

Equipoise Consulting, Inc.



Evaluation

Project Management

Final Report for

County of Marin's Measurement and Evaluation of the Marin Public Facilities Energy Management Team Program (CPUC Number 1433-04)

Submitted by:

Equipoise Consulting Incorporated

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1 EXECUTIVE SUMMARY

The Marin County Community Development Agency was chosen by the California Public Utilities Commission (CPUC) to implement a two-year non-investor owned utility information-only program to support Marin County local governments and school districts in reducing energy use and associated costs. The program established the Marin Energy Management Team (MEMT), a group of local energy efficiency experts who provided a comprehensive set of services. The program ran from March 1, 2004 to December 31, 2005.

A tightly-focused evaluation approach was developed for this project because of the limited evaluation budget. The evaluation team, in conjunction with the MEMT staff, developed a logic model to highlight the program theory and guide the assessment. Evaluation team experience and discussions during the development of the model provided insight into the areas of highest program theory uncertainty. This focused evaluation resources into key areas.

The Marin Energy Management Team has provided a needed service over the past couple of years. The large majority of participants surveyed by the evaluation were enthusiastic about the program and the services offered. The program staff are viewed as professional and knowledgeable by their customers.

1.1 Program Theory Assessment

There were two main areas of high evaluation priority, covering eight unique program theory links. One of the areas addressed a software component whereby participants were slated to use energy data to track use over time. This component was theorized to change behavior and practices when used regularly. However, a redirection of evaluation effort took place late in 2005 when it was realized that this component had taken longer than expected and the underlying assumptions could not be assessed. The second area in which the program theory was assessed covered the peer-networking component. This part of the program organized luncheon meetings that provided an informal venue to interact with others around Marin who worked in similar jobs. Additionally, the program made a short presentation at each event to educate and inform the participants about various energy efficiency topics.

1.1.1 Assessment of Software Component

For this area, the evaluation was changed to a process assessment because of the delay. Equipoise interviewed the three market actors involved with the late portion of the program. A qualitative analysis of the responses from the interviews supplied probable reasons for delay

Lessons are learned and obstacles are overcome whenever any new process is put in place. The MEMT was proactive in heading off certain potential time-delaying obstacles and active in tackling difficulties as they became aware of them. The forethought to create a one-page document for clarification of the need for historical billing data and complete all the needed information so that only a single client signature was required was essential in moving the early part of the process forward. The learning curve around billing data, its use and obtaining it regularly, caused delays. The level of work required by the subcontractor handling the database was not anticipated by MEMT. However, gaining the knowledge that PG&E is willing and able to create a standard extract for a 3rd party to regularly receive billing data was invaluable.

Adjusting the skill set of the team in the last quarter of the program ultimately helped to advance this component, but the lack of the best set of skills to begin with was one of the reasons for the slower than planned progress. To summarize this effort a slightly different way, the original four goals for the assessment and findings of each are next. The CPUC requested a determination of:

1. *The causes and conditions that slowed the process* – The process was slowed due to two main reasons. There was a learning curve for the MEMT in handling billing data and the need for a facility audit prior to an entity clearly understanding the information provided by the billing data. The facility audits took longer than expected because the team's auditing capabilities were not optimal.
2. *What kinds of management or operational changes should or could be implemented to assure accomplishment of the goal* – The MEMT has already made the changes necessary to correct the problem (i.e., they have in place what appear appropriate processes to obtain billing data routinely and in a timely manner, and they have added appropriate auditing capability and realize the essential timing of the audit to the data analysis) A future evaluation should be able to assess the links in question. The program appears to be on track to provide billing information to their customers who desire the information.
3. *Lessons learned* – The two main lessons learned by the MEMT around this particular process follow directly from the causes that slowed it. The first being that handling billing data requires more time and effort than originally expected. The fact that each time that billing data is provided there must be a process to determine the dropping or addition of metered data. The second was that having an engineer who is full-time with the team and has a comprehensive engineering background with the ability to understand billing data is the optimal organization of skills.
4. *Barriers to this effort* – The identified barriers to this effort appear to have already been overcome by the MEMT. They are now familiar with the potential difficulties of working with billing data and the team has a full-time engineer who works closely with them in all aspects from the audits to presentation of the billing data.

1.1.2 Assessment of Peer Network Component

The second main area of program theory assessment covered the peer networking component. The peer network lunches took place throughout the program implementation. The evaluation obtained a population for those who had attended one or more of the five lunches prior to 10/18/05 and surveyed a random sample of 17 these participants. The survey was created to determine whether the participants felt that the lunch was informational, whether they had contacted their peers to discuss any issues since the lunch, or may do so in the future. Questions were asked to assess whether the forum of networking over lunch was found to be a good use of their time and whether they thought meeting other people performing the same functions at different organizations helped them perform their job more effectively. Qualitative analysis of the responses from the 17 completed surveys provided the basis for the findings from the survey.

The qualitative data gathered from the participants in the peer network lunches strongly support the underlying program theory linkages for this component. Two-thirds of the organizations being served by the program attended at least one lunch, 90 percent of those indicated a high likelihood of using the contacts from the lunch as support around energy efficiency, 81 percent

stated an increase in knowledge about energy efficiency due to lunch participation, and 62 percent have already taken specific actions regarding energy use or energy efficiency. The MEMT has provided useful and desired activities that have led to the expected short-term outcomes. In the couple cases involving lighting retrofits, longer-term outcomes of actual energy and demand reduction have also occurred. The combination of social lunches with professional information, supported by team experts during and outside of the lunches, is a good approach to emulate to effect change in this population.

1.2 Verification of Program Goals

The program met or exceeded all of the program goals with two exceptions. According to the program, there are two formal and one informal energy management teams formed. The informal team is not counted towards the goal of three teams formed. Also, the audits covered 3 percent less square footage than planned. However, it should be pointed out that the 1.9 million square feet of audited space was originally broken down into 600,000 square feet of more intensive investment grade audits and 1.3 million square feet of facility audits that were less intensive to perform. This ratio was flipped in actuality, with ~1.1 million square feet of investment grade audits and ~750,000 square feet of facility audits.

The verification of the capital budgets by the evaluation was a simple audit of the fact that the program reviewed a specified number of budgets. The completed reviews took the form of a spreadsheet with information on each entity. As audited, the program exceeded the goal. However, the MEMT found that this element produced a number of useful lessons and created a document delineating these lessons. It is included as Appendix D.

**Exhibit 1.1
Verified Goals**

Element	Program Element	Agreed PUC Goal #	N Verified	% of Goal	Comment
1	Contact by Program	31	31	100%	
2	Scoping Surveys	25	25	100%	
3	Energy Accounting	15	31	207%	
4	Facility Audits	15	18	120%	This element also included a square feet audited goal that is included in Element 12 below.
5	Workshops	8	8	100%	
6	Workshop Attendance	58	123	212%	
7	Peer Networks	6	6	100%	
8	EE Management Teams	3	2	67%	
10	Capital Budgets Reviewed	15	17	113%	
11	Demonstration Classroom/ Office	2	2	100%	
12	Investment Grade Audits or Equivalent Engineering Analysis	1,900,000	1,849,215	97%	See note above table.

1.3 Recommendations

Because the current program met or exceeded all but two of the specified goals and appears to have made the needed changes to fulfill the one delayed element that was planned for evaluation, recommendations are made in the context of the future use of third party programs within California. In 2003, this program was chosen by the CPUC as a third-party implementer with the Investor Owned Utilities (IOU's) being the contracting agent. The IOU had no responsibility for the performance of the third party programs during 2004 and 2005. For 2006 and later, the IOU's will choose and integrate the third party programs more fully into their portfolio. As such, the program recommendations are directed towards what may be useful when assessing the possible effectiveness of a third party program to include within the portfolio.

1.3.1 Program directed recommendations

The MEMT program provided multiple areas of intervention to attempt to engender the growth of energy efficiency within their targeted population. The evaluation budget precluded an in-depth process evaluation of all but one element of the program¹. However, the recommendations that arose from this process evaluation should be relevant for any program that plans to use billing data as an ongoing source of information for their nonresidential participants.

Based on the findings of the process assessment, it is recommended that:

- The program provide sufficient time to set up and begin using the data from a database that houses the participant billing data. For a group of around 30 participants, anywhere from four months to a year may be appropriate.
- A standardized data request that includes premise ID be used. The data fields used within this program are presented in Appendix B. However, it appears to be possible to work closely with PG&E to create a set of variables that can be provided on a regular basis from the rate data analysis groups within PG&E.
- Training be provided to the program implementers in the structure of nonresidential billing data if they are unfamiliar with the use of this data.
- Adequate resources be budgeted to create and maintain a robust database of billing data for the participants. While the optimal level of resources are unknown, it is suggested that a budget of less than \$60,000 may be less than ideal. Any budget should have an embedded monthly maintenance cost.

If the program is also providing benchmarking or facility audits, it is recommended that:

- The organizational set up of the program include a full-time engineer with a comprehensive engineering background and an ability to read and understand billing data.

1.3.2 Evaluation directed recommendations

Since the MEMT has been chosen by PG&E to be part of the portfolio in PY2006-2008 as a third party implementer, any future evaluation will occur from two entities. The CPUC may provide an impact evaluation to attempt to determine indirect effects and PG&E may choose to perform a process evaluation of the program. Evaluation recommendations are:

- Provide a baseline of energy efficiency actions for the targeted population. This baseline should use the descriptive baseline information gathered by the program in 2004 to attempt to recreate a baseline prior to intervention by the MEMT.
- Determine the penetration of energy efficiency and the potential for future energy savings in the program participant population mid-way through the PY2006-2008 program to help inform future need for the program.

¹ The one element for which the process evaluation occurred used approximately eight percent of the program budgeted resources.

- Assess whether an increase in awareness and knowledge lead to changes in energy efficiency related behaviors (i.e., link 23).

2 INTRODUCTION

Equipoise Consulting Inc. (Equipoise) was chosen to evaluate the Program Year (PY) 2004-2005 Marin Energy Management Team (MEMT) Program. This document details the research methods used to assess the program and presents the results of that research. A brief description of the program begins this section, followed by the overall evaluation approach. A detailed description of how the evaluation team addressed each item stipulated by the California Public Utilities Commission (CPUC) is the last section in this introduction. The evaluation is more fully described in the remaining sections of the report.

2.1 Overview of Program

The Marin County Community Development Agency was chosen by the CPUC to implement a non-investor owned utility information-only program supporting Marin County local governments and school districts efforts to reduce energy use and associated costs. The program established the Marin Energy Management Team (MEMT), a group of local energy efficiency experts who provided a comprehensive set of services. This program offered the following assistance:

- Facility surveys to identify energy saving options;
- An energy accounting system to manage current energy use and track savings;
- Design and engineering assistance;
- Training for staff and team building to integrate energy efficiency (EE) practices and procedures into operations;
- Project management and financing;
- Leveraging technical and financial assistance available through PG&E, state and federal agencies;
- Retrofit of a classroom and office that served as state-of-the-art demonstrations and provided a learning tool for students and facility managers.

According to the MEMT program implementation plan (PIP), success of the program was to be determined by the number of cities and school districts who participated in the scoping mission, attended training workshops, participated in the networking meetings, accessed third party resources, and ultimately implemented energy efficiency measures in their facilities.

2.2 Evaluation Objectives

There were no specific evaluation objectives given by the program. As a result the CPUC stipulated objectives were used as the sole set of objectives for this evaluation. How those objectives were met is outlined in Section 2.4.

2.3 Evaluation Approach

A tightly-focused approach was used for this evaluation because of the limited evaluation resources available. The program had budgeted approximately 4% of the program budget towards the evaluation, however, as this was a relatively small program, the total evaluation resources available were small, leading to a restricted evaluation scope.

To offset this limitation, the evaluation team, in conjunction with the MEMT staff, developed a logic model to clearly define the program theory and guide the assessment. Evaluation team experience and discussions during the development of the model provided insight into the areas of highest program theory uncertainty, focusing evaluation resources into key areas. The program theory and logic model are detailed in Section 3.1.

An issue for this evaluation was the CPUC requirement of a market assessment and baseline for new programs and how it would occur given the resource constraints. As the market addressed by this program was the 12 local governments and 19 schools districts, the market entities were known. It was agreed that a full market assessment was not a high priority for the program implementers and that evaluation resources could be better spent elsewhere.

For purposes of the planning the evaluation, the baseline was considered the state of energy-related projects, awareness, or knowledge of these market actors prior to the implementation of the program. The program implementers had performed scoping studies with all organizations to assess their needs. In-depth interviews of one hour or more in length occurred that generally covered the following topics:

- City or School Description
- Current Energy Efficiency Projects
- Past Energy Efficiency Projects
- Future Projects
- Implementation Planning / Project Planning
- Maintenance & Operations / Procurement
- Energy Audits – if ever performed
- Funds / Incentives used in the past
- EE Training that has attended
- Benchmarking / Energy Accounting that has occurred
- Internal Resources / Barriers
- MEMT support

The interviews were with the person designated as the main contact person with MEMT. Most often this was the Public Works Director or Assistant Director (for cities) or the Facilities Manager (for schools). The nine currently completed scoping studies were reviewed by the evaluation team shortly after the evaluation project initiation meeting to determine the usefulness of this data as a substitute for the baseline information. The evaluation team felt that the information provided could be used as a descriptive baseline for the local governments and schools and was sufficient to allow evaluation resources to be focused elsewhere.

The CPUC accepted evaluation plan originally planned to spend resources to:

- 1) provide ongoing feedback and constructive guidance to survey instruments created by the program implementers;
- 2) test assumptions that underlie two specific components of the program; and
- 3) audit/verify activities stated in the program goals.

However, a redirection took place late in 2005 when it was realized that one of the two components slated for evaluation had taken longer than expected and the underlying assumption

could not be assessed. The evaluation had planned to assess the strength of links 3, 15, 16, 19, and 23 (see Exhibit 3.3). At the time of the evaluation, a few entities were being provided energy information, but had just begun to see the data and had no experience with it. Therefore, at the direction of the CPUC, Equipoise performed a process evaluation focused on the delayed component with the goal of determining: 1) the causes and conditions that slowed the process, 2) what kinds of management or operational changes should or could be implemented to assure accomplishment of this goal, 3) lessons learned, and 4) barriers to this effort.

2.4 CPUC Stipulated Items

This section covers the items specifically stipulated by the CPUC. There are both specific objectives and EM&V components that require discussion. Eight objectives are presented first followed by the EM&V components.

1. Measuring level of energy and peak demand savings achieved. – *This is an information program - no energy or demand impacts were expected and were not estimated in this evaluation.*
2. Measuring cost-effectiveness (except information-only) – *This is an information-only program and was not required to measure cost-effectiveness.*
3. Providing up-front market assessments and baseline analysis, especially for new programs – *Due to the available budget, the CPUC agreed not to require a market assessment as part of this evaluation. The descriptive baseline based on the data gathered during program sponsored scoping studies is included in this report as a substitute to the required baseline study.*
4. Providing ongoing feedback, and corrective and constructive guidance regarding the implementation of programs. – *Equipoise provided feedback by reviewing the scoping study form and the evaluation form for the workshops as well as providing recommendations in this evaluation report.*
5. Measuring indicators of the effectiveness of specific programs, including testing of the assumptions that underlie the program theory and approach. *Because the program did not have a program theory in the PIP, Equipoise created a program theory for the program and, with the input of the Program Manager, determined the areas that were least known. The evaluation tested the underlying assumptions of the Peer Network Lunch component.*
6. Assessing the overall levels of performance and success of programs. *Equipoise assessed the extent to which the Program achieved its stated objectives through audits of the different elements of the program.*
7. Informing decisions regarding compensation and final payments. – *The Energy Efficiency Policy Manual requirements are unclear for this objective for information-only programs. (Prior versions of the energy manual did not require this of information only programs.) The program reported progress against goals on a monthly basis. Equipoise did not double-check these reports as there would have been very little added value. However, the overall goals of the program were verified by the evaluation team.*
8. Helping to assess whether there is a continuing need for the program. – *The evaluation team drew conclusions from the information gathered during the evaluation to help assess a continuing need for the program. The programs ability to meet their goals, was used as an indicator of future need for the program.*

EM&V Components

Baseline Information

As this is an information only program, no energy baseline information is required.

Energy Efficiency Measure Information

As this is an information only program, no energy efficiency measure information is required.

Measurement and Verification Approach

As this is an information only program, no M&V is required.

Evaluation Approach

The evaluation approach is covered in detail in Sections 3 and 4 of this report.

3 PROGRAM THEORY AND ANALYSIS METHODS

The program theory logic model was originally put together by the evaluation team based on the program implementation plan. The model was discussed with the program staff during the project initiation meeting and changes were made as needed.

3.1 Program Theory & Logic Model

The CPUC, Marin County and the evaluators need a common understanding of how the program expects to produce certain outcomes. A program theory supplies this “set of beliefs that underlie action.”² The theory, and logic model that diagrams that theory, guides the evaluator in determining how to approach the evaluation and where resources should best be placed. The theory for this program is based on a set of hypotheses outlined in Exhibit 3.1.

Exhibit 3.1 Program Hypotheses of Change

1	Local governments and schools are aware of, want, and need energy efficiency services such as energy audits and energy information.
2	When entities have no dedicated energy management staff, they need availability of energy efficiency services from this program, not simply energy efficiency services in general.
3	Participation in program activities increases the awareness and knowledge of energy efficiency among participants.
4	Increases in awareness and knowledge cause changes in behavior that lead to reduction in energy use.
5	Participation in the program provides the tools to measure energy use on an ongoing basis which, in turn, leads to the ability to control/manage energy use
6	Organizational changes take place that cause behaviors leading to energy reduction

While these hypotheses are high-level, a logic model breaks apart how the program may cause certain actions and highlights the information and causality flow resulting from the program actions. The logic model for this program is shown in broad overview in Exhibit 3.2 and in detail in Exhibit 3.3. A discussion of each of the numbered links shown in Exhibit 3.3 is provided in Exhibit 3.4.

² Weiss, Carol H. Evaluation: Methods for Studying Programs and Policies. Prentice Hall, 1998.

Exhibit 3.2
Program Theory Logic Model - Overview

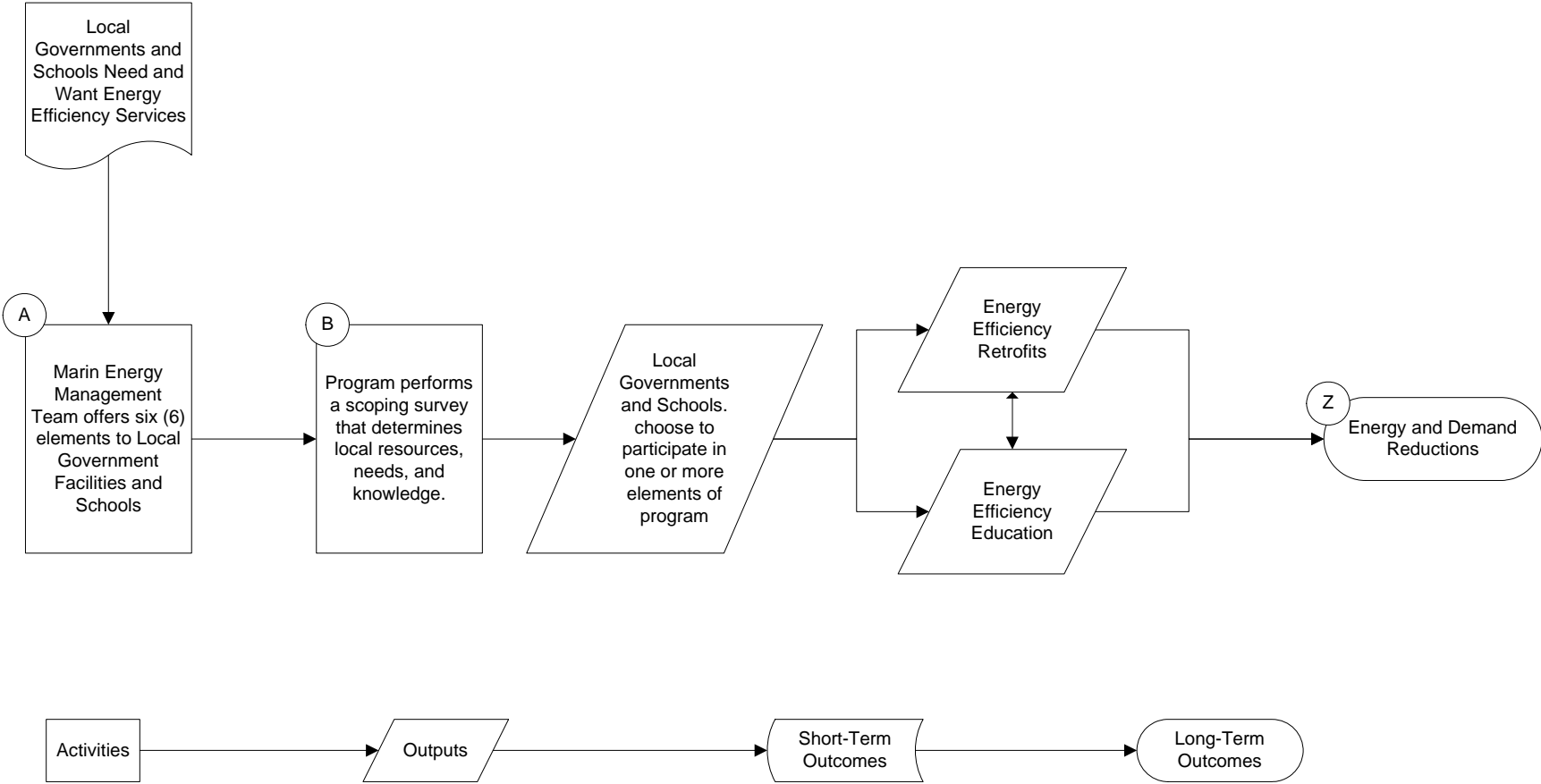


Exhibit 3.3
Program Theory Logic Model – Detailed

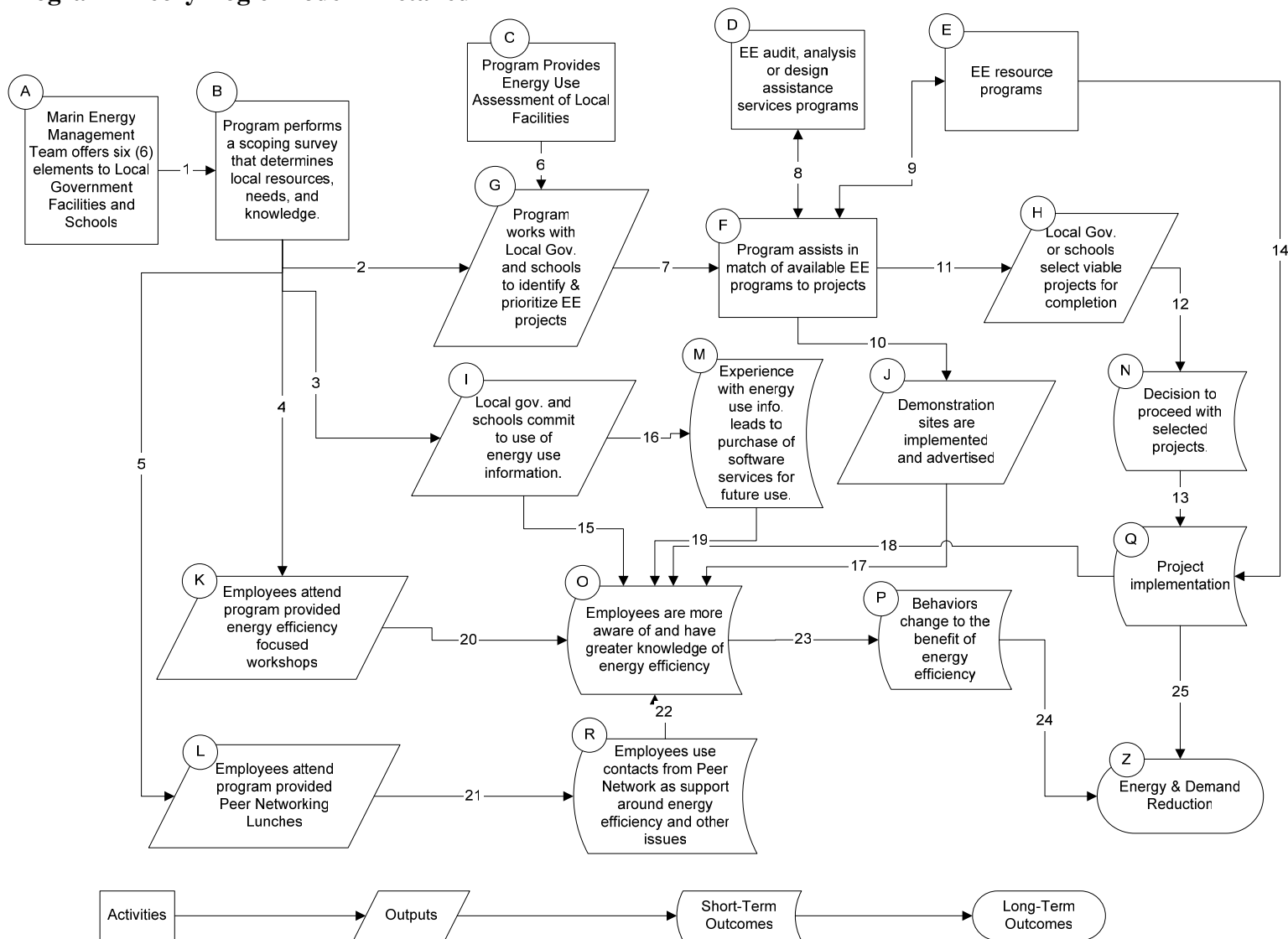


Exhibit 3.4
Explanation of Program Theory Links

<i>Link</i>	<i>Discussion</i>
1	The program obtains the needed resources and provides the appropriate people to perform scoping studies for the schools and local governments.
2	Based on scoping study, the program determines wants and needs and makes the local governments and school aware of program resources. Local governments and schools choose to have facility audits performed.
3	Based on scoping study, the program determines wants and needs and makes the local governments and school aware of program resources. Local governments and schools choose to use energy use information provided by software package.
4	Based on scoping study, the program determines wants and needs and makes the local governments and school aware of program resources. Local governments and schools choose to attend energy efficiency workshops. Program provides energy efficiency workshops at times and locations where staff can attend and are of interest to staff.
5	Based on scoping study, the program determines wants and needs and makes the local governments and school aware of program resources. Local governments and schools choose to attend Peer Networking lunches.
6	Program supplies adequate and timely assessment of the energy use at local government facilities and schools.
7	Audits are reviewed and areas where the implementation of energy efficiency projects could occur are identified
8	More detailed audits and possibly implementation plans are drawn up with the help of the program staff and other energy efficiency programs.
9	Program assists local government in identifying outside programs to help fund energy efficiency plans.
10	Based on previous audits, demonstration sites are set up and viable projects are selected.
11	Thoroughness and ability to understand recommended energy efficiency project reports allows local government and schools to select viable projects for future implementation.
12	Package submitted for internal approval has better chance of getting approved because of better documentation and identified sources of funding assistance, and training of decision makers. The availability of program staff to help manage the implementation of energy efficiency projects helps decision makers give the go ahead for projects
13	Availability of program staff and incentives causes increase in confidence in decision maker, contributing to the actual implementation of the energy efficiency project.

<i>Link</i>	<i>Discussion</i>
14	Program helps to obtain incentives for project implementation.
15	Continual use of the information from the software reports increases the understanding of how energy efficiency projects or behavioral changes can affect energy use.
16	Positive experience with information from software leads to purchase of software services at end of program for future use.
17	Seeing the demonstration site, hearing about the costs to retrofit and maintain the technologies installed, and learning about potential energy savings from the changes increases the understanding of energy efficiency potential.
18	Seeing the retrofit projects and learning about potential energy savings from the changes increases the understanding of energy efficiency potential.
19	Continued use of the information on energy use increases knowledge of how the buildings use energy and provide feedback on energy efficiency projects.
20	Exposure to relevant and targeted information about energy efficiency, ways that individual behaviors can effect energy use, and how organizations can make changes to save money on energy use increases the understanding of energy efficiency potential.
21	Existence of a peer support network causes employees to contact other members within the network when questions arise around energy efficiency.
22	Continual participation in the peer network increases awareness and knowledge about energy efficiency.
23	Because of increased awareness and knowledge, people now change their behaviors.
24	Change in behaviors lead to reduction in energy usage.
25	Project is implemented as planned and provides long term energy and demand savings.

Because it may not be totally clear where the program components are covered in the logic model, Exhibit 3.5 provides the map from the program element to the location within the program theory logic model.

Exhibit 3.5
Program Element Match to Theory

Program Element	Logic Model Box
Scoping Survey	B
Energy Accounting Software & Services	I
EE Training & Team Building	K
Initial Facility Audits	C

Program Element	Logic Model Box
EE Design & Engineering Services	D
Shared Energy Management Services	F
Demonstration classroom and office	J
Monitoring & Reporting	I

Based on discussions during the project initiation meeting, the least information was known about how (1) the peer networking lunches and (2) the ability to track current and historical energy use would affect participant knowledge and behavior. Exhibit 3.6 lists the links in the logic model (Exhibit 3.3) that were considered for evaluation, their priority for evaluation as it evolved from discussions with program staff, and summaries stating whether the evaluation will address the linkages.

Exhibit 3.6
Evaluation of Logic Model Links

Link	Evaluation Priority	Evaluation Summary
3, 15, 16, 19, 23	High	<i>Software</i> - These links cover the use of the software to track energy use and potential behavioral changes. Self-reported responses on interviews were planned assess the links. However, this component was delayed sufficiently to disallow a meaningful evaluation of the possible outcomes of this intervention. The evaluation team performed a process evaluation to attempt to determine the causes of the delay.
5, 21, 22, 23	High	<i>Peer Networking</i> - Peer networking was assessed through these links.
1, 2, 4, 6, 7, 8, 10, 20	High	<i>Verification of Program Achievements</i> - Verification / auditing of the program goals described the activity indicated by these links, although no testing of underlying program assumptions occurred.
9, 11, 12, 13, 14, 17, 18, 24, 25	Low	<i>Not Evaluated</i> - No evaluation occurred of these links due to resource constraints and the expectation that the long term outcomes may occur after the evaluation / program period.

3.2 Analysis Methods

The MEMT evaluation fell into the following three distinct areas.

3.2.1 Feedback to the Program

The evaluation team reviewed the scoping study that was in use by the program implementers and provided verbal suggestions for possible changes in what was collected. While the evaluation team originally planned to review and provide feedback on the evaluation tools

planned for use by the program implementers during the energy efficiency workshops, the implementers used a more informal verbal request of participants to obtain feedback on issues such as ideal times and duration to hold the workshops, location preference, and topic interests. This feedback was used to develop each subsequent workshop. The program implementers felt that this type of feedback loop was best for the specific group of people who attended the workshops. As such, the only feedback to the program that occurred during the implementation period dealt with the scoping survey.

3.2.2 Assessment of Program Theory Assumptions

Two areas of highest evaluation priority were the software component and the peer networking component (see Exhibit 3.6), which combined, covered eight unique program theory links.

The process evaluation of the software component involved three market actors: 1) the MEMT, 2) the consultant working with the billing data, and 3) the department within PG&E that provides billing data for analysis purposes. Equipoise interviewed all three market actors using the interview guides provided in Appendix A. A qualitative analysis of the responses from the interviews was used to inform the probable reasons for delay.

The peer networking component was the second area of program theory assessment. The peer network lunches took place throughout the program implementation. The evaluation obtained a list of all individuals who had attended one or more of the five lunches prior to 10/18/05 and surveyed a random sample of this population. The survey (provided in Appendix A) was created to determine whether the participants felt that the lunch was informational, whether they had contacted their peers to discuss any issues since the lunch, or may do so in the future. Questions were asked to assess whether they found forum of networking over lunch to be a good use of their time and whether they thought meeting other people performing the same functions at different organizations helped them perform their job more effectively. An attempt was made to determine the social structure currently used by the peer networking participants when they need information on energy efficiency by asking who they interact with regularly on this topic. Qualitative analysis of the responses from the 17 completed surveys provided the basis for the findings from the survey.

3.2.3 Verification of Program Goals

The program had multiple goals, which are listed in Exhibit 3.7. While the original PIP provided the program goals as a percent and also as a number (i.e., scoping surveys would be done on 80% or 10 local governments), specific values were required for entry into the EEGA system. At the request of those running the EEGA system, the original PIP values were updated to CPUC goal values. Both the PIP and CPUC goal values are shown in Exhibit 3.7. The evaluation independently audited/verified the program goals through the method indicated in Exhibit 3.7.

**Exhibit 3.7
Program Goals**

Program Element	CPUC Goal	PIP Goal	How Evaluation Team Verified Element
Contact by Program	31	100% of 12 local governments and 19 school districts	Program database indicating contact name, title, and date of contact
Scoping Surveys	25	80%	Obtained completed scoping surveys from program
Energy Accounting	15	50% participation	Verified energy usage reports on the MEMT website.
Facility Audits	15 and 1.3 to 2 million square feet	60% and 1.3 to 2 million square feet	Obtain completed facility audits from program
Workshops	8	8	Obtained listing of workshop date, location, number in attendance, type of participant from program.
Workshop Attendance	58	60% of target audience	Obtained listing of all workshops attendees.
Peer Networks	6	Established	Obtained list of meeting times, locations, topics, and attendees
EE Management Teams	3	Where appropriate, >60% formation success	Discussion with program staff about this component.
Capital Budgets Reviewed	15	60%	Obtained completed reviews from program
Demonstration Classroom/Office	2	1 classroom 1 office space	Physically viewed demonstration. Obtained listing of upgrades from program.
Investment Grade Audits or Equivalent Engineering Analysis	600,000 square feet	600,000 square feet	Obtained completed audits from program.

4 DATA SOURCES AND SAMPLING DESIGN

The evaluation gathered both primary and secondary data. This section documents the source of each type of data, and, if appropriate, the sampling techniques used to assure representative samples.

4.1 Existing Data Sources

The majority of the verification activity relied on obtaining existing data sources. These were obtained from the program manager or directly from consultants within the program who provided the services. The program maintained a website where much of the data resided. The evaluation team was given full access to this site and was able to download data as needed. Specifically, the following data was obtained from the website:

- Energy audit reports
- Scoping surveys
- PG&E account information
- Utility Management reports
- CPUC reports

4.2 Primary Data Collected and Sampling Design

The evaluation collected the primary data shown in Exhibit 4.1.

Exhibit 4.1
Primary Data Collection

Data Source	How Gathered	Planned N	Actual N	Sampled by:
Software Report Participants	In-depth Interview	16	0	NA
Software Report Market Actors		0	3	Census
Software Report Nonparticipants		5	0	NA
Peer Network Participants		15	17	Random sample of peer network participants as of 10/18/05
Total Interviews		36	20	-

As indicated earlier, the evaluation was unable to perform the survey on software participants and nonparticipants. Following the CPUC choice of a process evaluation of this component,

primary data collection from the three software market actors was substituted for this component.

The original sampling plan for the peer network participants was to stratify the participants by peer group type and randomly select participants within each group. However, with only 29 participants to attempt 15 completed surveys a simple random sample was performed.

The peer network participants were emailed an introductory message indicating that an evaluator would be calling to speak with them, followed by a phone call.

Three local government participants called back almost immediately to complete the interview, while it took a bit more time and effort to reach the school district personnel than the local government (average of 2.7 attempts before a completed interview with a school district versus 1.6 attempts for a completed local government survey). The survey disposition is shown in Exhibit 4.2.

Exhibit 4.2
Survey Disposition

Entity	Completed	Refused	Wrong Number	Sample not completed*	Sample left**	Total
School District	9	3	0	2	3	17
Local Government	8	0	1	0	3	12
Total	17	3	1	2	6	29

*sample with calls out, but not completed because met quota of 15 completions

**sample never contacted

The survey length averaged 14 minutes, with the shortest survey at 6 minutes and the longest survey taking 26 minutes. The primary and secondary data were analyzed using the methods outlined in Section 3.

5 RESULTS

This section provides the results of the areas evaluated. The descriptive baseline gives an idea of the level of energy efficient activities prior to the program. Assessment of the program theory contained two components. The process assessment of the delay in software component is provided first followed by the results from the peer network survey. The program goal verification is presented last.

5.1 Descriptive Baseline

As indicated in Section 2, the program implementer performed 25 scoping surveys. All 11 cities/towns, the County of Marin fairgrounds, and 13 of the 19 school districts are included in the survey population. The six school districts not included in the scoping survey represent 18 percent of the student population. The data from the write ups of the surveys were collected and analyzed to provide this descriptive baseline of energy efficiency within the county.

The county of Marin is in Northern California. It is bordered by other Northern California counties, the Pacific Ocean and the San Francisco Bay. Much of the county is agricultural with the cities and towns located in the southeast portion of the county (see Exhibit 5.1).

Exhibit 5.1 County of Marin Map



There are eleven cities/town in the county with an approximate total population of 180,000. The 19 school districts educate around 30,000 students. The program worked with both cities/towns and school districts. Because the organizational structures are different, the baseline information is presented by type of entity.

Cities / Towns - At the beginning of the program, close to two-thirds (64 percent) of the cities and towns had no current energy efficiency projects, although 73 percent of them had completed energy efficiency projects in the past. These past projects ranged from stoplight LED conversions to T8 lighting. Some of the lighting projects were ten or more years in the past. One of the city sites had put in new HVAC, but it was unclear from the write up if this retrofit was energy efficient. Seventy percent were considering some sort of construction project in the future, but the survey did not indicate if energy efficiency was slated to be part of the construction. Only three of the cities/towns had some sort of existing policy regarding energy efficiency. One city indicated that they procure Energy Star equipment, another had a green building residential ordinance in place and were considering a LEED certification requirement for city buildings, the third city had a resolution to reduce greenhouse gas emissions. Three different cities had had energy audits performed while only one city had any energy efficient training (the Director of Facilities had attended a class at the Pacific Energy Center (PEC) approximately five years ago). While it was not known if each of the scoping surveys asked about the awareness of the PEC, the write up showed that four of the cities indicated they were not aware of the PEC. None of the cities / towns had had any type of energy benchmarking nor did any of them perform energy accounting.

One of the main reasons for the scoping survey was to determine what the program could provide to help facilitate energy efficiency. At the time of the survey, slightly under half (42 percent) of the cities / towns requested an energy audit, half wanted the program to provide them with technical support, and a third were interested in obtaining historical energy data for their sites. Additionally, they wanted the program to help coordinate ongoing activities such as a California Energy Commission (CEC) loan process, follow up with a lighting vendor, help the city create an incentive model to award energy efficiency, or train staff.

School Districts – One quarter of the schools had ongoing energy efficiency projects such as a cool roof, new T8s, and a small new construction projects with planned energy efficiency options. Two of the schools were installing photovoltaic (PV) systems. One school was in the process of building a new school and another was in the middle of modernization activities. However, whether energy efficiency was being considered in either of these pursuits was not indicated. Ninety percent of the schools had some sort of past energy efficiency projects, mostly lighting, although there was insulation and dual pane windows retrofit at one site. Another school built a school wing that was considered “green” with low out-gassing, much natural light, and a purported comfortable interior temperature. Three quarters of the surveyed school districts had future plans for some sort of new construction or modernization, although energy efficiency was not specifically indicated to be part of the plans.

Only one school had some sort of energy policy in place. This school had a service agreement with a vendor to service their heating systems (clean filters, make adjustments) as well as an energy and water conservation policy and a regulation from 2002 regarding evaluating existing buildings. Two of the schools had had an energy audit. Three of the directors of maintenance/facilities had attended classes at the PEC and one of these directors had sent one of

his staff to an HVAC school. Four of the school districts were unaware of the PEC as a resource. Similar to the cities / towns, none of the school districts had benchmarking or performed any type of energy accounting.

Close to 70 percent of the districts requested an energy audit, about half desired some sort of technical information from the program, and close to a quarter were interested in historical billing data. The schools asked for awareness training for their teachers, information on solar energy potential, recommendations on how to reduce their load before planned PV panels were sized, help with energy efficient rebates, interactions with current architects on current and planned construction activities, and information on energy management systems.

Looking across both entities, the baseline indicated a strong need for benchmarking and energy accounts as none of these organizations had either of these activities. Eighty percent had never had an energy audit or any type of energy efficiency training. There appeared to be a lack of basic knowledge about the energy use of their sites and the potential for energy savings. Despite the lack in these areas, over three-quarters of the sites had performed some sort of energy efficiency project in the past (although the magnitude of those projects is unknown), about one third had some energy efficiency projects underway, and seventy percent had plans for future projects. However, the future projects did not always indicate inclusion of energy efficiency. There was a stated desire to work with the program and obtain services such as energy audits, technical information, and historical billing data.

While it would have been informative to assess where each specific city, town, or school district stood in relation to this baseline after working with the MEMT, this was outside the scope of work for this evaluation. However, the verification of program goals provides a sense of how many of the program participants were involved with the program in one component or the other.

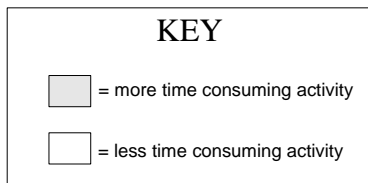
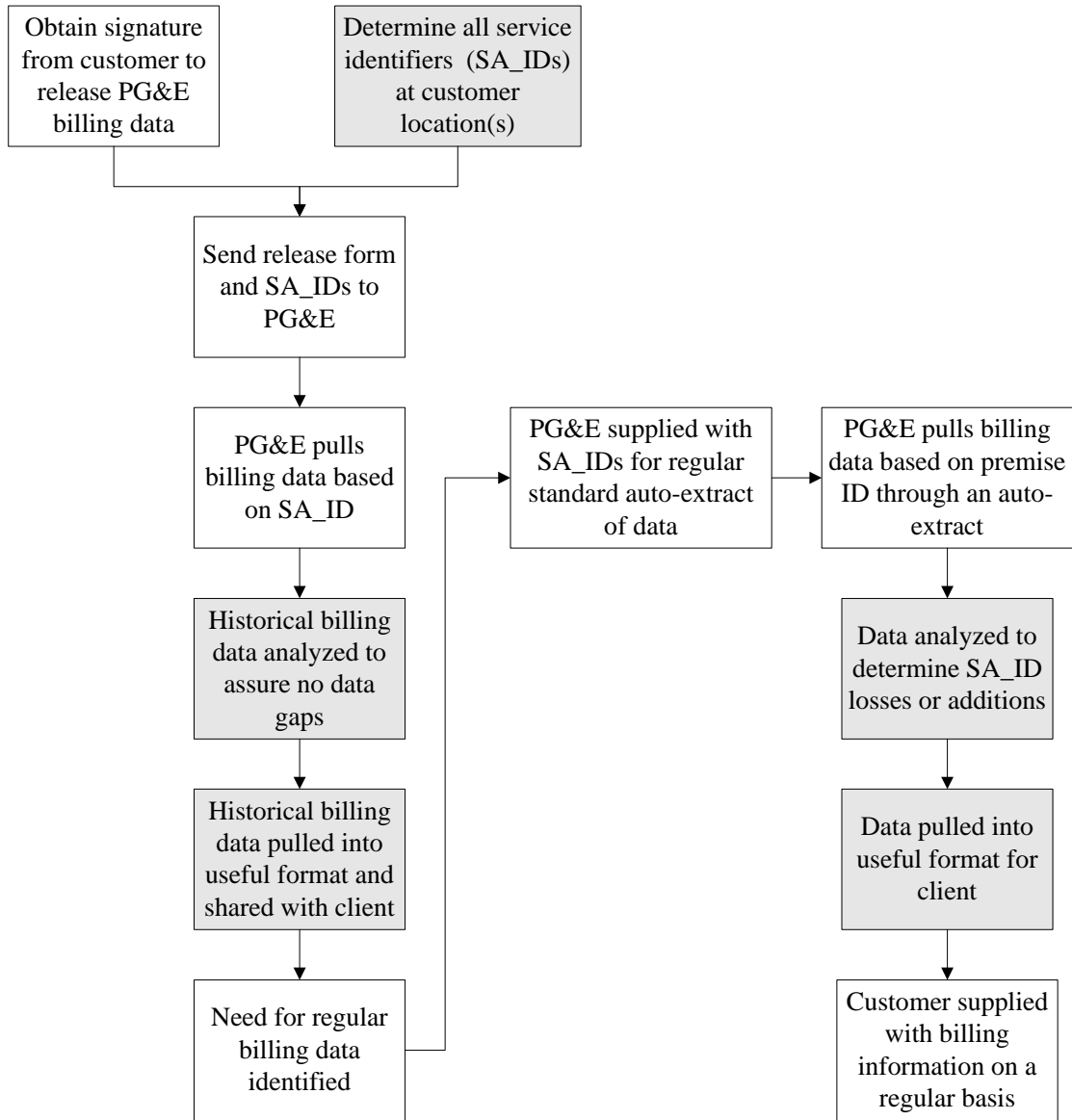
5.2 Program Theory Assumptions

5.2.1 Process Assessment of Delayed Energy Software Component

The process of moving monthly energy information from the PG&E billing system to the customer had three distinct interactions, each of which were assessed: 1) intra-program, 2) MEMT and their subcontractor Utility Management Services (UMS), and 3) the subcontractor (UMS) and PG&E. The interviews with the three market actors indicated that the process appeared to have been delayed mainly because of the learning curve required by the MEMT in handling the data and underestimating the actual time required to put together this type of system. Even with the knowledge gained and lesson learned, the MEMT felt in retrospect that setting up a similar process from scratch in the future would take six to eight months and would take longer than that to actually integrate the information with the client on a regular basis.

The original timeline from the PIP and an updated timeline based on the actual events are shown in Exhibit 5.4 as a visual guide to the timing of this component. Additionally, a flow diagram is presented in Exhibit 5.2 to help understand the process. Starting at the beginning and working through the expected process and associated timeline sheds light on why the evaluation was unable to perform the expected assessment.

Exhibit 5.2
Process flow of obtaining billing data



Originally, the program indicated a three month period to construct the database for an expected half of their client population. As indicated in Exhibit 5.4, it took closer to a year to complete the database. This database, however, contains data from all 31 clients. Prior to beginning the database construction, the program had foreseen difficulties in obtaining the release agreement required by PG&E for billing data and taken positive steps in reducing those possible barriers. The MEMT filled out the release agreement in total and found an avenue for obtaining account

information that took only a small amount of their clients' time. The program created a single page document that provided the client with the reasons why a release agreement was needed and how the data extraction was planned to be used. All that was required of the client was a signature. This streamlined process may have helped the program obtain the higher than expected 100 percent acceptance for this component. Because the MEMT did not meet with the clients simultaneously, the process of obtaining release agreements occurred over time. This extended the time to create a complete database with historical data for each client from the originally planned three month period to the twelve months shown in Exhibit 5.4. It must be recognized, however, that the MEMT used the database information as it became available. The fact that it took longer to fully populate the database than planned was not a root cause of the delay in the use of monthly data, but simply a recognition of the phased aspect of the program.

Once the client signed the release agreement, the MEMT performed the legwork to determine all service account identifiers (SA_IDs) covered by that client. This was not a quick process as some clients have multiple accounts (there are close to 1,000 accounts across the 31 clients). By performing this part of the work, the program took the burden off the client and reduced any potential barrier to moving forward expeditiously. Noteworthy is that the MEMT shared how to obtain all the needed data with another 3rd party program (the California Local Energy Efficiency Program) to help accelerate the other program's process.

Once the listing of SA_IDs was created, it was sent to UMS and thence to PG&E to obtain historical billing data. UMS has been working with PG&E for about five years. Over that period they have established a "standard" data request. This request asks for same data variables and format for all data requests. The use of a standard format has served both UMS and PG&E well as the turnaround time at PG&E becomes a matter of days with this format. Both UMS and PG&E felt that the process they have set up is beneficial to obtaining required data with a minimum of hassle. The list of variables within the "standard" data request is located in Appendix B so others can emulate this format and keep difficulties to a minimum. For this program, obtaining the historical billing data did not play a part in the slowness of the component.

That being said, using the historical data brought out difficulties with the actual data that needed to be overcome by the MEMT. Once the historical data was in the UMS database, MEMT would pull data from a site, format it, and present it to a client. The need for a client presentation first happened a few months after the data was being input into the database. At that time, when looking more closely at the historical data, it showed some meters had stopped providing data at odd times. Delving into the issue showed that the SA_ID changed at a site when a rate change or change of meter occurs. When this happens, the current SA_ID stops providing data and there was no way using that current process to determine that a new SA_ID had been added to the site. The work around was to obtain the premise ID for a site – this value does not change and has all the SA_IDs associated with it. However, only PG&E has the premise ID and it was not originally in the data request. It took time for MEMT to figure out what was going on with the data and then work with PG&E on a fix. This was part of the learning curve that took place and did cause the process some delay perhaps around 2 months, although that is only an estimate.

Once the data difficulties had been handled, and the MEMT was using the historical data regularly, it was noted by MEMT that the clients enjoyed seeing all their accounts on one page. Comments received directly from clients during a different part of this evaluation corroborated

that statement. Informal training on how to read billing data and what it showed was stated by program staff to be going on with the clients during the review of historical data.

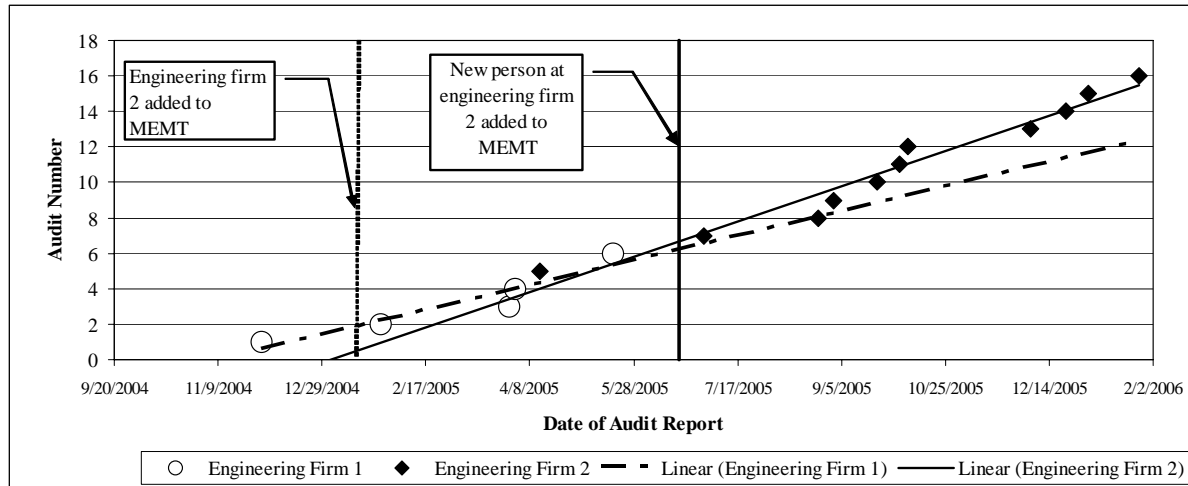
The process for obtaining monthly updates to the billing data was not detailed in the PIP. The program had appropriated budget for the work and was developing a few avenues of obtaining the data. Duplicate copies of bills that would go to the county and data entry by county personnel was one approach, as was attempting to use the PG&E website. However, with the success of recruiting 100 percent of their population came difficulties to either approach. There were too many accounts to make the planned methods viable. Simply putting in a data request to PG&E with all the SA_IDs every month was not viewed as practicable by UMS and the MEMT. A conference call with the MEMT, UMS, and PG&E, however, found a workable solution. A standard auto-query extract was created by PG&E to cover all the SA_IDs within the MEMT Program. It was run for the first time 2/23/05. Each time it runs, analysis must occur by UMS to compare the current SA_ID values with those in the extract. New SA_ID records must be acknowledged and added to the MEMT database. This level of effort was outside the original scope of work for UMS and has been a lesson learned during this process. Getting the monthly auto-query extract approach in place caused about a 2-3 month delay in the process.

Once the MEMT had the ability to obtain monthly data, they began formal training, with the first workshop taking place on 3/5/05. However, even with this training workshop, the best use of the data could really only occur after each site had a benchmarking facility audit. These audits took place over time, but increased in the rate performed once another a different engineering firm was added to the team in January 2005 This was another lesson learned by the MEMT.

Originally, they had a lighting auditor on the team and engineering expertise available on an on-call basis. While this appeared to provide the skill set required to move the program forward, the MEMT found that having a full-time engineer with a comprehensive engineering background and an ability read billing data working in conjunction with all the others in the group on a regular basis was a much better organizational system for the program. As an example, if the time between the scoping survey report and facility audit report is analyzed, it averaged close to a year difference between the two for scoping surveys performed in 2004. Once the second engineering firm was added to the team, this time gap dropped to 71 days.

As shown in Exhibit 5.3, of the 16 completed facility audits, 6 were completed from the beginning of the program to July 2005 and 10 were completed after the new person in engineering firm 2 was officially added to the team in July 2005. The rate of the facility audits was instrumental in delaying the use of regular billing data and hence the inability of the evaluation team to test the underlying program theory.

Exhibit 5.3 Facility Audit Dates



While all clients have historical and regularly updated data in the MEMT database, the program realizes that not all will choose to have regular reports for their facilities. However, it is expected that the desire to track energy use across facilities may increase among their clients as the increasing natural gas prices become reality. The MEMT feels that the ability of the program to have all needed data available quickly for their clients is seen as an extraordinarily useful service and one that is well worth the relatively small cost of maintaining the current database for all customers.

At the time evaluation data collection commenced, the MEMT was working with their clients to improve the data presentation from the billing database. It was trying to provide the most useful information for a regular feedback of building energy use. They were determining who would be able to use such a feedback mechanism and putting in place the process to meet that demand. Additionally, the MEMT was problem-solving the process for creating regular documents for their clients. While the UMS program has the ability to provide site specific information over the Internet, the MEMT program does not use this component of the software. Instead, they are exporting data from the UMS software and formatting the information in Word, then supplying the Word document to the clients. This current process is purported to be cumbersome as graphs need to be hand copied over the UMS while other parts of the report can be exported.

There are lessons learned and obstacles to be overcome when putting in place any new process. The MEMT was proactive in heading off certain potential time-delaying obstacles and active in tackling difficulties as they became aware of them. The forethought to create a one-page document for clarification of the need for historical billing data and complete all the needed information so that only a single client signature was required was essential in moving the early part of the process forward. The learning curve around billing data, its use and obtaining it regularly, caused delays. The level of work required by UMS was not anticipated by MEMT. However, gaining the knowledge that PG&E is willing and able to create a standard extract for a 3rd party to regularly receive billing data was invaluable. Adjusting the skill set and organizational set-up of the team in the last half of the program ultimately helped to advance this

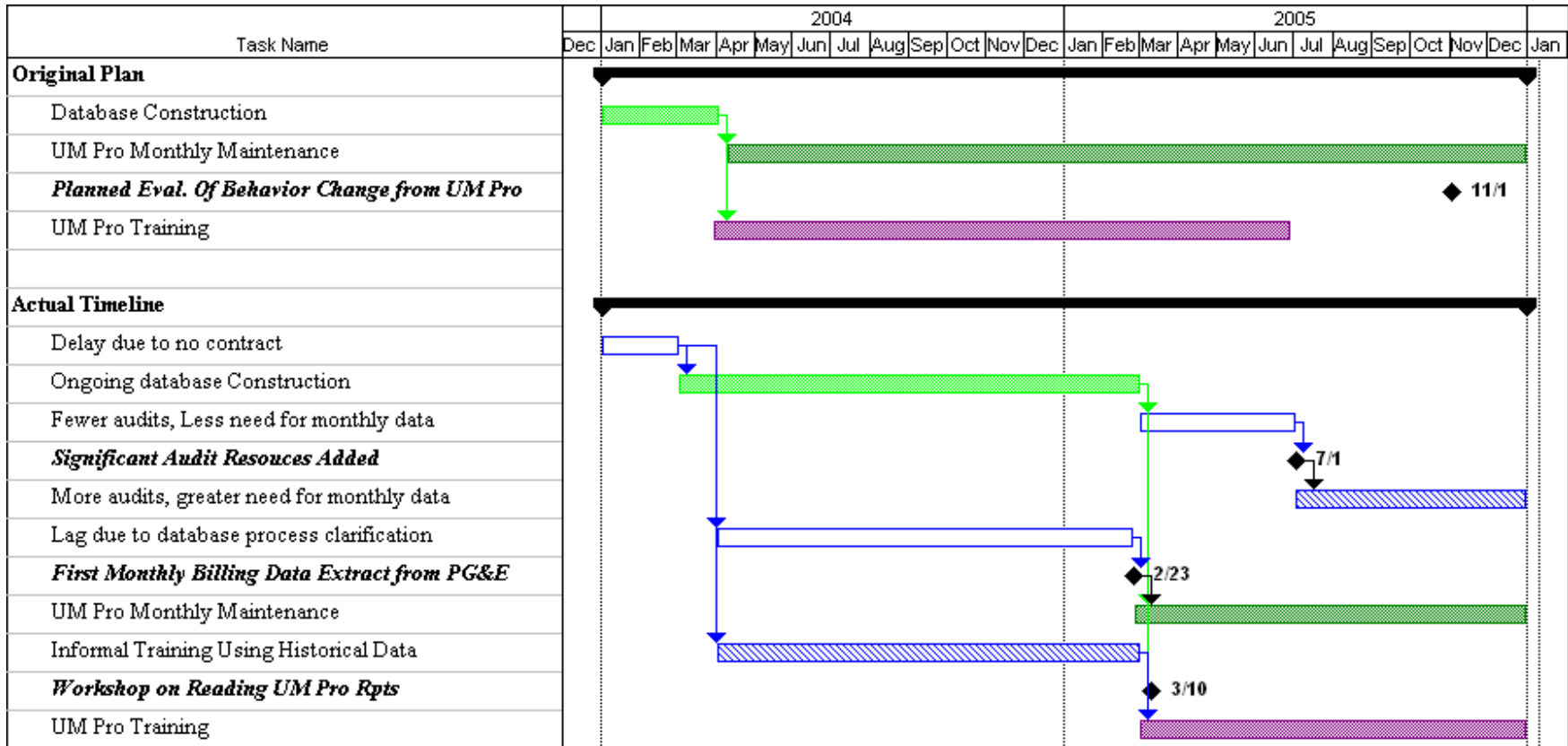
component, but the lack of the best set of skills closely tied to the program implementers to begin with was one of the other reasons for the slower than planned progress.

To summarize this effort a slightly different way, the original four goals for the assessment and findings of each are next. The CPUC requested a determination of:

1. *The causes and conditions that slowed the process* – The process was slowed due to two main reasons. There was a learning curve for the MEMT in handling billing data and the need for a facility audit prior to an entity clearly understanding the information provided by the billing data. The facility audits took longer than expected because the team's auditing capabilities were not optimal.
2. *What kinds of management or operational changes should or could be implemented to assure accomplishment of the goal* – The MEMT has already made the changes necessary to correct the problem (i.e., they have in place what appear appropriate processes to obtain billing data routinely and in a timely manner, they have added appropriate auditing capability, and realize the essential timing of the audit to the data analysis) A future evaluation should be able to assess the links in question. The program appears to be on track to provide billing information to their customers who desire the information.
3. *Lessons learned* – The two main lessons learned by the MEMT around this particular process follow directly from the causes that slowed it. The first being that handling billing data requires more time and effort than originally expected. The fact that each time that billing data is provided there must be a process to determine the dropping or addition of metered data. The second was that having an engineer who is full-time with the team and has a comprehensive engineering background with the ability to understand billing data is the optimal organization of skills.
4. *Barriers to this effort* – The identified barriers to this effort appear to have already been overcome by the MEMT. They are now familiar with the potential difficulties of working with billing data and the team has a full-time engineer who works closely with them in all aspects from the audits to presentation of the billing data.

Because the program has been funded for PY2006-2008, this part of the underlying program theory, originally planned to be evaluated within the PY2004-2005 program years, should probably be assessed in 2007. However, the number of participants and period of time they have been receiving regular feedback on energy use will be the best indicator of when to look at this area of the program theory.

**Exhibit 5.4
Timeline of Energy Management Component**



= Delay

= Limited Resources

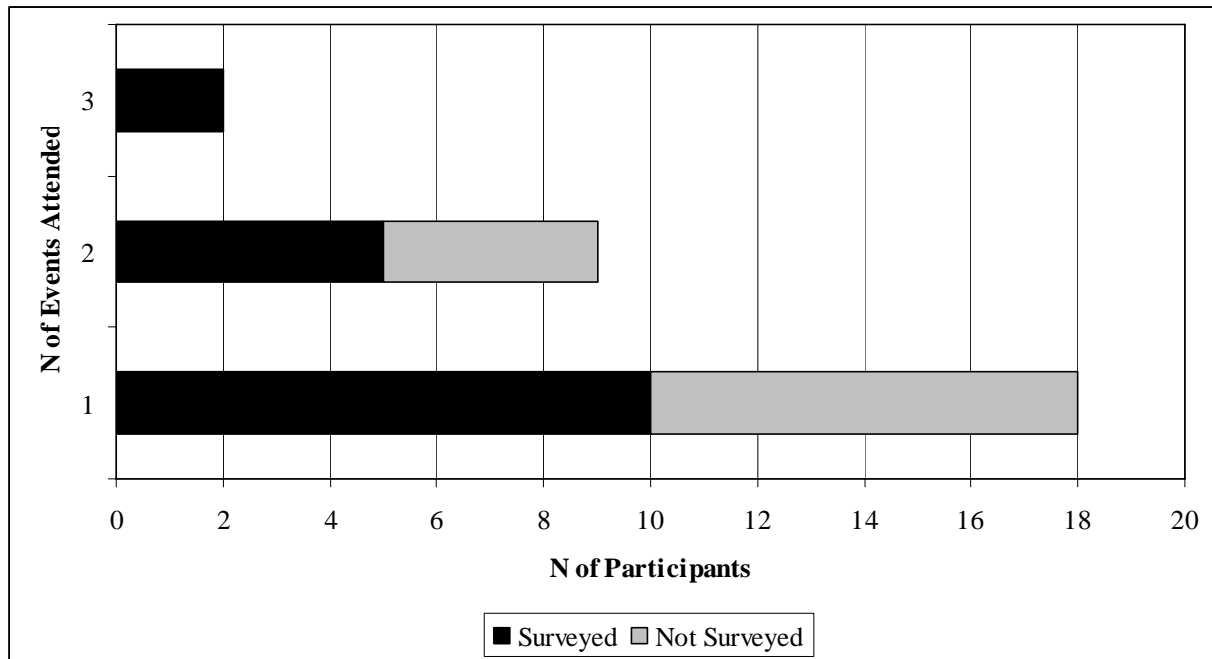
= Same color same task

5.2.2 Peer Network Survey

There were 29 individuals available for the interview on the peer network luncheons (i.e., they had attended a lunch at the time of the evaluation surveys). Because some entities sent more than one person to the lunches, there were 21 unique entities represented (11 unique local governments and 10 unique school districts). The 21 entities who attended the luncheons represented two-thirds of the total MEMT population of 31 entities enrolled in the program. Some participants attended more than one lunch, although the majority had attended only one peer network lunch at the time of the telephone interviews. As shown in Exhibit 5.5, those interviewed were typical of the population with the exception of the two individuals who attended three events.

Exhibit 5.5

Number of Peer Network Events Attended at the Time of the Evaluation Interviews



The lunches appeared to pull in the appropriate decision makers within the organizations. Seventy percent of those surveyed held director/superintendent level jobs within their organizations, while 12 percent were assistant directors/superintendents and the remaining 18 percent held engineering, public works, or bond manager positions. As a group, they all had some responsibility for energy use within their organizations, within the existing buildings, the modernization of current buildings, or new construction.

The pairing of peer networking and energy efficiency for the lunches resonated within the group and brought together people who typically did not interact in their normal business life. While some attended the lunches because they were told to attend by someone in their organization, others were invited directly by the MEMT. Slightly over half originally attended because of the potential to meet other peers and learn what they were doing. Others were mainly interested in learning about energy efficiency. All felt that the other participants were their peers, albeit

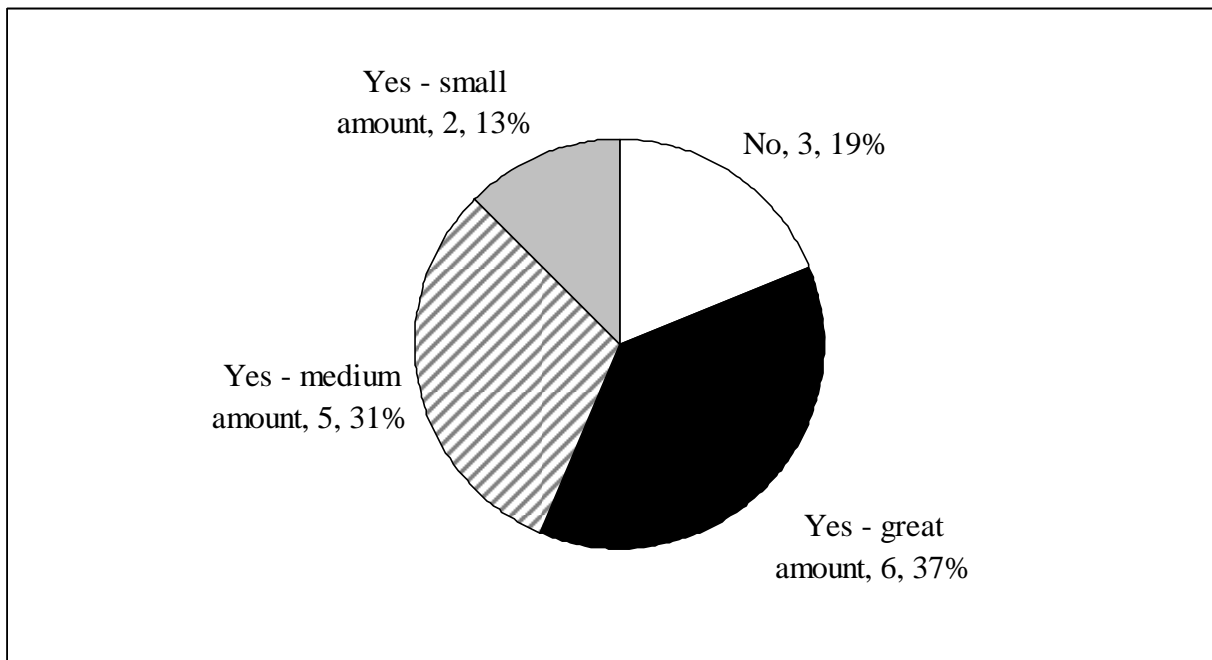
sometimes from a different type of organization (i.e., within a school versus a government). In general, most of the participants at the lunches were not previously acquainted. However, some participants indicated that there are outside meetings which they attend such as monthly meetings for director of public works, a quarterly meeting for county directors, and monthly director of facilities meetings. These other meetings focus on a myriad of issues such as sports turf, integrated pest management, water quality, paving, and safety issues. When asked if the other meetings ever discussed energy efficiency, only a few indicated yes, while others pointed out that the MEMT had attended their meetings to discuss energy efficiency.

About a third of the participants had already contacted others that they had met during the lunches. Some of them had gotten in touch with PG&E or the MEMT while a couple called other luncheon participants. Close to 90 percent indicated that it was 'somewhat' or 'very' likely that they would contact another peer network luncheon participants in the future to discuss energy efficiency. Mainly, the interest was in learning about solar projects going on within the other person's jurisdiction.

The MEMT presented a variety of topics spread across different luncheons, so what participants heard depended on which lunch they attended (see the listing of peer network events in Appendix D). Both process type and technical type of information were provided to the participants. No one theme emerged from the interviews about what information the group found most useful. A few found the specific technical knowledge most interesting, others enjoyed learning about the rate structure, and a few stated that learning about cost and energy savings was most beneficial. However, the majority indicated that the information presented increased their level of knowledge about energy efficiency in some way (see Exhibit 5.6) and 75 percent stated that the lunches helped them be more effective in their jobs.

Exhibit 5.6

Did participation in peer lunches increase your knowledge of energy efficiency?



The majority (62 percent) indicated that they took some sort of action because of the lunches. Some initiated lighting retrofits or energy audits by the MEMT, others have begun researching topics such as solar or HVAC or are simply looking more closely at their PG&E bills. All but one indicated that information from the peer network lunches will better enable them to take appropriate action in the future when energy questions arise.

The sign of a good meeting is the indication of future attendance. Eighty percent of those interviewed indicated they were very likely to attend future peer networking lunches, although a few qualified that statement with the fact that their schedule may interfere with attendance. Only one indicated it was very unlikely that he would attend again due to other priorities at this point in time. Perhaps the indication of high-level future attendance is due to the lack of such a resource in the past. Before these lunches, many of the participants used architects, contractors, or electricians when questions came up around energy or energy efficiency. A few were not aware enough to even think about asking efficiency-type questions during their job while others struggled through on their own using the Internet or calling people they knew for free advice. Perhaps it was due to the collegial milieu of the lunches as some indicated that it was a good way to get to know people in the relaxed atmosphere. Regardless, the MEMT-led peer network lunches were seen as a positive use of their time. Unsolicited comments included:

- *“Think this is a good social activity that people discuss and try to get information based on professionals.”*
- *“This would be useful if done in other areas of the state.”*
- *“I didn’t think it would be worthwhile at first – thought it would be a waste of time, but don’t think that now. Glad I went.”*
- *“I think that the MEMT is an excellent organization and seems like they have chosen a good way to get people together to disseminate information.”*

The qualitative data gathered from those who participated in the peer network lunches strongly support the underlying program theory linkages for this component. Two-thirds of the possible organizations attended at least one lunch (link 5 in Exhibit 3.3), 90 percent of those indicated a high likelihood of using the contacts from the lunch as support around energy efficiency (link 21), 81 percent stated an increase in knowledge about energy efficiency due to lunch participation (link 22), and 62 percent have already taken specific actions regarding energy use or energy efficiency (link 23). The MEMT has provided useful and desired activities that have led to the expected short-term outcomes. In the couple cases where lighting retrofits resulted from information supplied at these lunches, longer-term outcomes of actual energy and demand reduction have also occurred. The combination of social lunches with professional information, supported by a team of experts during and outside of the lunches, is a good approach to emulate to effect change in this type of population.

5.3 Verification of Goals

The program met or exceeded all of the specified goals with two exceptions. According to the program, there are two formal and one informal energy management teams formed. The informal team is not counted towards this goal. Also, the audits covered 3 percent less square footage than planned. However, it should be pointed out that the 1.9 million square feet of audited space was

originally broken down into 600,000 square feet of more intensive investment grade audits and 1.3 million square feet of facility audits that were less intensive to perform. This ratio was flipped in actuality, with ~1.1 million square feet of investment grade audits and ~750,000 square feet of facility audits.

**Exhibit 5.7
Verified Goals**

Element	Program Element	Agreed PUC Goal #	N Verified	% of Goal	Comment
1	Contact by Program	31	31	100%	
2	Scoping Surveys	25	25	100%	
3	Energy Accounting	15	31	207%	
4	Facility Audits	15	18	120%	This element also included a square feet audited goal that is included in Element 12 below.
5	Workshops	8	8	100%	
6	Workshop Attendance	58	123	212%	
7	Peer Networks	6	6	100%	
8	EE Management Teams	3	2	67%	
10	Capital Budgets Reviewed	15	17	113%	
11	Demonstration Classroom/ Office	2	2	100%	
12	Investment Grade Audits or Equivalent Engineering Analysis	1,900,000	1,849,215	97%	See note above table.

The verification of the capital budgets by the evaluation was a simple audit of the fact that the program reviewed a specified number of budgets. The completed reviews took the form of a spreadsheet with information on each entity. As audited, the program exceeded the goal. However, the MEMT found that this element produced a number of useful lessons and created a document delineating these lessons. It is included as Appendix D.

Because an on-site audit occurred for the verification of the demonstration classroom and office space, a bit more detail is provided on this one element.

Office Demonstration - The office demonstration was a retrofit of inefficient eight-foot fluorescent tubing that had purported poor lighting quality for architecturally pleasing pendent fixtures containing four pin-based compact fluorescent bulbs each. Additionally, an occupancy sensor system was included. This took place in the Council Chambers of the City of Larkspur. While this was the extent of the MEMT-sponsored demonstration, the demonstration brought about other changes at the same time that were outside of the program. The ceiling tiles were replaced, a new plenum and supply grills were installed, the pull down screen was exchanged for an electric screen that was less obtrusive, the audio system speakers were put into the ceiling, and a wireless microphone system was installed. Additionally, at the time of the audit the City was in discussion with the MEMT and may install an energy efficient heat pump to take the place of the wall heater in the room. Because of the energy audit previously performed by MEMT, Larkspur plans on performing a lighting retrofit on the entire City Hall, two Fire Stations, and the Police Station.

Exhibit 5.8

Before and After Picture of the Office Demonstration Site



According to the City Engineer working with MEMT, the program was very helpful and cooperative throughout the process. Because the new lighting fixtures were required to go through the Heritage committee for approval (a committee that handles changes to historical buildings), a different fixture was required than originally planned for the demonstration. MEMT worked closely with the City and the Heritage committee to obtain approval on the current fixtures and worked directly with the manufacturer to obtain a reduction on the actual lamp costs from the manufacturer. Because of when the Council Chamber was available, much of the work occurred during the Christmas holidays. According to the City Engineer, the response to the changes have been very positive from all who have seen the work.

Classroom Demonstration – The classroom demonstration site was a computer/conference room within the Marin County Of Education (MCOE). This site performed a retrofit of the lighting fixtures, installed lighting occupancy sensors, put Watt Stopper technology on all the computers to turn them off after a period of time and at a specific hour, installed a SEER 16+ HVAC packaged unit for the room and the controls for the HVAC system, and installed two skylights. At the time of the audit, reflective painting still needed to occur. The new lighting fixtures used a light harvesting technology that allowed the system to maintain a level amount of light in the room through reducing the electric light when more light was available through the north facing

windows. While a single picture cannot capture all the changes at this site, a before and after picture are shown in Exhibit 5.9. The after picture shows the skylights as rectangles of light in the ceiling.

The MCOE stated they are quite pleased with the new lighting system, although it took them a while to realize they liked it. The lighting was very different than the old fluorescent tubing that had been in place and seemed odd at first. However, they now want this type of lighting in more places within their building and have found it more “natural”, more easy on the eye, and better for working on computers. The upgrade to the HVAC system has significantly decreased the noise in the room. Previously, the fan was very noisy and a person giving a presentation had to increase their voice level in order to be heard when the system turned on. Now, it is so quiet that people do not even realize the system is on. This was considered a very positive change.

Exhibit 5.9

Before and After Picture of the Classroom Demonstration Site



The MCOE had been planning for HVAC, lighting, and window upgrades. They saw the potential for savings from the MEMT audit back in 2003. The school board gave the go-ahead to use deferred maintenance funding to start the process of upgrades and the MCOE is moving forward with retrofits. They have been working with the MEMT on specifics for new windows.

According to the Director of General Services at the MCOE, the demonstration project process took longer than expected, but he was not required to be involved much. The MEMT handled all the management and installation issues. Generally, they were satisfied with the process and very pleased with the results of this demonstration site. The demonstration allowed the MCOE to learn about a relatively new technology (light harvesting) at little risk and created a demand for the energy efficient technology that was not previously there.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The Marin Energy Management Team has provided a needed service over the past couple of years. The large majority of participants surveyed by the evaluation were enthusiastic about the program and the services offered. The program staff are viewed as professional and knowledgeable by their customers. The innovative peer networking lunches were successful. The evaluation found this to be a good approach to effect change in this type of population.

The program goals were met or exceeded with two exceptions. There were two formal energy management teams formed instead of the three planned. However, there is one additional informal team, according to the program. Also, the audits covered 3 percent less square footage than planned.

The evaluation assessed one component to attempt to determine reasons for its delay. The slow progress was found to be due to a learning curve on the part of the program team regarding obtaining, understanding and using billing data in conjunction with a sub-optimal skill set and organizational set-up for the site audit task during the first part of the program. However, the program was able to foresee certain possible obstacles and took positive steps to create a smoothly-flowing process within areas of the component. When difficulties were realized, they actively addressed them. The MEMT indicates that the lessons learned around this component included:

- the need for a premise ID and ongoing analysis of all accounts attached to that premise to accurately portray energy use at a site,
- the need for an engineer with a thorough understanding of site auditing and how to interpret billing data as an integral part of the team, and
- providing adequate time to set up and obtain updates of billing data on a regular basis.

The MEMT is working on creating an improved process for providing billing data on a regular basis that will give their clients the most useful information possible. This process must include a processes for creating the reports that is less cumbersome than the process currently in place.

6.2 Recommendations

Because the current program met or exceeded all but two of the specified goals and appears to have made the needed changes to fulfill the one delayed element that was planned for evaluation, recommendations are made in the context of the future use of third party programs within California. In 2003, this program was chosen by the CPUC as a third-party implementer with the Investor Owned Utilities (IOU's) being the contracting agent. The IOU had no responsibility for the performance of the third party programs during 2004 and 2005. For 2006 and later, the IOU's will choose and integrate the third party programs more fully into their portfolio. As such, the program recommendations are directed towards what may be useful when assessing the possible effectiveness of a third party program to include within the portfolio.

6.2.1 Program directed recommendations

The MEMT program provided multiple areas of intervention to attempt to engender the growth of energy efficiency within their targeted population. The evaluation budget precluded an in-depth process evaluation of all but one element of the program³. However, the recommendations that arose from this process evaluation should be relevant for any program that plans to use billing data as an ongoing source of information for their nonresidential participants.

Based on the findings of the process assessment, it is recommended that:

- The program provide sufficient time to set up and begin using the data from a database that houses the participant billing data. For a group of around 30 participants, anywhere from four months to a year may be appropriate.
- A standardized data request that includes premise ID be used. The data field used within this program are presented in Appendix B. However, it appears to be possible to work closely with PG&E to create a set of variables that can be provided on a regular basis from the rate data analysis groups within PG&E.
- Training be provided to the program implementers in the structure of nonresidential billing data if they are unfamiliar with the use of this data.
- Adequate resources be budgeted to create and maintain a robust database of billing data for the participants. While the optimal level of resources are unknown, it is suggested that a budget of less than \$60,000 may be less than ideal. Any budget should have an embedded monthly maintenance cost.

If the program is also providing benchmarking or facility audits, it is recommended that:

- The organizational set up of the program include a full-time engineer with a comprehensive engineering background and an ability to read and understand billing data.

6.2.2 Evaluation directed recommendations

Since the MEMT has been chosen by PG&E to be part of the portfolio in PY2006-2008 as a third party implementer, any future evaluation will occur from two entities. The CPUC may provide an impact evaluation to attempt to determine indirect effects and PG&E may choose to perform a process evaluation of the program. Evaluation recommendations are:

- Provide a baseline of energy efficiency actions for the targeted population. This baseline should use the descriptive baseline information gathered by the program in 2004 to attempt to recreate a baseline prior to intervention by the MEMT.
- Determine the penetration of energy efficiency and the potential for future energy savings in the program participant population mid-way through the PY2006-2008 program to help inform future need for the program.

³ The one element for which the process evaluation occurred used approximately eight percent of the program budgeted resources.

- Assess whether an increase in awareness and knowledge lead to changes in energy efficiency related behaviors (i.e., link 23).

APPENDIX A
Survey Guides

Questions for MEMT on utility accounting element

Section 3 has a few specific questions that were asked, but generally discussions were planned to revolve around the larger topics shown in Section 2.

Overview of Program Plan

The following information is copied from the MEMT plan dated September 23, 2003. The information pulled from the plan deals directly with the topic in question. It was provided as a quick reference source for the conversation.

Program Objective:

- Establish a shared regional "energy accounting system"⁴ to benchmark all public facilities, and to monitor and control energy use, demand and cost into the future.

Program Implementation

Energy Accounting Software and Services for facility benchmarking, energy use and demand monitoring, reporting, O & M support, and project savings tracking. Analysis of a facility's historical energy use and end-uses is a critical component of an energy audit and ongoing energy management. It is a cumbersome and labor-intensive task if done by hand. Inexpensive software and services can automate this task and provide more useful data such as energy use normalized for seasonal and annual temperature variations. It also provides a valuable tool for ongoing energy management through reporting functions that help facility operators improve and maintain energy efficiency in operations and maintenance.

Monitoring & Reporting through the energy accounting system to ensure projected savings are not only achieved but also maintained. A significant EE take-back effect can occur if energy monitoring is not built into ongoing facility operations and maintenance. Energy accounting is also important to build management trust in the value of EE initiatives.

Responsibilities

Utility Management Services will set up the energy account system, load and validate the initial data set, assist in benchmarking the facilities, provide training and on-call support throughout the project.

Timeline

Task 3: Energy Accounting

3.1 UMS database construction	1st Qtr - 3rd Qtr	Facility Energy Use Benchmarking Reports
3.2 UMS Monthly Maintenance	Ongoing	Ongoing Reporting
3.3 UMS Training	3rd Qtr - 6th Qtr	

Topics for discussion

⁴ This is commonly called Utility Management Systems (UMS) but that does not convey the equal value energy accounting has to other accounting controls of local government.

Other programs are looking into bringing this type of component into future programs.

Causes and conditions that slowed the process

What kinds of management or operational changes should or could be implemented to assure accomplishment of this goal

-If another program were to try to set up this type of arrangement, what should/could they do?

Lessons learned

- What actions did you take to monitor and focus on this objective over the previous period? What was the response to these actions?

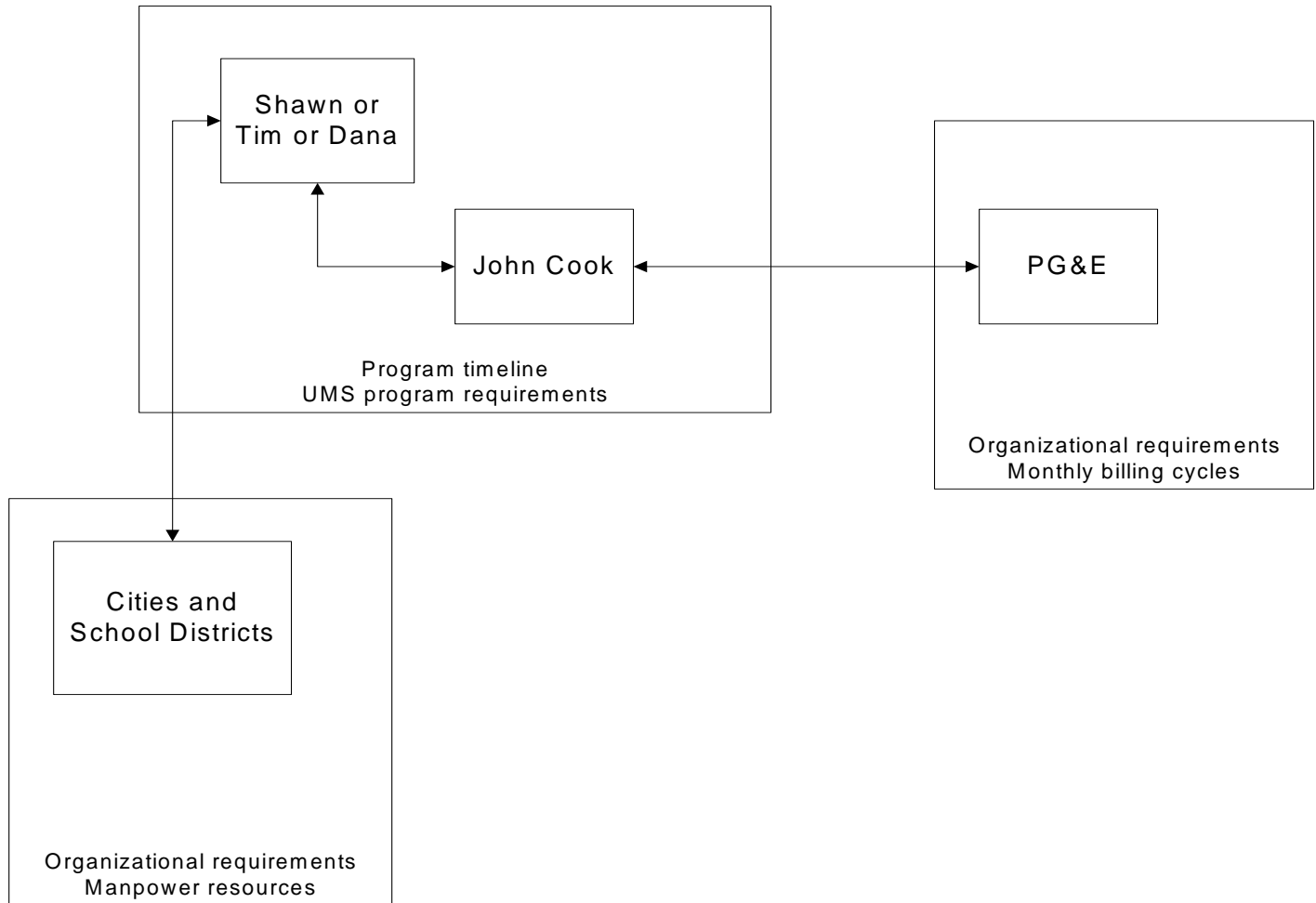
Barriers to this effort

-What barriers do you feel can be overcome and what ones cannot? Why?

Other questions

1. Was the program able to begin implementation on January 1, 2004?
2. How often did you contact PG&E or UMS to follow up on this topic? In what format (i.e., phone, email)?
3. Who is the PG&E contact? Did this person change over time?
4. Is John Cook the appropriate person for me to talk to at UMS?
5. Did the UMS database construction occur within the first 3 quarters of program implementation (regardless of when the program actually started)?
6. What do you think is an appropriate timeline to set up this type of arrangement?

Flowchart of process



This draft diagram provide both a flowchart for information and possible issues within each organization that may have played a part in the length of time it has taken for implementation of the monthly use of UMS data. Let's discuss needed changes to this diagram and expand on the issues as appropriate. If organizational requirements are an issue, I would like to detail exactly what these are and their impact on the implementation process.

Questions to ask John Cook of UMS for process evaluation on billing data requests with MEMT.

Interview Date:

Start Time:

PG&E Process

1. Describe your relationship with the PG&E data request group – how long have you worked with them and how often do you interact within in a typical month, have you found them easy and professional to work with, etc.
2. Please describe the sequence of events that occurs when you make a billing data request to PG&E.
3. What billing data information do you provide for your requests?
4. Is there typically any back and forth about the data request to hone the format or clarify type of data requested?
5. What is the typical time lag between the meter reading and when the billing data is available for your data request?
6. What is the typical time lag between a request and obtaining the billing data?
7. Does PG&E ‘clean’ data? Create calendar month billing data – or is this something that you do?
8. What policies are in effect at PG&E regarding data requests by 3rd parties such as your company?
9. What does it cost you to obtain billing data from PG&E? Can you imagine a change in this cost structure? If so, what might it become?
10. What are the most common issues that typically come up for 3rd party billing requests?
11. Can you imagine anything now or in the future that could adversely effect PG&E providing billing data requests?

Relationship with MEMT

12. What is your role for the program?
13. There are two ways in which the program has planned to use billing data and UMS – as a benchmark using historical data and as ongoing feedback for energy management. How long did the process take to get historical data available to the program? Was this typical, quicker or longer than usual?
14. The process of getting monthly data from PG&E for the program has seemed to take longer than planned. Can you discuss why you think this is so? (i.e., causes and conditions that caused the process to be lengthy)
15. What kinds of management or operational changes should or could be implemented to decrease this time?
16. What changes could occur in UM Pro to facilitate this type of program? Are there plans to do so?
17. If another program were to try to set up this type of arrangement, what should/could they do?
18. What are some of the lessons you learned during this process that could help others?
19. What do you see as barriers to this type of effort?

End Time:

Questions to ask PG&E for process evaluation on billing data requests with MEMT.

Interview Date:

Start Time:

20. What is your role at PG&E?
21. What is the role of your area within PG&E?
22. Please describe the sequence of events that occurs when you get a data request?
23. How many requests do you get every month and in what categories do they fall?
24. How do you want data requests? How do you get them? (time lag desired, format of request, etc.)
25. Is there any back and forth about the data request to hone the format or clarify type of data requested?
26. What is the typical time lag between the meter reading and when the billing data is available for a data request?
27. What information do you require for a billing data request?
28. Is there a difference for your group between one-time and regular data requests?
29. Does PG&E 'clean' data? Create calendar month billing data?
30. What policies are in effect at PG&E regarding data requests by 3rd parties?
31. What is the cost of data requests by 3rd parties? How are these costs covered? Can you imagine a change in this cost structure? If so, what might it become?
32. What are the most common issues that typically come up for 3rd party billing requests?
33. Can you imagine anything now or in the future that could adversely effect PG&E providing billing data requests?
34. What is the typical time lag between a request and your ability to provide the data?
35. Who is the PG&E person designated to handle 3rd party billing requests?
36. Describe your relationship with MEMT / John Cook of UMS – how often do you work with him or his company, have you found him easy and professional to work with?
37. What was the date of the first query for the monthly data that you ran? (i.e., when did you meet about this issue and when was the query first run?)

End Time:

MEMT Interview Guide for Peer Network Participants

Hello, my name is _____ of Equipoise Consulting. We are an independent evaluation firm performing a California Public Utilities Commission required assessment of the Marin Energy Management Team Program. I was given your name by the Program to discuss your participation in the Peer Network lunches. Do you have a couple minutes to talk with me?

You should know that our conversation will be kept confidential. Analysis of this information will be reported on a grouped basis. Although specific quotes may be used within the report, they will not be attributed to any one person or organization.

Although you may have worked with MEMT in various venues, we are interested in looking only at the Peer Networking lunches within this survey. My questions are directed only at this component of the program.

Date of Interview:

Time Start:

-
1. What is your job at your organization?
 2. How are you involved with energy use within your organization?
 3. Initially, why did you choose to participate in a Peer Network lunch?
 - a. What aspect of the event most interested you?
 - b. How did you hear about the event?
 4. My records show that you have attended {x} peer networking events. Is this correct?
 5. Were the other people at [each of] the event[s] performing jobs similar to yours? (i.e., were they your peers?)
 6. How many new people did you meet at the event(s)?
 7. How many people did you already know at the event(s)?

IF THEY KNEW PEOPLE AREADY, ASK Q8; ELSE SKIP TO Q9.

8. Prior to the peer network lunches, how would you characterize your relationship with the people you already knew – i.e., did you talk with them frequently? See them occasionally at functions? Email them?
 - a. What topics did you typically discuss?

- b. Did you ever discuss energy efficiency?
9. Since participating in a peer networking event, have you contacted any of the people who had also attended the event[s]? (not including contact at another peer network lunch) IF YES TO Q9, CONTINUE; ELSE SKIP TO Q11.
 - a. How often?
 - b. Why did you contact them? Did you discuss energy efficiency?
 - c. Were the people you called ones you had already known, or were they ones you met at the luncheon?
 10. Can you explain to me how you think meeting the people at the lunch affected your decision to contact them later?
 11. How likely are you to contact any of the peer network participants in the future to discuss energy efficiency? Very likely, somewhat likely, somewhat unlikely, or very unlikely.
 - a. ASK IF UNLIKELY: Why do you think that it is unlikely that you would contact any of these people in the future?
 12. What kind of information have you learned during the peer network events?
 - a. Have you learned more about process types of issues (i.e., how to find funds for energy efficiency, how to apply for funding) or technical information?
 - b. What piece of new information did you find most interesting? Most valuable?
 13. In general, would you say that participation in the peer networking lunches has changed your knowledge of energy efficiency? Would you say your knowledge level has remained the same, increased a small amount, or increased greatly?
 14. Do you feel that the participation in the peer network events helped you perform your job more effectively? How so?
 15. Can you think of one action that your or someone in your organization took that was based on information learned in a peer network lunch?
 16. Do you feel that the information learned in the peer network lunches will better enable you to take the appropriate action in the future when energy questions arise?
 17. How likely is it that you will attend any future peer networking events if they occur? Is it very likely, somewhat likely, somewhat unlikely, very unlikely?
 18. Thinking back to before you attended these lunches, what did you do when you had questions about energy and energy efficiency? (i.e., who did you call, how did you get your questions answered?)

19. I would imagine that you may have worked with members of the MEMT on other services provided by the program besides the peer lunches. What is your viewpoint on how the lunches affected other parts of the program? *Prompt if needed:* (i.e., did you feel more at ease with the knowledge of the MEMT through this repeated exposure? Did you feel you used services you may not have because of the relationship built during the lunches?)
20. Do you have any other thoughts (positive or negative) you would like to share with me regarding the peer network events or the program?

Thank you for your time.

Time End

APPENDIX B
Standardized Variable List
for Billing Data Requests

NAME	LABEL
BLD__	BILLING LOAD
CDT__	CURRENT READ DATE
COMMTYPE	COMMODITY TYPE
CSCH__	COMPRESSED RATE SCHED
DMDOF	OFF-PEAK DEMAND
DMDON	ON-PEAK DEMAND
DMDPT	PARTIAL-PEAK DEMAND
KWH__	USAGE (ELEC)
KWHOF	KWH OFF-PEAK
KWHON	KWH ON-PEAK
KWHPT	KWH PARTIAL-PEAK
MTRNUM	ELECTRIC METER NUMBER
NAME	CUSTOMER NAME,FIRST 50 CHARS
PDT__	PRIOR READ DATE
PREM_ID*	PREMISE ID
REV__	REVENUE AMOUNT
SA_ID	SERVICE AGREEMENT ID
SERADDR	SERVICE ADDRESS OR DESCRIP
SERADDR2	CONTINUATION OF SERVICE ADDR
SERCITY	SERVICE CITY
SERSTATE	SERVICE STATE
SERZIP	SERVICE ADDRESS ZIP CODE
THM__	USAGE (GAS)

*This variable added by PG&E after receiving SA_ID variables.

APPENDIX C
Listing of Peer Network Lunches and Workshops

Peer Network Meetings

N	Meeting Date	Location	N Attendees	N MEMT Staff	Attendee Peer Group	Topic of meeting
1	10/8/2004	Chevys in Bon Air Shopping Center - Greenbr	5	3	School Districts	Load Shedding for PV
2	1/21/2005	Marin Brewing Company in Larkspur Landing	7	4	School Districts	Load Shedding for PV
3	6/2/2005	Care Arrividerci - San Rafael	5	5	Local Government	County projects & financing
4	6/21/2005	Seafood Peddler, San Rafael	9	4	Mixed	Controls
5	10/12/2005	Noonan's Bar and Grill - Larkspur Landing	16	8	Mixed	Utility Rates
6	12/1/2005	Noonan's Bar and Grill - Larkspur Landing	8	5	Mixed	Challenges in Energy Management
		N School District Workshops	12			
		N School Local Government Workshops	5			
		N School Mixed Workshops	33			
		Total	50			

Workshops

N	Date	Location	N Workshop Attendees*	Type of attendee (i.e., targeted group)	Topic
1	2/11/2005	Marin County of Education - San Rafael	6	School Districts	EE Oportunities (MCOE)
2	3/10/2005	Marin Joes, Corte Madera	12	Mixed	Utility Accounting
3	4/21/2005	Town Ross Council Chambers - Ross	25	Local Governments	EE Oportunities (MPWA)
4	5/4/2005	BOS room in Marin County - San Rafael	16	School Districts	M&O Best Practices (CHPS)
5	6/15/2005	SEI - San Rafael	30	Local Governments	Commissioning (USGBC)
6	7/21/2005	Seafood Peddler - San Rafael	16	Mixed	How to Proceed with EE Installations
7	11/16/2005	SEI - San Rafael	14	Mixed	Lighting Workshop
8	1/18/2006	Noonan's Bar and Grill - Larkspur Landin	12	Mixed	MEMT Successes and Future Services
		N School District Workshops	22		
		N Local Government Workshops	55		
		N Mixed Workshops	54		
		Total	131		

*Does not include MEMT or PG&E staff

APPENDIX D
Lessons learned from the Capital Improvement Plan Review
Element

The document that follows was written by the MEMT. The evaluation team includes it within this document with no changes and makes no claim as to the veracity of the information.

**Marin Energy Management Team
Capital Improvement Plan Review Program Element
(as initially conceived and lessons learned)**

Definition of Capital Improvements:

A capital improvement plan is any plan that provides a timeline and budget for improvements to facilities including:

- New Buildings/Major Renovation
- Minor Renovation
- Deferred Maintenance
- Equipment Replacement

The MarinEMT focuses on only the subset of these activities for which we have the potential to reduce energy use and demand.

Each public agency might have its own terminology for such plans. Local governments often refer to “capital improvements” while school districts often call them “modernization” plans. “Deferred Maintenance” and “Equipment Replacement” can also be included within the annual operating budget. The common elements for these expenditures are that they are:

- planned (not an emergency such as replacing a failed HVAC unit)
- budgeted
- a significant expenditure (not considered a repair or routine maintenance)
- may require design, engineering and/or procurement specifications
- result in energy savings not captured by traditional EE programs (audit, retrofit, incentive, direct install)

Regardless of what they are called by the various agencies, the MarinEMT refers to them collectively as “Capital Improvements.”

MarinEMT Capital Improvement EE Initiative:

This initiative is designed to capture lost EE opportunities that result from the activity occurring outside the traditional EE program cycle, and activities for which no clear EE program has been designed to capture. For our program, we break the opportunities into two categories: measures that can be assisted by our team, and measures that leverage other EE programs. Capital improvements that we can directly impact include large equipment replacement (e.g., HVAC, light fixtures, control systems) that are not cost effective to retrofit but are cost effective to upgrade beyond applicable state and federal standards. This analysis is similar to an audit analysis that we provide. New buildings and major renovations (e.g., additional area or significant changes to the building envelope) that require a design team including an architect and engineers go beyond what MarinEMT resources can provide and can be best served by other programs including Savings By Design, CHPS, and LEED certification. The MarinEMT role is to help the agencies adopt EE specifications and ensure the right skill set is on or available to the design team. MarinEMT will assist the agencies in leveraging the appropriate programs. For most of our agencies, they have not used these programs historically.⁵

Since there is no uniform way public agencies collect capital improvement information, MarinEMT will collect this information and put it into a format that will allow the team to assess where and when we can offer assistance to capture these otherwise lost opportunities. Consistent with the MarinEMT program approach, the objective is to provide the right information at the right time.

Since detailed information is often lacking on future capital improvements (1–5 year budget estimates are usually all the data available) we cannot make accurate energy savings estimates but will attempt to quantify the potential where possible to help prioritize our assistance to where it will do the most good. We also do not provide the organizations with reports or savings estimates on their capital improvement plans because that would require detailed information that isn't available until they begin working on the particular improvement. Staff is more willing to provide the information we need to do more detailed analysis of savings at the time they begin to focus on the capital improvements.

MarinEMT did not assume we would be able to capture energy savings during the initial two-year program cycle, but identify opportunities for future years.

⁵ Another benefit of MarinEMT's process is assistance in follow-through when SBD or CHPS has been used in the design phase to make sure the EE components identified are used. In the case of one recent high school built in Marin, they used CHPS in the initial design phase but abandoned anything that added to the upfront cost because construction costs had increased beyond their original estimates. If the MarinEMT program had existed, we would have helped them find the additional funds to implement the CHPS high performance measures and been able to work with the decisionmakers to help them understand the ultimate value of such measures.

Lessons Learned by MarinEMT:

1. Lack of Consistent Planning Documentation and Implementation: While we had assumed a lack of consistency in how local governments and school districts plan and report these activities, we had not anticipated how inconsistent and incomplete the capital improvement planning would be. Since such improvements need to be part of the budgeting process, we assumed the reporting of such activities would be more easily obtained. This proved much harder than expected. Local governments like Mill Valley prepares and publishes a 5-year plan as part of the budget yet Fairfax plans such improvements on an annual basis. Others track this information in less than ideal formats. There also appears to be greater uncertainty than anticipated in what gets done and when, based on unanticipated budget constraints, emergency or otherwise unexpected repairs and renovations, and other changing costs and priorities.

Capital improvements plan review proved of value but incomplete in capturing potential lost opportunities. Ultimately, the team found that information needs to be collected in multiple ways including through peer network meetings, workshops and even scanning the local newspapers. The team found no single method to reliably gather a complete picture of each institution and identify all possible opportunities.

2. Time-Critical Assistance: Being able to provide services on a “just-in-time” basis is very important to capturing the opportunities. The time and rules required for use of PG&E SBD and CEC technical services can be a barrier.

3. More Ad-Hoc Planning and Design: Many capital improvements don’t go through a design team. Organizations often fall back on existing contractor relationships to advise on replacements and upgrades in part because they don’t know any better and in part because they have no budget for planning and technical assistance. Contractors have neither the training nor the motivation to think “out of the box” on upgrades and to apply a “whole systems” approach. For example, at MCOE, until MarinEMT’s intervention, they planned a simple replacement of HVAC package units per their contractor’s specifications when loads were about to be reduced by lighting and window retrofits. MCOE also has the opportunity to move to a single ground-mounted split system leaving only air-handling equipment on the roof. In addition to potential energy savings, this option has great potential for reducing long-term M&O costs, reducing roof loads making DSA compliance much easier, and reducing overload on existing circuits not designed for modern plug and HVAC loads. MCOE management lacked the training to understand the interrelated impacts of their various projects and how to go about obtaining the right assistance.

4. Not Cost-Effective to Focus on Early Estimates of Savings: The MarinEMT anticipated greater ability to quantify savings from capital improvement plans. However, collecting sufficient information in one shot proved to require too much of an organization’s staff time and

not an effective use of the Team's time. Additionally, the plans and the timing of other compatible projects can change greatly between when the original plan was conceived and the time the client takes up the project (e.g., the MCOE example above). A key tenet of the MarinEMT program is to respect client's time constraints and only require time when sufficient value can be added by our Team to warrant it. Hence, it proves more effective to access the potential for energy savings at the time the client starts to focus on the activity.

As the MarinEMT begins a new program for 2006–08 in partnership with PG&E that transitions from an “information-only” to EE savings-targeted program, the team should be able to collect sufficient data for future evaluation of the value of this program element.

5. Integration of Data with Overall Team Web-Based Management Tools: Since a web-based database for audit and savings information was not implemented in the initial program cycle, the Capital Improvements database was set up as a standalone Excel file. The Team plans to integrate it into a more robust tool for tracking all activities for each client so that capital improvement information can be more easily collected as a part of all interactions with the client.