,**
- **from what company,**
- **job title, how long with the company,**
- **how long have they been involved in their current job function**
- **level of awareness around their company's energy management practices**

3. Background (5 minutes)

For the aware EMS groups:

As I mentioned at the outset of our session, today we will be talking about how you and your company view investing in an energy management system.

Let's make sure we are all on the same page in terms of what we mean when we talk about an energy management system, or EMS.

Basic construct of an EMS:

- centralized controls of one or more assets within the building which could include HVAC, lighting, chillers, plug loads
- this centralized box should have some translation capabilities from the proprietary protocols that allows the HVAC system to interface with IP
- There may be intermediary boxes that do not do aggregation of controls but just do one offs on data translation, this is also considered part of the EMS
- The centralized control box may also have some sort of visualization tool where they can visually monitor all or part of their building controls
- This visual user interface may be on a LAN or be hosted in the cloud

Consideration of EMS Systems

So now that we have a common understanding of what an EMS is, how do you see them meshing with energy efficiency investments that you have considered?

3.1 From your perspective, what benefits could you derive based on getting an EMS installed?

- *If stalled, consider using potential prompts:*
 - *lower costs tied to better use across TOU periods,*

- *reduced demand charges,*
- *greenhouse gas reductions,*
- *in those cases where tenants are involved, happier tenants,*
- *differentiation among competitors, etc.*

3.2 Have you been approached by EMS vendors? Which ones?

3.2.1 What type of system was being proposed?

3.2.2 What business model was put forth (i.e., shared savings, straight sale, financing, etc.)?

3.2.3 What business model was relevant to you? Why / why not?

3.2.4 Without a current system in place, how do you manage these energy issues manually?

3.2.5 What would it take to convince you to install an EMS?

3.2.6 What would it take to convince your management?

3.2.7 Have you heard of the more sophisticated EMS product lines, like Cisco Mediator, Johnson Controls EnNet, Honeywell Jace?

I'm going to walk you through a bunch of questions related to your perspective and perceptions regarding EMS and how your facility would respond to an option of incorporating an EMS into your operations, but before I do, do you have **any general questions about the basic idea?**

Note that the results of this focus group will be shared with PG&E, and be used by them to help identify the tools, information and resources you would like to see made available relative to EMS. While PG&E is sponsoring this research, and views your input as valuable, know that no final decisions have been made about what tools and approaches will be used to help you. That is why your input can be so meaningful.

4. Questions about the customer's building controls

I want to learn a little bit more about you. I'm going to ask a few questions about how you, your staff, or others within your organization first operate your facility, and then how you all make investment decisions about your building control systems.

4.1 Building control questions (up to 20 minutes)

- In a typical day/week, how is energy monitored in your company? Who is responsible for what? How are issues managed? What systems are in place?
- Where do these people fit into your company's organizational structure?
- Where do building management initiatives come from...is it top down from the leadership team?
 - (When applicable) Is it driven by complaints of the occupants?

- Is it instigated by the building management team?
- For those who come from a **more corporate** or chain perspective, how much of the energy-oriented **decision-making is made at your facility** vs. by corporate?
- On a **day to day basis**, are you the **decision-maker** when it comes to electricity use, or are you a **decision-shaper** who influences someone higher up?
- In your performance metrics, are there specific measures tied to reducing your energy costs? If so, where does it rank among management's goals for you?

4.2 Financial decisions questions (up to 20 minutes)

- What information do you need to make a decision about whether or not to invest in an EMS system?
- Is someone else responsible for lining up \$\$ for building control investments?
 - If so, where does that responsibility fall within your organization?
 - When you need funding, what is the process for justifying the amount needed and who do you go to?
- In terms of building control investments, where do they usually fit in the “pecking order” of ways that your company usually invests its capital dollars?
- Are potential EMS investments routinely considered solely as capital investments, or can operating monies be brought to bear?
- Are there any formal (or informal) thresholds that the proposed investment must meet in order to remain in contention for the available monies?
- If it is okay, can you tell me in ballpark numbers how much of your business's operating costs is tied to electric usage?
- Are there any formal (or informal) thresholds that a proposed investment must meet in order to remain in contention for the available monies?
- What EE investments has your company made, and when? Why did your company make these investments? What were the alternatives and considerations?
- What is the toughest sale to management?
- **SHORT BREAK (5 minutes)**
(Facilitator to circle back with observers regarding additional topics or clarifications to be picked up in latter portion of the focus group.)

5. Barriers (10 minutes)

What aspect of EMS that you are aware of lead you to not investing in such an asset? Are there other barriers that stand in the way? What EMS features would be most attractive to you?

If stalled, potential prompts – some of the new products enable the following features:

- *Automated fault detection of various systems within building*
- *Hosted monitoring services*
- *Easy integration with DR measures*
- *Retrocommissioning project suggestions from automated audits.*

Are there issues that stand in the way of pursuing an EMS?

If stalled, potential prompts include is it –

- *tied to specific aspects of your business,*
- *insufficient financial reward to warrant the effort necessary to invest, or*
- *more due to challenges of getting the attention to such matters from senior management.*

Let's work together to develop a list of barriers that stand in the way of customers like yourselves being in a position of more aggressively pursuing sophisticated EMS investments. We will separate them into barriers that you see confronted from a facility manager's perspective, and those confronted from upper management's perspective. What should that list of barriers include?

Work with the participants to develop and post a list of barriers from their perspective.

If stalled, potential prompts include is it –

- *energy not a sufficient component of operating costs, so no attention paid,*
- *hesitancy by facility managers to take on developing a project request, or*
- *difficult economic times.*

Ask each to prioritize the list of barriers just developed, concentrating on identifying the top 3 most impactful barriers from their perspective and identifying the 3 least impactful barriers.

Then poll the room as to probe on why they felt the way they did.

6. Potential Tools for Increasing Interest in EMS (15 minutes)

PG&E is analyzing possible incentives for increasing customers' interest in initial EMS investments, as well as more sophisticated EMS upgrades for customers' like you.

Are you aware of whether your company has participated in one of PG&E's Energy Efficiency programs? If yes, which one(s)?

What about their Demand Response or Peak Day Pricing Programs?

How did you become aware of PG&E's programs?

Which PG&E programs have you looked at and opted not to participate in? Why?

If you have not participated in any of PG&E's programs, why?

If they are familiar and have had experience with incentives, ask about their experience.

If stalled, consider following prompts:

- *Was the auditing process too tedious*
- *Did they have to do extensive submetering to collect data*
- *Were the incentives not enough to make the payback period significantly shorter*
- *Did the incentives not cover the right thing*

What additional tools would you like to see that would help you and customers like you become more empowered to pursue EMS investments for your facility? *Unaided.*

Here are some things that PG&E has been looking at developing to assist you relative to pursuing more sophisticated EMS options.

I am going to walk through these quickly to see if you have any basic questions.

For each of the below concepts ask: likes, dislikes and why.

6.1 Resources

- On-site paid Project Manager to implement EE measures recommended by building performance software. There are many software products in the market today that do building performance monitoring. Some of these products automate parts of the auditing process and offer project suggestions for retrofits or general maintenance of the building. However, many building facility teams do not have the time or resources to manage these suggested projects. The proposed incentive would be in the form of a contractor that would be onsite to help manage energy efficiency measures derived from these software auditing tools.
 - *Would the customer select the PM or would PG&E provide?*
Could be either, but its be funded by PG&E
 - *Cap on the level of monies provided to the PM?*
I think it would be salary based, whatever is appropriate for a PM
 - *Any constraint in terms of how long they would be allowed to continue to support a given project?*
We would probably set a duration of a year or something, something reasonable to complete projects and then they have the option to rollover to the company's payroll
 - *Any minimum constraint in terms of the number/funding level/energy savings needed to be met in order to qualify for the paid PM?*
Yes, it would have to go through an auditing and application process similar to Retro-Commissioning programs
 - *Any constraint in terms of availability of the offer, once the customer agrees to obtaining the building performance software?*
Haven't thought the idea through that far, the sequence of our project is this market study first, then technology assessment around how to structure the actual incentive

6.2 Tools/technology

Wireless Pneumatic Thermostats

- *these are devices you put on existing pneumatic thermostats that wirelessly communicate with a centralized control box*
- *The control box can either integrate with your building management system or directly to the IP network and you can interface and monitor your zones through a web portal*
- *With these systems, there are a number of energy efficiency measures you can take that will reduce your total energy consumption*

6.3 Incentives

Hybrid Deemed Rebate on Wireless HVAC Product

- *the way the incentive works is the customer purchases this technology and the incentive would subsidize part of the capital investment but they would be obligated to run 1 of the identify energy savings methods and provide documentation that they have saved energy*
- *An example of the energy savings measures is dead band controls where they set there HVAC system to not do anything for a range of temperatures*
 - *Do you have some specifications that we could look at in terms of the wireless HVAC product that you have in mind?*
A quick google search resulted in Advector Systems, Honeywell's RedLINK, and Steinel's Enocean System (from India).
Yes, we are working Cypress envirosystems
 - *What level of rebate?*
Too early to tell, possible subsidize hardware
 - *Will it be capped by percent of overall cost?*
Too early to tell
 - *Will it be limited to eligible products?*
Yes, only customers with pneumatic thermostats
 - *Cap on the number of rebates to be paid, or limited by monies available?*
Too early to tell

Are there any additional tools that would assist you in assessing your enhanced EMS options?

7. Closing (3minutes)

THANK THE PARTICIPANTS FOR VALUABLE INSIGHTS AND PERSPECTIVE.

HONORARIA AVAILABLE AT THE FRONT DESK; YOU HAVE THREE OPTIONS;

- ACCEPT (WE WILL ASK YOU TO SIGN FOR IT)
- DONATE TO YOUR FAVORITE CHARITY
- OPT NOT TO ACCEPT

FOR THOSE WHO SO CHOOSE, YOU CAN INDICATE THE CHARITY OF YOUR CHOICE AND WE WILL PROVIDE THEM WITH THE MONEY IN YOUR NAME OR YOUR COMPANY'S NAME; JUST WRITE DOWN THE INFORMATION ON THE OUTSIDE OF THE ENVELOPE.

I-1: Interview Recruitment Script

EMS IDI Recruiting Script

Hello, this is _____ calling on behalf of PG&E. Can I speak with _____ (or the person who makes decisions regarding your company's investments in energy systems and software tools)?

If speaking with end customer

Freeman, Sullivan & Company has been contracted by PG&E to speak with a select group of its larger commercial/industrial customers like you so that we can get your insight, on how you view energy management systems (EMS) as well as how to make PG&E's incentives for energy efficiency programs more attractive to business customers.

If speaking with trade association personnel

Freeman, Sullivan & Company has been contracted by PG&E to speak with key opinion leaders of different trade associations like you so that we can get your insight, on how your members view energy management systems (EMS) as well as how to make PG&E's incentives for energy efficiency programs more attractive to your members.

I am hoping to schedule a 50-minute telephone call between you and Mr. Dan Engel. In appreciation of your time and participation, there will be a \$_____ honorarium [decision on including an incentive is pending]. May I ask you a few questions to see if you are suitable for the discussion?

S 1. Please confirm that you are the individual within your organization that is the decision-maker or decision-shaper when it comes to whether or not your facility invests in energy efficiency or energy management tools. Example roles might include building facility manager, CFO, sustainability engineer, etc. If you represent a trade association, can you speak to these topics relative to your membership's general perspective?

= Yes

= No...then can you put us in touch with the right person within your organization? Obtain contact information, and when reaching out the identified individual, reference that their name was provided by the first respondent.

S 2. First of all, has your company (or member companies) ever considered installing an Energy Management System? [If customer does not know what an energy management system is, read description].

EMS Description:

It is a combination of building management systems and advanced software solutions. Energy management systems can assist business customers in managing the building functions in a more energy-efficient way. It could take the form of Building Automation Systems or just centralized HVAC and/or lighting controls but basically some sort of aggregation of controls and monitoring of different assets within the building.

- Yes
- No (THANK AND TERM)

S 3. Has your company (or member companies) installed an energy management system of any kind?

- No / not yet – NO EMS
- Yes

S 4. How extensive is the system currently in place? Please stop me when I read the statement that best describes the extent of your company's energy management system.

PG&E's Emerging Technologies Program

8. It is a comprehensive digitization and IP enabled system.
9. It is an aggregation of all controls into a central Building Automation System or Building Management System.
10. Or you may know them by name such as Suregrid by Siemens, Metasys by Johnson Controls, Honeywell, Trane or Cisco Mediator.

The less extensive control system may be

11. Our building is partially digitized, maybe only lighting or only HVAC system as a stand-alone end-use
12. We have a centralized Building Management System.
13. Or you may know them by name such as Jace by Honeywell, EnNet or Field Server.
14. Other specify

If answer = 1, 2, 3 – **HI EMS**

If answer = 4, 5, 6 – **LO EMS**

If answer = 7 – tell customer we will call again once the Project Manager has decided how best to approach them.

We are looking at scheduling the call in September for the week of And we have openings on _____? The interview will be wrapped up within one hour.

	T	W	R	F	S	S	M	T	W	R	F	S	S	M	T	W	R	F
	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
8																		
9																		
10																		
11																		
12																		
1																		
2																		
3																		
4																		

I will send an email invitation using Outlook which will also include a brief overview of the materials that will be discussed so that you may have time beforehand to formulate constructive input.

If customer does not use Microsoft Outlook, tell customer to put in on his/her "calendar".

May I please have an email address? _____

May I have a cell phone number? _____

May I have your name and job title?

Name: _____

PG&E's Emerging Technologies Program

Job title: _____

Thank you in advance. We look forward to your input! If you have any questions, please call me at 415-948-2314.

ONLY IF NECESSARY: The PG&E Program Manager who can verify that the FSC is in fact conducting these interviews for PG&E is:

Name: Elina Shcop
Telephone: 415-973-6148

I-2: Interview Discussion Guides

PG&E - EMS Market Research

Interview Question Guide for Trade Association Interviews

Trade Association Name _____ Date _____

Contact Name _____

Title _____

Phone Number _____

Email address _____

As you will recall from our prior conversation and the background material we sent, we at Freeman, Sullivan have been asked by PG&E to perform some market research regarding how certain commercial/institutional market segments view investments in energy management systems. As a reminder, EMS can be thought of as centralized computer-based systems that allow a facility manager to monitor and control one or more end-uses from a central location, for either that building or a series of structures. EMS systems range from basic (i.e., lighting or HVAC controls) to more sophisticated products.

PG&E is interested in learning more about how customers view and assess EMS investments in that by seeing more EMS systems coming into play among their commercial customer base, PG&E believes more energy efficiency measures will be adopted. We sincerely appreciate you taking the time to share your candid views and perspectives, and have a series of questions to pose that will take approximately 45 minutes of your time.

In full disclosure, please bear in mind that the EMS options we are going to be discussing towards the end of our time together are under consideration but by no means finalized; nor is whether or not a PG&E EMS marketing strategy will actually come to fruition. However, your input will be strongly considered in how this all moves forward. Your responses will remain confidential with your association only identified by "large (or small), state (or regional or county, etc.), and type of facilities (office space or other)".

Also, in order to allow me to better capture your key points, while staying focused on our conversation, are you comfortable with me recording our conversation? The recording will solely be used by my team to help us craft our report to PG&E.

Is now still a good time to talk? If not, when would be better? *(Get it rescheduled.)*

Background Questions

These background questions are designed to assist us in better understanding how the members of your association would be involved in structuring and approving an EMS investment.

- Among your California membership, roughly how many facilities are under their purview?
- Is there any common themes or characteristics associated with the facilities?
- What is the footprint, description, and electric load associated with a typical facility?
- Do your member's facilities usually have EMS systems in place?
 - are they utilized?
- For your membership, about how much of their respective monthly operating costs are tied to paying for electricity?
- In general, how does the capital project approval procedure work for improvements to the facilities your members oversee?
- Among your members, are there any situations whereby a capital project (due to limited size or scope) could be funded through the operating budget?
- In terms of capital investments, where does energy efficiency fall in terms of your members' priority "pecking order"? How does it compare to statutory compliance, health and safety, etc.? Does it have its own performance metric or is it viewed under the rubric of "operating cost savings"?
- From your experience with your members, are they aware of PG&E's web-based offering known as InterAct?
- From your experience with your members, are they aware of the usage data download capabilities of the SmartMeters being installed?

Energy Efficiency Experience

- Overall, do your members pursue energy efficiency projects?
- What EE projects do they routinely complete?
- What is the projected payback period threshold that your members look for?
- Do your members have sufficient engineering project management expertise (in-house or contracted) to identify and implement any energy efficiency opportunities within their facilities? Do you recall whether they have taken advantage of utility and/or other third party engineering services in the past?
- How successful have your members been in crafting the requisite capital project justification documentation that led to project approval by their senior management?
- Do you offer any support services along these lines?

Barriers

Let's work together to develop a list of barriers that stand in the way of your membership being in a position of more aggressively pursuing sophisticated EMS investments. We will separate them into barriers that you see confronted from a facility manager's perspective, and those confronted from upper management's perspective.

What should that list of barriers include?

If stalled, potential prompts include is it –

- *tied to specific aspects of your business,*
- *insufficient financial reward to warrant the effort necessary to invest, or*
- *more due to challenges of getting the attention to such matters from senior management.*

Based upon your knowledge of EMS systems, as well as the wants and needs of your members, what functions of an EMS system would have the most cache?

If stalled, potential prompts – some of the new products enable the following features:

- *Automated fault detection of various systems within building*
- *Hosted monitoring services*
- *Easy integration with DR measures*

Potential EMS Incentive Structures

PG&E is analyzing possible incentives for increasing customers' interest in initial EMS investments, as well as more sophisticated EMS upgrades for customers' like those in your association.

Here are some things that PG&E has been looking at developing to assist them relative to pursuing more sophisticated EMS options.

I am going to walk through these quickly to see if you have any basic questions.

- **On-site paid Project Manager to implement EE measures** recommended by building performance software. There are many software products in the market today that do building performance monitoring. Some of these products automate parts of the auditing process and offer project suggestions for retrofits or general maintenance of the building. However, many building facility teams do not have the time or resources to manage these suggested projects. The proposed incentive would be in the form of a contractor that would be onsite to help manage energy efficiency measures derived from these software auditing tools.
 - *Would the customer select the PM or would PG&E provide?*
Could be either, but its be funded by PG&E
 - *Cap on the level of monies provided to the PM?*
I think it would be salary based, whatever is appropriate for a PM
 - *Any constraint in terms of how long they would be allowed to continue to support a given project?*
We would probably set a duration of a year or something, something reasonable to complete projects and then they have the option to rollover to the company's payroll

PG&E's Emerging Technologies Program

- *Any minimum constraint in terms of the number/funding level/energy savings needed to be met in order to qualify for the paid PM?*
Yes, it would have to go through an auditing and application process similar to Retro-Commissioning programs
- *Any constraint in terms of availability of the offer, once the customer agrees to obtaining the building performance software?*
Haven't thought the idea through that far, the sequence of our project is this market study first, then technology assessment around how to structure the actual incentive

Potential Incentive Oriented Questions

- Does this concept have any appeal? Would your members be receptive to the offer?
 - **If no**, what are the major impediments or shortcomings that you see?
 - If no, what aspects of the concept appear attractive?
 - **If yes**, what components of the offer as described sound most appealing?
 - If yes, what pieces do you view as major impediments or shortcomings?

Wireless Pneumatic Thermostats

- *these are devices you put on existing pneumatic thermostats that wirelessly communicate with a centralized control box*
- *The control box can either integrate with your building management system or directly to the IP network and you can interface and monitor your zones through a web portal*
- *With these systems, there are a number of energy efficiency measures you can take that will reduce your total energy consumption*

Potential Incentive Oriented Questions

- Does this concept have any appeal? Would your members be receptive to the offer?
 - **If no**, what are the major impediments or shortcomings that you see?
 - If no, what aspects of the concept appear attractive?
 - **If yes**, what components of the offer as described sound most appealing?
 - If yes, what pieces do you view as major impediments or shortcomings?

Hybrid Deemed Rebate on Wireless HVAC Product

- *the way the incentive works is the customer purchases this technology and the incentive would subsidize part of the capital investment but they would be obligated to run 1 of the identify energy savings methods and provide documentation that they have saved energy*

PG&E's Emerging Technologies Program

- *An example of the energy savings measures is dead band controls where they set there HVAC system to not do anything for a range of temperatures*
 - *Do you have some specifications that we could look at in terms of the wireless HVAC product that you have in mind?*
A quick google search resulted in Advector Systems, Honeywell's RedLINK, and Steinel's Enocean System (from India).
Yes, we are working Cypress envirosystems
 - *What level of rebate?*
Too early to tell, possible subsidize hardware
 - *Will it be capped by percent of overall cost?*
Too early to tell
 - *Will it be limited to eligible products?*
Yes, only customers with pneumatic thermostats
 - *Cap on the number of rebates to be paid, or limited by monies available?*
Too early to tell

Potential Incentive Oriented Questions

- Does this concept have any appeal? Would your members be receptive to the offer?
 - **If no**, what are the major impediments or shortcomings that you see?
 - If no, what aspects of the concept appear attractive?
 - **If yes**, what components of the offer as described sound most appealing?
 - If yes, what pieces do you view as major impediments or shortcomings?

What additional tools would you like to see that would help you and customers like you become more empowered to pursue upgraded EMS investments for your facility? *Unaided.*

Marketing Approach

- What marketing approach and/or channels would you recommend as being most impactful in terms of helping your members make a decision?
- What marketing approaches and/or channels would be least impactful?

This concludes our interview, unless you have any questions for me. Thank you again for your time and frank discussion.