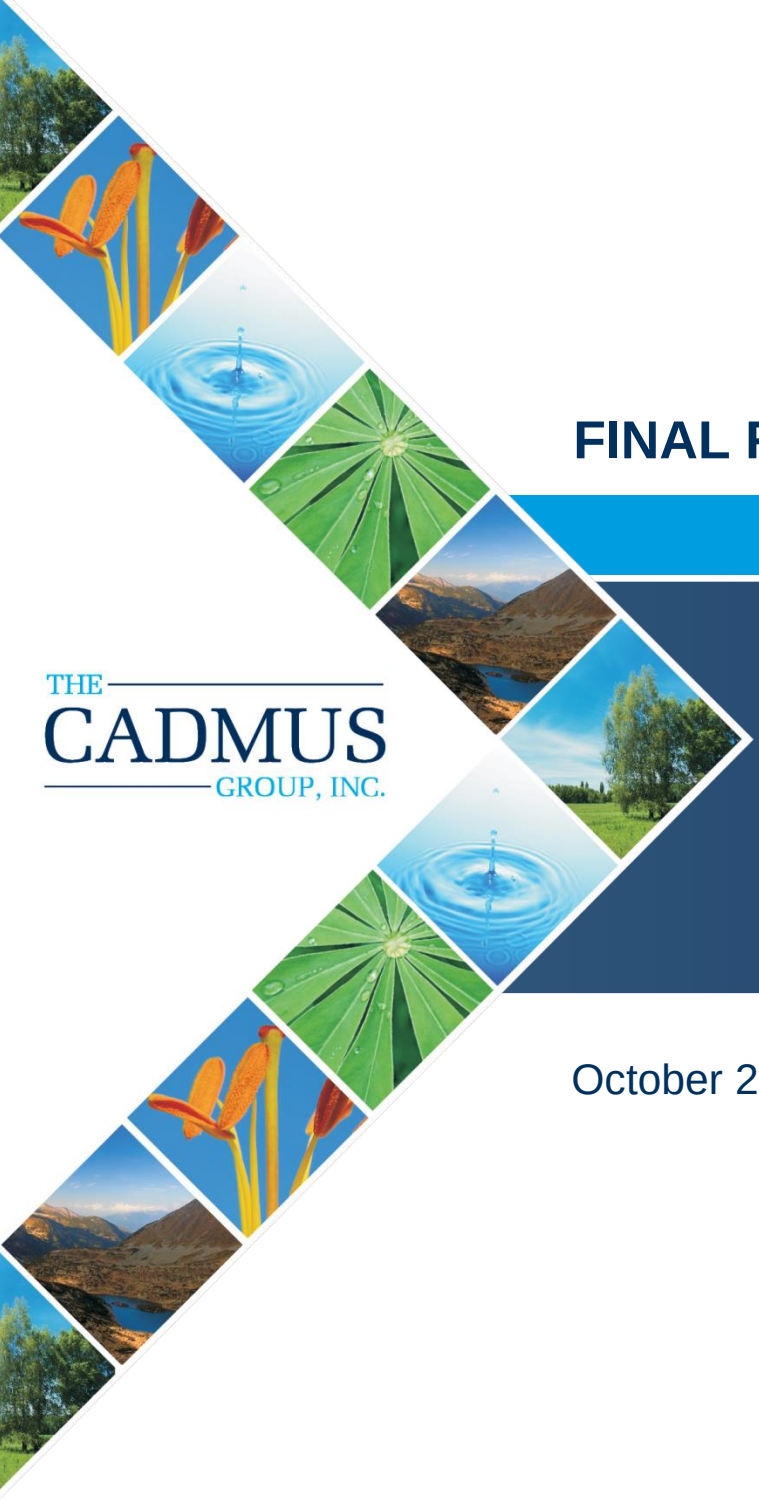

THE CADMUS GROUP, INC.

FINAL REPORT

Process Evaluation of California's Continuous Energy Improvement Pilot Program

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EXECUTIVE SUMMARY

The California Investor Owned Utilities (IOUs) currently administer a pilot Continuous Energy Improvement (CEI) program, which explores alternative strategies for achieving electricity and gas savings in the commercial and industrial sectors. The utilities that comprise the IOUs are Pacific Gas & Electric (PG&E), Southern California Edison (SCE), Southern California Gas (SCG), and San Diego Gas & Electric (SDG&E). The pilot was implemented by third-party contractors (CEI advisors) engaged by the IOUs through competitive solicitation.

The CEI program strategy differs from traditional energy-efficiency programs offered by the IOUs because it focuses on implementing a holistic energy-management approach that extends beyond replacing inefficient equipment. The primary goal for the pilot program was to help IOUs develop methods for implementing CEI programs in their service territories. The program provides long-term energy-management consulting services that educate and train commercial and industrial energy users to: (1) develop and execute a long-term energy-planning strategy; and (2) permanently integrate energy management into their business planning at all levels of the organization, from shop floor to corporate management.

The IOUs designed their programs to offer the same components and have the same structures. However, to test different strategies, each IOU used a slightly different delivery mechanism. For example:

- PG&E allowed a company cohort model, where more than one facility within the same company could participate in the program.
- PG&E also built in off-ramps after each CEI phase, so that in the event of unforeseen circumstances, customers could discontinue the program.
- SCE and SCG hired four CEI advisors to implement their programs, while PG&E and SDG&E hired one CEI advisor each. This allowed for comparisons between the approaches of the CEI advisory firms.

As the pilot was designed primarily as a learning forum, the IOUs wanted a process evaluation at the early stages of the program's implementation. The purpose for this evaluation was to gain insights into whether and how a full-scale CEI program might be included in the IOUs' future program planning cycles.

The IOUs engaged The Cadmus Group, Inc., to conduct the process evaluation and identify possible program improvements or refinements. The Cadmus team's evaluation encompassed these activities and addressed the related issues:

- **Review other CEI-type programs.** Based on lessons learned through comparing and contrasting program elements and design features, what improvements would be recommended for a future, full-scale CEI program?
- **Determine customer perceptions of CEI.** What factors do customers find important when deciding to participate in the program? What CEI aspects do participants find most valuable?

- **Uncover CEI implementation barriers.** Which factors inhibit customer participation in the program? What other services could the program offer to improve the likelihood of participating?
- **Investigate interactions between CEI and other IOU programs.** Does CEI participation influence customer decisions to participate in other programs? How can the CEI program best work with the other IOU programs?
- **Recommend how California's CEI program might proceed.** Should the program be expanded? How can the program operate most effectively? For future programs, what program performance metrics (PPMs) would be recommended?

Methodology

Cadmus' process evaluation consisted of these six tasks:

1. **Review literature.** Cadmus reviewed other similar programs, comparing and contrasting these elements:
   - Program design and service offerings;
   - Target markets;
   - Marketing strategies;
   - Outreach and recruitment;
   - Administration and implementation; and
   - Incentive structures.
2. **Interview IOU program staff, California Public Utilities Commission (CPUC) staff, and CEI advisors.** Cadmus interviewed CEI advisors, program staff from each IOU, and a CPUC staff member to assess program implementation and to identify improvements.
3. **Interview account executives (AEs).** Cadmus interviewed AEs at each IOU, evaluating their understanding of CEI and identifying their criteria for choosing customers appropriate for program participation.
4. **Interview participants.** Cadmus interviewed a sample of program participants to assess their experiences and satisfaction with the program.
5. **Survey nonparticipants.** Cadmus conducted a short survey with customers who were approached by program staff but who chose not to enroll in CEI. The survey topics—similar to those used in the participant survey—enabled Cadmus to: (a) gauge differences between program participants and nonparticipants, and (b) identify market barriers impeding program participation.
6. **Review PPMs.** Cadmus reviewed the pilot's PPMs and proposed metrics for a future full-scale statewide program.

Conclusions and Considerations

As previously mentioned, the primary purpose for the pilot program was to provide the IOUs with a learning forum for testing different program concepts and implementation strategies. From this perspective, the pilot can be considered a success.

The IOUs collaborated well in designing similar programs with distinct features and they communicated often after program implementation began. CEI advisors who had been involved with other energy management projects shared their experiences with the IOUs and other CEI advisors during program design and implementation. Additionally, through regular program meetings, CEI advisors discussed their customers' experiences, and these conversations enabled the program managers to improve facility-level CEI implementation. Program managers reported learning a great deal from the pilot.

The evaluation findings indicate that in addition to the IOUs gaining program implementation experience, the pilot program remains on track to meet the facility-level goals of: (1) engaging facilities in long-term energy planning strategies, and (2) integrating energy management permanently into facility business planning.

Participant interview responses support this finding, with all 18 interviewees stating they intended to continue with CEI upon ending their engagement with the program. Participants also expressed satisfaction with the support they received through the program thus far. In particular, they appreciated CEI advisors' free technical expertise, as this provided credibility regarding the participants' proposed projects, enabling some projects to move forward that otherwise would not have been implemented.

Lessons Learned

Program managers, AEs, and CEI advisors highlighted the following topics and the associated lessons learned from the pilot program.

- **Screening participants.** Due to the level of commitment required by CEI and the pilot's short time frame, either AEs or CEI advisors screened customers before approaching them regarding program participation. Program staff considered the screening procedures successful because: (1) fewer resources were needed to market the program; (2) participants could engage with CEI quickly; and (3) few participants dropped out of the program. However, the screening criteria for the pilot may slow recruitment or limit participation in a full-scale program.
- **Recruiting participants.** The recruitment of customers by AEs and CEI advisors for program participation produced mixed results.
  - CEI advisors reported difficulty in educating AEs and selling the program to them—a critical step in recruitment.
  - AEs who chose to enroll customers had a narrow view of customer types suitable for the program, which limited numbers of candidates.
  - Some CEI advisors used a list of companies they had previously worked with to recruit participants successfully. However, CEI advisors who attempted to recruit through cold calls were less successful.

- **Communicating commitment levels.** When initially approaching customers about the program, recruiters found it was important to emphasize the commitment required for participation. Several participants dropped out of the program because they could not sustain the staff or capital resources required to move forward with CEI.
- **Creating off-ramps.** As CEI requires long-term commitments, the program must continually engage participants. The possibility exists, however, that participating facilities may undergo unforeseeable changes. (For example, staff turnover or company expansions may impede a facility's ability to continue to participate.) Thus, program staff agreed off-ramps should be included in facility-level CEI plans, allowing customers to disengage from the program while still maintaining a relationship with the IOU. This would also reduce the likelihood of IOUs investing money in energy management consulting services without realizing results at facilities.
- **Leveraging other IOU programs.** Information provided by IOU staff to CEI advisors about other IOU program offerings allowed for the leveraging of incentives or services. Regarding equipment rebates, this helped offset capital project costs for two participants who had begun to implement projects. However, regarding audit programs, one CEI advisor felt that scheduling and coordinating with other contractors extended the time required to develop a CEI plan for a facility.
- **Integrating demand-side management (DSM).** CEI advisors encouraged participants to consider demand response and distributed generation in their CEI plans, in addition to energy-efficiency measures. However, few participants saw potential for demand response or distributed generation at their facilities.
- **Claiming savings.** The program does not currently quantify or claim savings, and IOU staff voiced concerns that this may limit recognition of a full-scale program's success and hinder the ability for the program to receive funding in the future. The main barrier to claiming energy savings is that these types of programs are relatively new; consequently, and most programs do not claim savings, nor have they been evaluated.

  However, there are a few exceptions. The energy management programs offered by NEEA, BPA, and BC Hydro have been evaluated and energy savings achievements have been quantified. The methodology used in quantifying energy savings through these programs was based on a billing analysis approach, and is described in detail in Appendix A. One strength of this approach is that capital measure savings are determined separately and can be subtracted from total facility energy savings, which avoids the risk of double-counting savings for capital measures that should be attributed to the IOU program providing the incentive.

Market Barriers

Participant and nonparticipant interviews identified these primary barriers to CEI participation:

- **Lack of resources.** Participants and nonparticipants cited a lack of staff time as the primary barrier to program enrollment. Some also cited a lack of capital.
- **Inability to convince senior management.** Without energy savings or cost-savings data specific to their facilities, participants and nonparticipants reported difficulty in

explaining the program's value to senior management. Reportedly, senior management expressed skepticism about the program ***and*** an unwillingness to proceed without strong evidence of energy- and cost-saving potentials.

- **Confusion about CEI requirements.** Two nonparticipants chose not to enroll in the program due to misperceptions about program requirements. One customer reported not participating because he mistakenly believed the program required his company to enroll in demand response. In actuality, CEI did not require specific measures, as each facility is considered unique; the measures and strategies recommended are based on what is most appropriate for each individual facility.

Considerations for a Full-Scale Program

Based on the literature review and interviews, Cadmus presents the following items to consider when planning for a full-scale program.

1. **Quantify program impacts.** Estimating facility-level energy savings resulting from a full-scale program would ensure that the facilities, CEI advisors, and IOUs recognize CEI benefits and impacts. Further, it would allow program cost-effectiveness to be determined. Appendix A contains a methodology for estimating CEI energy savings; this methodology is used for other energy management programs and has been accepted as the best method for determining savings for these types of programs.
2. **Co-funding energy managers**. As participants and nonparticipants identified the lack of staff resources as being the greatest participation barrier, Cadmus recommends future programs offer co-funding of the energy manager's salary. This approach has been used with some success by Puget Sound Energy, BC Hydro, and BPA's energy management programs, which were reviewed through this evaluation. Each has been designed slightly differently, and we recommend speaking with each program manager to learn how successful each structure has been and to determine which approach would work best in California. The IOUs should also consider offering savings-based incentives for projects which would not qualify for incentives through other IOU offerings.
3. **Leverage other IOU offerings.** CEI advisors should continue encouraging participants to apply for other IOU offerings, which could lower the first-cost burdens of capital improvement projects. CEI advisors should also continue to recommend DR and distributed generation. One way to encourage adoption of all strategies would be to offer additional incentives to participants who successfully integrate all three DSM aspects (energy efficiency, DR, and distributed generation).
4. **Build off-ramps**. Off-ramps should be included in facility-level CEI plans, which will: (1) allow customers to disengage from the program if they cannot proceed with the next steps, and (2) reduce program costs for the IOUs.
5. **Be flexible about requiring certification.** Requiring certification (such as ISO 50001 or the U.S. Department of Energy's Superior Energy Performance) may limit program participation or cause participants to drop out due to the additional effort required for becoming certified. The requirements of the CEI program should remain flexible, so that program managers do not require pursuing a certification that is not in a facility's best interest.
6. **Provide workforce education and training.** The program could offer workshops on technical training (regarding the use of equipment) and the application of energy management strategies. Such workshops could leverage the experiences of pilot participants, who could share their CEI program experiences, which might aid in recruiting a new wave of participants.
7. **Explore a company cohort structure. A company cohort model offers a more cost-**effective implementation strategy, allowing firms to select multiple buildings for program participation. This model enrolls more participants in the program, while requiring less recruitment time and effort. Also, as this structure involves more

company energy managers who understand the process, it reduces the likelihood that a company will leave the program when staff turnover occurs.

8. **Devise different strategies for reaching small- and medium-sized businesses.** A CEI program may be difficult to implement cost-effectively with small- or medium-sized businesses. These businesses could be reached more cost-effectively through a cohort CEI program in which similar businesses learn CEI practices together from energy management workshops and trainings. The workshops could be held monthly over a year so that businesses can work through the steps of CEI and have a support group to answer questions and provide encouragement.
9. **Present a program fact sheet containing case studies.** Participants and nonparticipants reported skepticism regarding the benefits achievable through the program, so having case studies based on pilot participant successes could alleviate this concern. Additionally, these fact sheets should clearly state program requirements, as this will alleviate confusion or misunderstandings resulting from presentations by CEI advisors or AEs.
10. **Emphasize how the program assists with energy certification offered by other entities.** When recruiting companies that are already pursuing certification, CEI advisors can provide companies with further expertise, which may result in companies achieving certification more quickly and at a lower cost.
11. **Provide public relations support through recognition.** Publically promoting a participating company's energy-efficiency actions could provide an added CEI program benefit, hence motivating participation.

INTRODUCTION

The California Investor Owned Utilities—Pacific Gas & Electric (PG&E), Southern California Edison (SCE), Southern California Gas (SCG), and San Diego Gas & Electric (SDG&E)—currently administer a pilot Continuous Energy Improvement (CEI) program.

About the CEI Pilot Program

The CEI pilot explores alternative strategies for achieving electricity and gas savings in the commercial and industrial sectors. By focusing on implementing a holistic energy-management strategy that extends beyond replacing inefficient equipment, the CEI program strategy differs from traditional energy-efficiency programs offered by the IOUs. The program provides long-term consulting services that educate and train staff to: (1) develop and implement a long-term energy planning strategy; and (2) integrate energy management permanently into their business planning at all organizational levels, from shop floor to corporate management.

CEI's approach encompasses organizational structures, people, energy systems, and energy and output tracking as essential energy management aspects. While CEI may lead to adoption of specific actions, energy-efficiency measures, and capital projects, the program emphasizes positioning energy as an input into business operations, thus managing it for maximum value.

The program has six participation stages:

- Commitment
- Assessment
- Planning
- Implementation
- Evaluation
- Modification

The CEI pilot requires commitment and support from each participant's upper management. Commitment at this level guarantees funding and support for proposed energy-efficiency projects, and it ensures that staff will receive education and training about energy efficiency.

After a facility commits to CEI, the CEI advisor conducts an organizational assessment that: (1) examines management effectiveness regarding energy use, and (2) provides an understanding of management process strengths and areas for improvements. This assessment also entails an energy audit, which may leverage other utility offerings.

Following the assessment, the CEI advisor works with facility staff to develop a list of recommendations for reducing electricity and gas consumption. The advisor also aids facility staff in planning by helping to: (1) prioritize recommendations, and (2) develop short- and long-term energy reduction goals. The facility then begins implementing the plan.

Reevaluation or modification of the plan occurs between six months and one year after implementation (or sooner, if necessary). As CEI is focused on long-term energy management planning, facilities are generally engaged in the program for one to two years. During this period,

the program provides support and resources that enable the facility to refine company goals and energy management strategies.

The CEI pilot program has recruited a diverse group of facilities from the commercial, industrial, and agricultural sectors. These participants are at various stages within the CEI process, ranging from assessment through modification. Table 1 shows the number of committed program participants (by segment) for each IOU.

Table 1. Number of Engaged CEI Participants by IOU and Segment

Segment	PG&E	SCE/SCG	SDG&E	Totals
Food Processing	11	6	1	**18**
Manufacturing	1	3	1	**5**
Smelter	0	1	0	**1**
Laundry	0	2	0	**2**
Hotel	0	1	0	**1**
Restaurant	0	1	0	**1**
Retail	0	1	0	**1**
Government	0	1	0	**1**
School	1	1	0	**2**
Office	1	0	1	**2**
Corporate Office	3	0	0	**3**
Biomanufacturing	1	0	0	**1**
Totals	**18**	**17**	**3**	**38**

*Equivalent to the number of unique facilities. Some companies have more than one participating location.

As previously mentioned, the primary purpose for the pilot program was to help IOUs develop the best methods for implementing CEI programs in their service territories. Thus, the IOUs expressed interest in conducting a process evaluation at the early stages of program implementation. Specifically, the IOUs wanted insights into whether (and how) a full-scale CEI program should be included in future planning cycles. The IOUs also looked for information regarding ways the CEI program could be refined or improved, if it were continued.

The specific process evaluation objectives were these:

- **Review other CEI-type programs.** Compare and contrast designs of other CEI-type programs, and recommend improvements for the pilot or a future, full-scale CEI program.
- **Determine customers' perceptions of CEI.** What factors do customers find important when deciding to participate in the program? What CEI aspects do participants find most valuable?
- **Uncover barriers to implementing CEI.** Which factors cause customers to hesitate in participating in the program? What other services could the program offer to improve the likelihood of customer participation?
- **Investigate interactions between CEI and other IOU programs.** Does CEI participation influence decisions to participate in other programs? How can the CEI program work best with the other IOU programs?

- **Recommend how California's CEI program should proceed.** Should the program be expanded? How can the program operate most effectively? What program performance metrics (PPMs) would be recommended for a future program?

To address these objectives, the Cadmus team's process evaluation consisted of these six tasks:

1. **Review literature.** Cadmus reviewed other similar programs, comparing and contrasting these elements:
   - Program design and service offerings;
   - Target markets;
   - Marketing strategies;
   - Outreach and recruitment;
   - Administration and implementation; and
   - Incentive structures.
2. **Interview program staff, California Public Utilities Commission (CPUC) staff, and CEI advisors.** Cadmus interviewed CEI advisors, program staff from each IOU and a CPUC staff member to assess program implementation and to identify opportunities for improvement.
3. **Interview account executives (AEs).** Cadmus interviewed AEs at each IOU, evaluating their understanding of CEI and identifying their criteria for choosing appropriate customers for program participation.
4. **Interview participants.** Cadmus interviewed program participants to assess their experiences and satisfaction with the program.
5. **Survey nonparticipants.** Cadmus conducted a short survey with nonparticipant customers who were approached by program staff but who chose not to enroll in CEI. By using survey topics similar to those used in the participant survey, Cadmus was able to: (1) gauge differences between program participants and nonparticipants, and (2) identify market barriers.
6. **Review PPMs.** Cadmus reviewed the pilot's PPMs and recommended metrics for a future, full-scale statewide program.

This report, which presents findings, conclusions, and recommendations from all evaluation tasks, is organized as follows:

- **Introduction** (this section): Presents an overview of the program and evaluation goals.
- **Methodology:** Explains the process evaluation methodology used.
- **Findings:** Presents results from the literature review; the interviews with program staff, CPUC staff, CEI advisor, AE, and participant; and the surveys of nonparticipants.
- **Conclusions and Recommendations:** Provides conclusions and recommendations drawn from Cadmus' research.
- **Appendices:** A proposed methodology for calculating energy savings (Appendix A) Literature review references (Appendix B); and interview guides (Appendices C to G).

METHODOLOGY

Cadmus conducted primary and secondary research and reviewed PPMs. This section describes the methodology used to conduct this research and analysis.

Literature Review

Cadmus reviewed other energy management programs, comparing and contrasting:

- Program design and service offerings;
- Target markets;
- Marketing strategies, outreach, and recruitment;
- Administration and implementation; and
- Incentive structures.

The reviewed programs consisted of the following nine, full-scale programs offered by utilities in North America:

- BC Hydro: Power Smart Partner (PSP) Program.
- Bonneville Power Administration (BPA): Energy Management Program.
- Energy Trust of Oregon (ETO): Industrial Energy Improvement Program.
- MidAmerican: Nonresidential Energy Analysis Program.
- Northwest Energy Efficiency Alliance (NEEA): Continuous Energy Improvement.
- New York State Energy Research & Development Authority (NYSERDA): Industrial and Process Efficiency Program.
- PPL Electric Utilities: Continuous Energy Improvement Program.
- Puget Sound Energy (PSE): Resource Conservation Manager (RCM) Program.
- Xcel Energy: Process Efficiency Program.

In addition to the utility and regional energy management offerings, Cadmus reviewed national program initiatives from the U.S. Department of Energy (DOE), such as the Better Buildings Better Plants (BBBP) Program, and Superior Energy Performance (SEP). The study also reviewed certification initiatives (specifically, ISO 50001 and ENERGY STAR®) and energy-management tools available from DOE.

Appendix B contains a list of Cadmus' review sources. The Literature Review Results section of this report summarizes each program, initiative, and certification.

Program Staff, CPUC Staff, and CEI Advisor Interviews

Cadmus conducted interviews with key utility staff, involved in delivering the pilot program; CPUC staff involved in program oversight; and contractors hired as utility CEI advisors. Table 2 shows interview sample sizes. (Note that PG&E and SDG&E each work with one CEI advisory firm, while SCE and SCG work with four CEI advisory firms.)

Table 2. Program Staff and CEI Advisor Interview Sample Sizes

IOU/CPUC	Program Staff (n)	CEI Advisor (n)
PG&E	2	1
SCE/SCG	3	8 (from 4 firms)
SDG&E	1	1
CPUC	1	N/A
Total	**7**	**10**

*In some instances, interviews included multiple people from the same IOU or firm during the same call.

The interview guides are provided in Appendices C and D. The key interview topics were these:

- **Program involvement.** What roles do various program actors play? What are respondents' perspectives on (and past experiences with) delivering CEI to large commercial, industrial, and agricultural customers?
- **Program goals and objectives.** What are the short- and long-term goals for the program? Are these goals clearly defined for participants? Who is CEI's target market?
- **Program implementation.** What challenges or successes were experienced in implementing CEI? Does the program resonate with marketplace trends (e.g., other "green" initiatives and objectives)? How does the CEI approach differ from that of other programs?
- **Marketing and outreach.** Describe program marketing and program promotional efforts. Are marketing messages clear and actionable? Do they align with customers' key motivations and drivers?
- **Program design and participation.** How satisfied do implementers consider participants to be with program processes (such as enrollment, audits, and energy-efficiency improvements)? What percentage of participants has perceived financial benefits, based on the participants' program experience? What other benefits do they report? Does a system exist for customers to provide feedback? If so, how does this process work?
- **Persistence and involvement in other programs.** Do participants stay engaged with the program? What program features keep customers engaged? How frequently do participants require contact from IOUs/implementation contractors to remain active in the program? Do participants show interest in participating in other IOU program offerings? Have participants dropped out of the program? If so, why?
- **Program tracking.** What data are collected from participants, and what reports are produced? What roles do respondents play in this process? What additional information could be obtained from participants to facilitate program improvements?

- **Market barriers.** What prevents customers from enrolling in the program? What barriers prevent participants from fully engaging in CEI?

AE Interviews

AEs play a role in identifying and recruiting potential pilot program participants. Cadmus interviewed two AEs from each IOU, gauging their understanding of the program and determining their involvement in participant recruitment.

The interview guide was approved by the IOUs is provided in Appendix E. The key interview topics were these:

- **Program involvement.** What role do AEs play in the program?
- **Understanding of program goals and objectives.** What is their understanding of how the program works? How does the program benefit customers? Who is CEI's target market? How does this program's approach differ from other IOU offerings?
- **Communication with CEI advisors and program managers.** Do CEI advisors and program managers clearly explain the program? How often do AEs communicate with the CEI advisors?
- **Marketing and outreach.** Describe program marketing and program promotional efforts. Are marketing messages clear and actionable? Do they align with customers' key motivations and drivers?
- **Program design and participation.** How satisfied do AEs perceive participants to be with program processes, such as enrollment, audits, and energy-efficiency improvements? Does a system exist for customers to provide feedback? If so, how does this process work?
- **Market barriers.** What prevents customers from enrolling in the program? What participation barriers exist? What barriers prevent participants from fully engaging in CEI?

Participant Interviews

Speaking to the person identified by the IOUs as the main point of contact, Cadmus interviewed participating customers to assess their experiences and satisfaction with the program. In many cases, the interviewees were energy champions (or heads of energy teams) at each facility.

Although Cadmus sought to complete a census with participants, several customers could not be reached. The IOU or CEI advisor notified each participant that we would be contacting them with questions, and urged them to participate, and we attempted to contact each customer five times before removing the customer from the sample. One participant scheduled a time for the phone interview but did not answer at the scheduled time and did not respond to follow-up voice mails or e-mails. Another participant had left the company; his replacement was contacted via email but did not respond.

Table 3 shows total numbers of completed participant interviews by IOU.

Table 3. Completed Participant Interviews

IOU	Number of Participants*	Completed Interviews
PG&E	18	9
SCE/SCG	17	6
SDG&E	5	3
Totals	**40**	**18**

*Equivalent to the number of unique facilities. Some companies had more than one participating location.

Cadmus relied on information from interviews with program staff and CEI advisors to create a survey instrument, addressing all evaluation topics of interest in the context of current program design. IOUs reviewed and approved the final interview guide, which is provided in Appendix F. The key interview topics were these:

- **Program awareness and reasons for participation.** How did participants learn about the program? Why did they choose to participate? What specifically interested them in CEI? Did specific reasons lead them to choose to participate in this program, as opposed to other utility offerings?
- **Enrollment process.** What steps did they take to enroll in the program?
- **CEI activities and involvement.** What CEI activities did they complete after enrolling in the program? Was there an energy audit of their facility? Did they find the audit results helpful? Was there an organizational assessment? Did they find the organizational assessment results helpful? How did they decide which activities to implement? Did they make specific operation and maintenance (O&M) changes since participating in CEI? Were changes made that no longer remain in place? Do they wish to pursue other projects?
- **Organizational structure.** Has the facility made changes to organizational structures, based on organizational assessment results? If so, what has been the impact of these changes in managing energy? If not, why not? Were organizational changes made that no longer remain in place?
- **Interactions with program staff, including CEI advisors.** What interactions did they have with program staff? Have staff members been helpful and informative? Would they like to receive additional support from program staff?
- **Program value.** What program features did they find most valuable? Did they think benefits associated with CEI outweighed costs? What did they like or dislike about the long-term approach to CEI?
- **Interest in other programs.** Since participating in CEI, did they participate or consider participating in other utility programs? Why or why not? How much of an impact did CEI have on their participation in these other programs? In the future, do they think they are more are less likely to utilize utility programs due to CEI? Are they exploring more options for integrated demand side management? How much more aware are they of these opportunities?
- **Resources and perceptions.** Did they feel they had sufficient staff and capital resources to participate in CEI over the long term? What attitudes and perceptions did upper management have about CEI? What attitudes did other staff have? Before participating in

CEI, did the facility have an energy manager? Did the firm take an active role in managing energy consumption before participating in CEI?

- **Market barriers.** What participation barriers exist? Did they encounter barriers to CEI activities? What barriers prevented them from fully engaging in CEI?
- **Satisfaction.** How satisfied were they with the program? Do they plan to continue to participate? How satisfied were they with their utility? Did their perceptions regarding their utility change since participating in the program? What improvements could be made to the program? What aspect of the program proved most useful? What significant changes took place for the better? What changes, if any, proved detrimental?

Nonparticipant Surveys

In addition to interviewing participating customers, Cadmus conducted a short survey with nonparticipant customers. We relied on each IOU and its implementation staff to provide a list of nonparticipants who were approached about the program but declined to participate.

PG&E's CEI advisor did not track nonparticipants, but they provided contact information for two customers who dropped out of the program. Cadmus attempted to contact both drop-outs, but one facility's energy champion had left the company and the other facility's main point of contact could not be reached. From the SCE/SCG and SDG&E contact list, we had two refusals due to time constraints and traveling. One other person responded to our email and requested a second e-mail; however, this person said the survey was a low priority and, ultimately, did not respond.

Table 4 shows both the number of nonparticipant contacts received from each utility the number of completed surveys.

Table 4. Completed Nonparticipant Interviews

IOU	Number of Nonparticipants*	Completed Interviews
PG&E	2**	0
SCE/SCG	21	8
SDG&E	1	1
Total	**22**	**9**

*Includes only nonparticipants Cadmus received contact information for.

**PG&E provided contact information for two customers that enrolled in the program, but dropped out.

The nonparticipant surveys addressed the following topics. Note that these surveys closely mirrored participant interview topics, which enabled Cadmus to identify the differences between participants and nonparticipants. The interview guide was approved by the IOUs, and is provided in Appendix G.

- **Program awareness and reasons for nonparticipation**. Where did they first learn about the program? Did they feel they had sufficient information about the program to make an informed decision? Why did they choose not to participate? How strongly did they consider participating? Did they consult with other people in their organization or industry about participating?

- **Interactions with program staff**. What interactions did they have with program staff? Were staff members helpful and informative? Did they want additional support from program staff?
- **Perceptions regarding the program's value**. What program features did they think were most valuable? Which did they think were least valuable? Did they think the benefits associated with CEI outweighed its costs? What did they like or dislike about the long-term approach to CEI?
- **Interest in other programs**. Did they participate or consider participating in other utility programs? Why or why not? In the future, do they think they are likely to participate in CEI? What about other utility programs?
- **Resources and perceptions**. If interested in CEI, did they feel they had sufficient staff and capital resources to participate over the long term? What were upper management's attitudes and perceptions about CEI? What attitudes and perceptions did other staff have? Did their facility have an energy manager? Did they take an active role in managing energy consumption?
- **Market barriers**. Why did customers choose not to enroll in the program? What participation barriers exist? What specifically prevented their participation in CEI?
- **Spillover.** Did they take any actions CEI recommended? If so, did this result from CEI advisors' program marketing? What did they do? Why?
- **Satisfaction**. Do they plan to participate in the program in the future? How satisfied were they with their utility? Did their perceptions of their utility change after learning of the CEI program? Based on their knowledge of the program, how can it be improved?

PPMs Review

Cadmus reviewed the program performance metrics (PPMs) used to measure the current pilot program's accomplishments and success. We also reviewed the guidance provided in Draft Resolution 09-09-047 on PPMs.

1. The metrics shall be designed for simplicity and cost-effectiveness when considering data collection and reporting requirements (D. 09-09-047 at 92).
2. Integrated metrics shall be developed for programs that employ more than one technology or approach, such as whole building programs (D. 09-09-047 at 92).
3. The metrics shall link short-term and long-term strategic planning goals and objectives to identified program logic models (D. 09-09-047 at 92).
4. The metrics shall track progress towards Commission-adopted market transformation goals (D. 09-09-047 at 91).
5. The metrics shall allow the Commission to evaluate progress toward market transformation as a factor in determining whether the programs should be continued, modified or eliminated in future portfolios (D. 09-09-047 at 98).

This report's Considerations for a Future Program section contains Cadmus' proposed metrics for a future, full-scale, statewide CEI program.

FINDINGS

This section presents Cadmus' findings from the literature review and from the program staff and CEI advisor interviews.

Literature Review Results

Cadmus reviewed four nationwide initiatives for energy management (including three offered by the federal government) and nine utility or regional energy management program offerings. Appendix B lists sources for information summarized in the literature review.

Initiatives and Certifications

There are various initiatives and programs available to the target audience for the CEI program. DOE the Better Buildings Better Plants (BBBP) Program, and Superior Energy Performance (SEP), and the Environmental Protection Agency (EPA) offers ENERGY STAR certification.

DOE also offers several energy management tools, including the Plant Energy Profiler (ePEP) and Energy Performance Indicators (EnPI). The EnPI tool was designed to aid facilities with the International Organization for Standardization (ISO) 50001 energy management standard, which launched in 2011.

ISO 50001 Certification

ISO 50001 is a voluntary international standard for energy management that outlines a framework for: (1) integrating energy efficiency into management practices, and (2) providing a consistent method for companies with facilities worldwide.

ISO 50001 is based on the ISO management system model, familiar worldwide to organizations implementing standards of quality management, environmental management, food safety, and information security. Based on a continuous improvement framework, it incorporates energy management into every-day organizational practices by utilizing the following steps:

1. **Plan.** Conduct an energy audit and organizational assessment, set energy reduction goals, and outline an energy management plan for reaching the goals.
2. **Do.** Implement the energy management plan.
3. **Check**. Track and report energy consumption to monitor progress towards achieving energy reduction goals.
4. **Act.** Take actions to continually improve energy management.

Upon completion of the four steps, organizations can assess their progress and develop a new plan accordingly. Repeating the steps provides a continuous approach to energy management.

ISO 50001 does not offer guidance regarding energy reduction amounts required for certification; rather, it leaves this to a company's discretion. Companies can choose certification by an independent third-party entity or can follow ISO 50001 without certification.

DOE Superior Energy Performance

Launched in 2012, the SEP certification program uses ISO 50001 as a central certification requirement. Accredited by the American National Standards Institute National Accreditation Board (ANSI-ANAB), SEP's main program elements provide consistency in energy-management implementation across facilities. These elements are:

- **Energy Management Standard.** Facilities must follow ISO 50001 to receive SEP certification.
- **System Assessment Standards.** Guidance is provided for assessing systems (such as pumps, compressed air, steam, and process heating) for energy-efficiency opportunities.
- **Measurement and Verification Protocols.** A best-practice methodology is outlined for commercial and industrial facilities to measure and verify energy savings.
- **ANSI-Accredited Certified Practitioners.** Certified practitioners provide assistance to facilities in assessing energy-efficiency opportunities and in meeting both the ISO 50001 standard and the additional SEP requirements. Additionally, independent certified practitioners (SEP Performance Verifiers and SEP Lead Auditors) validate performance for facilities seeking certification.
- **End-User Awareness Training.** SEP provides brief trainings on program elements via the Internet or, when appropriate, integrates these brief trainings with more comprehensive training.

SEP conducted demonstration projects at several facilities before launching the program in 2012. The demonstration facilities received trainings and monthly coaching towards achieving SEP certification. SEP selected these facilities following four criteria, which, if met, would ensure a high likelihood of success:

- **Willingness to allocate resources to energy management.** Senior-level commitment was required to ensure facilities would devote the necessary resources to energy management.
- **Previous implementation of a management system.** Facilities with an ISO or other type of certified management system in place were selected, as they understood the requirements and commitment needed to implement ISO 50001 and SEP. In addition, at least one SEP team member at the facility understood existing internal management systems.
- **Commitment to workforce development and budget allocation to training and education.** Participating facilities had to invest in educating employees about energy efficiency and allow employees to implement energy projects.
- **Willingness to pursue SEP certification.** Facilities had to allow third-party audits verifying the facility met SEP requirements of a minimum 5% improvement in energy performance, and this had to be supported by a minimum of 48 months of facility energy consumption data.

The program remains under development. Two facilities in PG&E's CEI program and one facility in SCE's program are pursuing SEP certification, with the assistance of CEI advisors.

DOE Better Buildings Better Plants

In December 2011, the BBBP Program began as a rebranded version of the Save Energy Now LEADER (SENL) Program (launched in 2009). As of November 2011, SENL had six companies reaching 10-year targets for reducing energy intensity by 25%. Two-thirds of participants were on track to meet their targets, and many participants pursued SEP certifications.

To date, 110 industrial and manufacturing companies have signed the BBBP pledge to reduce energy intensity by at least 25% within 10 years. The pledge includes a voluntary commitment to complete the following (all within one year of signing the pledge):

- Appoint an energy manager;
- Establish baseline energy usage and intensity; and
- Develop an energy management plan.

DOE provides program participants with access to a technical account manager, who provides support for: establishing energy baselines, analyzing usage data, and developing an energy-management plan. Participants can attend training sessions on financing, technology, software, and other energy-management topics. In addition to applying for on-site trainings, companies can access a portfolio of online tools provided by the DOE's Advanced Manufacturing Office (AMO).

Participants are required to submit annual reports addressing the following:

- Their energy use;
- Their progress toward decreasing energy intensity;
- The number of participating plants at the company; and
- A short description of efforts (technology, strategy, and practices) they implemented.

BBBP does not offer monetary incentives, but it features participants on the DOE Website and provides promotional materials for companies to publicize their participation externally and among their own employees.

EPA ENERGY STAR Certification

ENERGY STAR offers certification for commercial buildings and manufacturing plants passing certain criteria.

- For commercial buildings, EPA's online Portfolio Manager calculates a score on a 100-point scale. Buildings scoring 75 or higher may qualify for ENERGY STAR certification, if the criteria met are verified by a professional engineer or a registered architect.
- For manufacturing plants, the plant must have an energy performance indicator (EPI) score in the top 25% for its industry.

After the plant's energy manager enters energy and production data, the EPI is calculated and measured against non-public census data for other facilities within the same industry. Both an EPI score for the plant and the average EPI for that industry are then provided to the plant's energy manager. A plant is considered efficient and qualifies for ENERGY STAR certification if it falls into the 75^{th} percentile of all plants within its industry.

DOE Tools

DOE has numerous tools available for tracking, analyzing, and managing energy consumption. Cadmus reviewed two of these tools, the ePEP, and EnPI, which are available through the DOE's Website (via the AMO).

- Released in late 2011, ePEP helps industrial plant managers identify how energy within their plants is purchased and consumed. The tool then helps identify potential energy and cost savings. ePEP has been designed so plant managers can complete plant profiles in about an hour. This tool provides a customized, printable report containing this information: details of energy purchases; how energy is consumed; potential cost and energy savings; and a list of next steps for saving energy.
- Released in 2012 for beta testing, EnPI is a Microsoft Excel-based regression tool used for tracking energy use. The tool's regression model establishes baseline energy consumption (based on historical energy billing data), and it tracks changes in energy consumption resulting from implemented energy management projects. The tool's design accommodates users participating in a variety of programs including SEP, BBBP, and ISO 50001.

Utility and Regional Programs

Cadmus reviewed nine commercial and industrial programs from across the United States. Each program took a different approach to continuous energy management, but many stressed principles similar to CEI:

- The importance of dedicated energy-management staff (five programs);
- Conducting an organizational assessment (four programs); and
- Continually evaluating progress to improve future energy management (eight programs).[1]

The following brief overviews address each program reviewed.

California IOUs

Before the CEI program, IOUs conducted a less formal, less rigorous version of CEI with their large industrial, agricultural, and commercial customers.

The current AE strategy involves reaching out to customers, establishing a relationship, and exploring customers' opportunities to save energy. The AEs work with customers to complete a few small, less-complex energy-efficiency projects, for which the IOU provides incentives.

After a customer completes a few successful projects, the AE discusses establishing an energy manager at the customer's facility. The AE then discusses with the designated energy manager any changes the plant is likely to undergo over the next decade. Through these discussions, energy-efficiency opportunities are identified.

[1] NYSERDA's project-based program presents an exception to the continuous improvement approach, providing incentives for implementing energy-efficiency projects and for operations and maintenance energy savings. However, it focuses on shorter-term, one-time improvements.

The CEI pilot program creates a structured framework around this existing process and provides a more rigorous evaluation of energy-savings opportunities. The program does not provide incentives; rather, it provides consulting services to customers for one to two years, depending on a customer's progress.

The goal for the program is to help customers develop the skills required to identify and implement energy projects. This will enable the company to develop, enact, and continually update a long-term, strategic energy-management plan.

The strategies include for an energy-management plan include the following:

- Efficient equipment upgrades;
- Improvements to O&M and process efficiencies;
- Education and training to change employee behaviors; and
- Modifying management structures to incorporate and consider energy efficiency at all levels.

As mentioned previously, the six stages of the CEI pilot are these:

1. **Commitment:** The facility commits to the program, and signs a memorandum of understanding (MOU) to signify its commitment to CEI's requirements.
2. **Assessment:** The facility undergoes the energy audit and organizational assessment to identify possible improvements.
3. **Planning:** The facility identifies an energy manager, who works with the CEI advisor to determine energy consumption reduction goals. An energy management plan then can be developed, prioritizing the projects to be implemented first.
4. **Implementation:** High-priority projects identified in the plan are implemented.
5. **Evaluation:** The facility's progress is evaluated and achievements recognized.
6. **Modification:** If necessary, the energy management plan is revised and, when that occurs, steps 2 through 5 are repeated. At this stage, the facility may become self-sufficient in practicing CEI and may no longer need the CEI advisor's assistance.

IOUs designed their programs to offer the same components and use the same structures, although each utilized slightly different delivery mechanisms.

- PG&E allowed a company cohort model, which allowed more than one facility within the same company to participate in the program. This enabled the CEI advisor to work with two or more facilities at the same time, conducting trainings and implementing projects that applied to both facilities, in addition to facility-specific projects.
- PG&E built in off-ramps after each CEI phase, so in the event of unforeseen circumstances, customers could discontinue the program.
- SCE and SCG hired four CEI advisors to implement their program, which enabled a comparison between the approaches of the CEI advisory firms.

- All programs involved AEs in recruiting customers, although some programs relied more heavily on CEI advisors than on AEs for recruitment efforts.
- California's CEI program based its design on existing energy-management programs, as discussed below. In particular, SCE and SCG reported working with a representative from BC Hydro in designing its CEI program.

BC Hydro

BC Hydro's PSP program, which began in 2002, has since been split into PSP-Transmission (PSP-T) and PSP-Distribution (PSP-D) subgroups, based on customers' electricity rate classes. The former serves large pulp and paper, mining, and other customers, while the latter addresses mid-size industrial and manufacturing customers. To participate, customers must have annual electricity bills of at least CAD$200,000. As of early 2008, PSP had over 100 participants, with the two subprograms having a combined three-year budget of roughly CAD$65 million.

Five main components comprise the program:

1. Co-funding an energy manager from the customer's own staff or an outside consultant.
2. A free management assessment and up to 100% co-funding of an energy study (following BC Hydro's review of the energy study report).
3. Assistance with monitoring, targeting, and reporting.
4. Having an on-site audit of electric motors and developing a management plan for motor repairs and improvements.
5. Provision of materials for education, training, and awareness to foster company-wide involvement with energy-efficiency efforts.

Upon participant implementation of energy-efficiency measures, BC Hydro reimburses up to 75% of incremental costs for bundled projects producing at least 50,000 kWh of annual savings. (These are subject to certain payback restrictions.[2])

Bonneville Power Administration

The BPA's Energy Management Program for utilities and high-usage industrial customers began in October 2009 as a pilot component of the Energy Smart Industrial (ESI) program. Three parts comprise the program:

1. **Having performance-based co-funding for a designated Energy Project Manager (EPM).** Co-funding for EPMs is granted in proportion to a participant's energy-savings goal (between $25,000 and $250,000, per participating site).
2. **Establishing a baseline, monitoring usage, and achieving savings from O&M improvements on an ongoing basis** (known as Track and Tune [T&T]);

[2] The simple payback (not including the incentive amount) must be at least two years for hardwired or permanent projects.

3. **Training on implementation strategies** (High Performance Energy Management [HPEM]), which include:
   - Conducting a management assessment;
   - Developing and implementing a plan;
   - Recognizing achievements; and
   - Reassessing the plan periodically to update and continue the process.[3]

As reimbursements for performance tracking system costs, T&T awards incentives based on verified energy savings (ranging from $0.0025/kWh to $0.075/kWh) and up to $0.0025/kWh of baseline usage. HPEM provides annual incentives of $0.025/kWh for verified savings. Each funding type can be continued for up to five years, if the participant continues to achieve its savings goals.

In 2011, two T&T projects and 13 HPEM projects reported energy savings. This program was evaluated in 2012, however, final results were not publically available at the time of writing this report.

Energy Trust of Oregon

The ETO, Oregon's energy-efficiency system benefits charge administrator, offers an Industrial Energy Improvement Program. Implemented by Strategic Energy Group, this cohort-based pilot started in 2009. For each cohort, ETO recruits from eight to 12 industrial customers from non-competitive industries to participate in the 14-month program. The program offers incentives of $0.02/kWh and $0.20/therm for energy savings achieved in the participation year.

Participants attend meetings, Webinars, and workshops to:

- Share ideas;
- Train on goal setting, monitoring, tracking, and reporting; and
- Find opportunities for saving energy.

Between sessions, participants can access technical support for: (1) establishing baselines and monitoring usage, and (2) implementing the methods learned through training. To demonstrate management support, each company must designate an Executive Sponsor. Also, each company must designate at least two Energy Champions to implement the energy-saving strategies outlined in the energy policy developed by the company.

The program emphasizes behavioral and O&M approaches to reducing energy use as precursors to investing in capital-intensive, energy-efficiency products. The program further encourages companies to continue making improvements based on monitoring data even after their cohort's training sessions have ended.

The first cohort contained customers from the automotive, metal products, wood products, and high-tech industries (among others), each with annual electricity costs more than $500,000.

[3] EPM and HPEM participants typically have loads of at least 3 aMW. T&T participants generally have at least 1,000,000 kWh subsystem, or 4,000,000 kWh plant-wide annual usage.

Together, the first cohort's 10 members saved over 13.5 million kWh (an 8% reduction) and received incentives totaling more than $200,000.

As of January 2012, the program had completed work with 27 participants. The first-year savings totaled more than 43,500 MWh (across three cohorts) and more than 160,000 therms (only incented for the most recent cohort).

MidAmerican Energy

MidAmerican's Nonresidential Energy Analysis began in 2004 as a pilot called Efficiency Partners. The program has since evolved, offering energy assessments and two tracks for continued support of Iowa and Illinois nonresidential customers with facilities of at least 50,000 square feet.

The pilot follows this format:

1. Participants first receive an energy assessment. In most cases, this is a comprehensive, facility-wide assessment establishing baseline energy usage and identifying opportunities for improvements.
2. Following the assessment, customers can enter the Efficiency Partners Track, through which participants commit to work with MidAmerican to develop energy-efficiency action plans.

In the Efficiency Partners Track, the participants' action plans contain detailed implementation strategies and timelines, and the plans are continuously updated as new savings opportunities are identified. These customers receive incentives for installing the qualifying measures recommended in the assessment summary report. Incentives are structured to offset incremental costs of high-efficiency measures, with a maximum buydown of four years payback of incremental costs.

Efficiency Partners can also receive both reimbursements for preapproved, investment-grade studies (up to 50% of costs) and savings-based incentives for implementing recommendations from detailed studies (up to 50% of the study cost).

Some participants may choose to forgo the initial comprehensive assessment if they have already identified a specific area of concern. These participants receive technical and financial assistance for conducting feasibility studies and making necessary improvements. The participants are also eligible to receive cost-sharing incentives for detailed studies, and they are encouraged to seek project-specific rebates and incentives through the MidAmerican Nonresidential Equipment and Custom Systems programs.

Northwest Energy Efficiency Alliance

NEEA's CEI Program, which began in 2005, focused on achieving O&M energy savings in the food processing, and pulp and paper industries. The program emphasizes sustainability and the ability of participants to continue to implement CEI processes on their own.

The key program elements are these:

- Designating staff to lead energy-improvement efforts (including an energy champion);
- Setting goals for reducing energy use below an established baseline; and
- Creating an energy management plan, updated and revised as energy improvements are achieved.

Currently, the CEI program does not offer incentives or training sessions for participants, but NEEA's broader Industrial Initiative plans to shift its focus to include: (1) technical training and demonstrations; (2) increased cooperation with utilities and professional, trade, and labor organizations; and (3) encouragement of cross-industry collaboration.

NYSERDA

NYSERDA's Industrial and Process Efficiency Program, which started in 2009, offers incentives to encourage the implementation of energy-efficiency projects and to improve efficiency of operations and maintenance practices. The target audience for this program consists of manufacturing facilities (and their support operations, such as warehousing and distribution) and data centers.

To qualify, applicants must: (1) be customers of designated New York utilities, and (2) pay into the System Benefits Charge, which funds the program. Applicants must also submit the New York State Consolidated Funding Application, which NYSERDA uses for its New Construction, Existing Facilities, and FlexTech Programs.

NYSERDA provides technical reviewers to assist with the required engineering analysis, pays for measurement and verification, and contributes 50% of costs for engineering feasibility studies for potential projects. Project-based incentives (which reimburse up to one-half of total project costs) are paid in two installments: up to 60% upon installation completion, and the remainder following measurement and verification (which can take up to two years).

- Electric project incentives range from $0.12/kWh to $0.16/kWh.
- Gas project incentives range from $15/MMBtu to $20/MMBtu.
- O&M incentives are provided at rates of $0.05/kWh and $6/MMBtu for up to one-half of costs.

Each facility qualifies for up to $5 million in electric incentives and $1 million in natural gas incentives per year, until 2015 (or until the program's current funding of $167 million is exhausted[4]).

As of March 2011, $13.7 million has been spent on incentives for electricity savings and $1.5 million has been spent on incentive payments for gas savings. By that date, program participants had saved 97.2 GWh, 15.2 MW peak demand, and 254,174 MMBtu.

[4] Incentives for a given project or O&M task are based on one year of energy savings, but a participant can receive incentives in subsequent years for undertaking new projects.

PPL Electric Utilities

In late 2010, PPL Electric launched its pilot CEI Program, which emphasizes five steps:

1. Define production parameters to identify problem areas.
2. Measure baseline usage and develop an action plan.
3. Establish an energy policy, staff roles, and key performance indicators.
4. Implement O&M improvements.
5. Sustain continuous improvements through: monitoring, tracking, and reporting; employee awareness; and recognition of achievements.

Participants attend Webinar training and on-site sessions at each stage of the process, receiving technical guidance and peer learning opportunities.

The first 12-month cohort consisted of seven industrial facilities (medium to large industrial customers from the plastics, meat, candy, dairy, and aluminum industries) and two PPL Electric Utilities' sites. Energy savings for the program's first nine months totaled approximately 9,000 MWh (3% of baseline usage), and participants received more than $600,000 in incentive payments.

In September 2011, PPL Electric held a Webinar to recruit participants for the next cohort.

Puget Sound Energy

PSE's Resource Conservation Manager Program, which began in 2002, predated NEEA's seminal CEI program. The RCM program promotes the value of a dedicated staffer for achieving operational and behavior-based energy savings. The program is designed to serve large commercial and industrial customers and public institutions with multiple facilities. Interested parties must submit an RCM profile sheet (available online) to provide facility and budget details and to select desired services from a menu.

Program services, which are based on facility size[5], include these:

- Resource accounting software,
- Technical assistance,
- Staff training,
- Energy data services, and
- Site-based incentives (with eligibility determined upon PSE's review of the application and estimation of savings potential).

Qualifying participants receive a guarantee of the first-year salary for a full-time RCM, 25% of which is paid when participation begins. The remainder of the salary is paid by PSE—up to the value of energy savings—if the energy savings do not cover the difference. During their second

[5] Smaller customers may receive funding for a part-time RCM (at least 25% of a full-time equivalent). PSE also provides resource accounting software and technical assistance for customers not operating on a scale sufficiently large to qualify for the full program.

and third program years, participants who meet their energy-savings targets through O&M and behavioral efforts (a 5% annual reduction over the prior year's usage) receive an incentive from PSE equal to the start-up incentive.[6] (During a participant's three-year involvement, the program typically results in 10% to 15% reduced energy usage and costs over the three-year period.) The program also provides training stipends for RCMs to earn Building Operator or Energy Management Certifications.

As of 2008, PSE had worked with more than 50 organizations across the public and private sectors. For 2011, PSE had a budget of $2,561,000 and, pending approval in October 2011, with a budget of $6,070,000 is available for program years 2012-2013.

Xcel Energy

Xcel Energy's Process Efficiency Program (started in 2007) was designed for large industrial cutomers in Colorado and Minnesota, whose participation was contingent upon their potential for energy savings.[7] This program utilizes a three-stage approach to continuous energy management:

1. Identifying opportunities;
2. Scoping energy-efficiency potential; and
3. Implementing improvements.

Participants first receive a free energy-management assessment (the assessment types are EnVinta One-2-Five, EnVinta Achiever, or Best Energy) and a technical audit to identify savings opportunities. Xcel Energy subsidizes engineering and technical studies of energy-saving opportunities. Participants have a 25% cost share (capped at $7,500) for these studies. The participant then uses the assessment and audit results to develop energy action plans.

For the final program involvement phase, Xcel Energy works with participants to develop a three-year management plan for energy improvements, provides participants with product-specific rebates for completed installations, and pays bonuses for reaching milestones and exceeding goals.

Xcel Energy targets a small number of participants each year (12 participants in 2012 and 15 in 2013), based on high historical usage and conservation potential (more than 10 GWh annually). Past participants in Colorado have included manufacturing, water treatment plants, mining, aerospace, and printing facilities.

Program budgets in previous years primarily were spent on consulting services, although future budgets ($2,017,096 for 2012, and $2,569,383 for 2013 in Colorado) anticipate increased rebate payments resulting from upon project completions and program expansion.

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[6] RCMs also are encouraged to seek complementary PSE incentives through other programs (e.g., lighting, HVAC, and water heating system improvements).

[7] Conservation potential requirements are 2 GWh in Colorado and 1 GWh (or 4,000 Dth) in Minnesota.

Program Similarities and Differences

Across the nine continuous improvement programs described, the program structures vary widely. Several programs adhere to a strict timeline or cohort structure, while others allow participants to determine the commitment horizon. In some cases, program administrators provide tracking software, or pay savings-based incentives.

Programs also differ in their alignment with certification programs, such as ISO 50001. The following sections address each of these topics as they present comparisons of program offerings. The DOE BBBP Program is included for comparison purposes.

Time in Program

Several programs have firm time limits, while others have no fixed participation horizons. Participant commitments range from a one-year cohort (PPL Electric) to a 10-year pledge to reduce energy intensity (DOE). Table 5 summarizes commitment time frames across programs.

Table 5. Summary of Program Time Requirements for Participant Commitment

Program	Commitment Time frame	Other Notes
BC Hydro	One to 2 years	
BPA	At least 1 year and 1 month	Savings-based incentives, granted for up to five years.
California IOUs	One to 2 years	
DOE	Up to 10 years	
ETO	One year and 2 months	Cohort.
MidAmerican	Up to 2 years	
NEEA	Variable, ranges from 1 to 5 years	
NYSERDA	Variable	
PPL Electric Utilities	One year	Cohort.
PSE	Three years	After three years, customers can extend participation through a second term of performance-based incentives.
Xcel Energy	Variable	

Cohorts

Two programs—ETO and PPL Electric—recruit customers for approximately one year of participation in a cohort.[8] Both programs have recruited participants from a range of industries, and PPL Electric's first cohort notably included two of the utility's own facilities.

An evaluation of ETO's pilot cohort concluded program participants valued the opportunity to visit other participants' plants and to attend in-person meetings in lieu of Webinars. Including participants from different industries, however, proved something of a stumbling block, because Webinar and workshop content had to be sufficiently general to benefit all attendees. Participants reported some topics or program aspects were not applicable to their facilities and said they

[8] BPA's HPEM component offers participants the option of joining a group of 10 to 12 noncompetitive customers as an alternative to the one-on-one approach. In addition to providing individual support, the group option entails monthly meetings or Webinars to facilitate learning and sharing among peers.

would prefer to receive lists of savings opportunities rather than focusing on general energy management principles.

Unlike PG&E's cohort model (which includes several facilities from the same company), the PPL Electric and ETO cohorts include facilities from many different companies. Including different companies within the same cohort can pose challenges, such as finding commonalities between industries or competitiveness between companies within the same sector. However, the arrangements also offer advantages, as energy managers can learn from their counterparts' experiences.

Incentives

There is significant variety among the nine programs in terms of their approaches to incentives.

- The programs of DOE, NEEA, and PPL Electric are similar to the California IOUs in that they do not provide financial incentives for participation. In fact, NEEA and PPL Electric only provide consulting expertise.
- Three other programs grant incentive payments per kWh or MMBtu saved.
- Three pay for (or contribute to) salaries for energy management staff.
- Two provide bonuses for achieving goals.

Table 6 summarizes incentive types offered by each program. In addition to the incentives listed, participants are referred to other utility program offerings for equipment or capital measure incentives.

Table 6. Summary of Program Incentive Types and Amounts

Program	Incentive Types and Amounts
BC Hydro	• Co-funding salary for an energy manager. • Up to 100% co-funding of an energy study. • Reimbursement for up to 75% of incremental project costs, totaling at least 50,000 kWh of annual savings.
BPA	• Co-funding for an energy manager salary, in proportion to the participant's self-determined energy-savings goal (between $25,000 and $250,000 per participating site). • T&T incentives range from $0.0025/kWh to $0.075/kWh for verified energy savings, and up to $0.0025/kWh of baseline usage as reimbursement for performance tracking system costs. • HPEM provides up to five years of annual incentives of $0.025/kWh for verified savings.
California IOUs	• None.
DOE	• None.
ETO	• $0.02/kWh for first-year energy savings.
MidAmerican	• Incentives for installing qualifying measures recommended in the assessment summary report, or recommendations from detailed studies (up to 50% of study costs). • Up to 50% of investment-grade study costs.
NEEA	• None.
NYSERDA	• Electric process and energy-efficiency incentives range from $0.12/kWh to $0.16/kWh, and gas project incentives range from $15/MMBtu to $20/MMBtu. • O&M incentives are provided as $0.05/kWh and $6/ MMBtu, up to half of costs. • The program has a per-facility annual cap of $5 million in electric incentives and $1 million in natural gas incentives.

Program	Incentive Types and Amounts
PPL Electric Utilities	• None.
PSE	• Includes a start-up incentive of 25% of a first-year salary for an energy manager, plus a salary guarantee for the energy manager, if energy savings do not cover the remainder. • Training stipends for certifications. • Cash bonuses (equal to the start-up incentive) for reducing annual energy usage by 5% through behavioral and O&M improvements in Program years two and three.
Xcel Energy	• 75% (or more) of engineering study costs. • Product-specific rebates. • Bonuses for reaching milestones and exceeding goals.

Certifications

Although none of the programs required ISO 50001 or other certifications, three programs characterized their efforts as being in line with the ISO 50001 philosophy, or they planned to provide tools to facilitate certifications. (For example, PSE provides a training stipend for energy management staff to earn Building Operator or Energy Management certifications.)

- To facilitate energy management consistent with ISO 50001 and SEP, DOE plans to update its suite of free tools to include an "E-Guide for ISO 50001 Implementation" and related resources.
- BPA's program manual describes HPEM as: "…[applying] the same proven continuous improvement approach that end users already apply to other aspects of their operations (i.e., ISO 9000+ for quality control, ISO 14000+ of environmental control, 5-Star OSHA programs, Six-Sigma, Lean Manufacturing, etc.)." BPA's manual also says end users having experience with business management systems will most likely benefit from the HPEM program.
- NEEA's industrial homepage promotes the value of ISO 50001 as a key strategy for achieving energy savings. The CEI Website notes that NEEA also plans to update and supplement its online offerings "as energy management standards progress toward ISO 50001."

Software Tools

Table 7 summarizes energy benchmarking and tracking software options, which vary widely across programs.

- Three utilities outside California provide an EnVinta One-2-Five energy-management assessment, and NEEA recommends doing so (although does not reimburse this expense).
- Three programs provide or reimburse tracking tools/software (BPA, ETO, and PSE),
- Two programs (NEEA and the DOE) provide free tracking tools online.

Table 7. Management Software and Energy Tracking Methodologies Offered by Programs

Program	Management Software	Energy Tracking
BC Hydro	Proprietary Energy Management Assessment (EMA) tool	None.
BPA	EnVinta One-2-Five	TrakSmart (proprietary Web-based tool); funding provided for participants to install measurement equipment and software for performance tracking.
California IOUs	EnVinta One-2-Five	No standard method currently used.
DOE	None	Website provides a suite of scorecards and tracking tools through the AMO, including EnPI and ePEP, and offers training sessions on how to use these most effectively. The Web-based tools are organized by category: plant-wide; motor-driven; steam; process-heating; and data centers. The site ultimately will include an "E-Guide for ISO 50001 Implementation" and related resources to facilitate energy management consistent with ISO 50001.
ETO	None	MT&R models and training in line with the International Performance Measurement and Verification Protocol, Option D, which determines facility energy use by calibrated simulation.
MidAmerican	EnVinta One-2-Five	None.
NEEA	Encourages but does not provide funding for EnVinta One-2-Five assessment	Program Website provides a wide range of free planning documents and monitoring spreadsheets, with examples for each stage of the process, starting with an energy management assessment and a 90-day energy management action plan, through a long-term action plan with a two-year horizon.
NYSERDA	None	Funding provided for metering equipment and other measurement and verification costs.
PPL Electric Utilities	None	None.
PSE	None	Utility Manager software (which can be linked to the ENERGY STAR Portfolio Manager).
Xcel Energy	EnVinta One-2-Five, EnVinta Achiever, or Best Energy	None.

IOU Program Manager, CPUC Staff, and CEI Advisor Interview Results

Cadmus conducted interviews with key utility staff from the four IOUs involved in delivering the CEI pilot program and with key staff from the five contractors hired as CEI advisors. We also spoke with the CPUC representative advising the CEI pilot program.

The following sections discuss the results of Cadmus' interviews with IOU staff, CPUC staff, and CEI advisors. The interview guides are provided in Appendix B (IOU and CPUC staff) and Appendix C (CEI advisors).

Program Involvement

Cadmus interviewed utility staff members who act as program managers for the CEI pilot program. However, involvement in program design and delivery varied by staff member, with some helping develop the program in 2009 while others became involved more recently. This

variation was usually the result of staffing changes occurring at the utilities.

Involvement in day-to-day program delivery also varied. Some program managers took active roles in recruiting participants, and they occasionally attended CEI meetings with participants. Other program managers left the majority of day-to-day program delivery and interaction with customers to CEI advisors.

- SCE's and SCG's program managers reported being very closely involved with the program from the beginning, and their efforts included: (1) selecting its four CEI advisors; (2) hosting roundtable discussions to determine program details; and (3) asking stakeholders and account managers to vet plans before rolling out the program in 2010.
- At PG&E, the involvement of the program manager and marketing manager focused on administrative implementation aspects: overseeing the budget; communicating with AEs; engaging with CEI advisors; and coordinating with the other IOUs through monthly and quarterly calls.
- At SDG&E, the program manager participated in: (1) negotiating the program's terms and conditions and deliverables, and (2) in writing the utility's program implementation plan. Now that the program has entered the implementation stage, the program manager primarily manages the CEI advisor.

CEI advisors played active roles in the program, with many helping design specific pilot program elements. Following the design phase, CEI advisors assumed implementation responsibilities, including:

- Marketing and customer recruitment;
- Technical assistance;
- Assisting with development and implementation of facilities' action plans;
- Monitoring progress; and
- Other activities.

While CEI advisors took responsibility for day-to-day interactions with participating facilities, their involvement in specific activities, such as customer recruitment, varied by IOU.

A single CPUC staff member served as a liaison between the CPUC and the IOUs, overseeing program processes and providing direction and guidance to the IOUs. The CPUC staffer did not play an active role in day-to-day program operations, but attended group meetings regularly and communicated with IOUs on an as-needed basis.

In terms of customer motivations for program involvement, SCE reported customers have joined the program because of increased corporate awareness of the need to integrate environmental and energy improvements into their businesses. Customers see this as a unique opportunity to seek expertise on organizational improvements; other programs only support limited energy improvements. Customers also see program involvement as a marketing tool to demonstrate a company's environmental awareness.

Program Design

The CEI pilot program served as a learning experience, providing IOUs opportunities to: (1) work with several implementers and customer sectors, and (2) test a variety of delivery mechanisms and recruiting strategies.

The IOUs worked with the CEI advisors in designing the program; the CEI advisors offered a wide range of experience and expertise during the planning phase. CEI advisors appreciated the collaborative nature of the program design phase, stating all participants had an opportunity to offer input on each program aspect. One CEI advisor in particular cited the process as a very good example of consulting firms working together under an IOU's direction.

Although CEI pilots across IOUs shared main features, each program slightly differed in design and implementation, and each utility's design process varied. Additionally, each program manager Cadmus interviewed reported different experiences with designing the program.

PG&E formulated the design for the first California CEI pilot program. Due to consulting costs from implementing the pilot, PG&E performed extensive due diligence to ensure customers fit the program well. PG&E selectively recruited participants, focusing program design on serving large customers.

PG&E allows customers to enroll more than one location (the "cohort model"). These can be sites of different types within the same company (e.g., an industrial location and a corporate headquarters), and the program treats them individually. The CEI advisor leverages training, and tries to implement similar plans across sites. PG&E wishes to expand this to set up cohort trainings for similar customers from different companies within the same area. For example, the program could enroll several school districts from the same region.

When SCE and SCG later began to design their own programs, they coordinated with PG&E to learn about the principles behind CEI and the PG&E program's structure. SCE and SCG built on and modified this structure through meetings with the four consultants and a focus group of AEs. The group went through each of the six phases detailed in PG&E's CEI model, establishing tracking mechanisms and tools for each phase. Although SCE and SCG modified PG&E's program design, they worked to retain the basic strategies to ensure consistency for this statewide effort. SCG's program manager explained the program design also borrowed from NEEA and other programs.

SCE said the key challenges encountered during the program design were these: (1) reconciling different points of view; and (2) Reaching compromises among the four CEI advisors and two utilities (SCE and SCG) at planning meetings.

SCE and SCG program managers cited working with a consultant from BC Hydro during the program design process. (As previously mentioned, the California CEI program differs from some other program offerings in that it does not offer financial incentives.) The BC Hydro consultant explained that incentives provide an effective tool to guide participants and warned that without incentives, the program could not influence participants' decision making. Thus, the program would simply serve as a learning opportunity for customers.

SDG&E's current program manager and the CPUC staff member were not involved in the program design process. However, the CPUC staff member said the IOUs will draw upon lessons learned from the current program cycle to determine whether CEI's comprehensive approach should be expanded in the future. She recommended using the 2013-2014 program cycle as another opportunity for a pilot to test additional strategies, such as incorporating medium-sized customers and integrating demand-side management (DSM), including distributed generation and direct-load control.

Referring Participants to Other IOU Offerings

All program managers noted that CEI advisors referred participants to other IOU incentive programs, as applicable. CEI advisors helped participants identify opportunities for additional financial or technical assistance from IOUs, and one advisor in particular mentioned identifying new ways for facilities to participate that previously had not considered.

One CEI advisor, however, commented that reliance on certain IOU offerings could impede the progress of implementing CEI. For example, the advisor cited an IOU program relying on its existing audit program for conducting energy audits, rather than allowing the CEI advisor to conduct the audit. The IOU offered the rationale that the existing audit program could provide this service in a more cost-effective manner. However, the CEI advisor had invested substantial resources coordinating with the other program, and the customer had to wait for the audit to be conducted. This CEI advisor said if she had conducted the audit herself, the work would have been completed sooner, thus saving resources.

The CPUC suggested offering higher incentives to customers taking on DSM integration projects, explaining this would spur participation in other IOU programs while maintaining consistency with CEI's holistic approach. Such incentives would promote a comprehensive approach to DSM in addition to rewarding customers further for installing demand response, energy-efficiency, and distributed generation projects.

IOU staff reported that although participants should leverage other program offerings, this may affect the perceived value of the CEI program, as the CEI pilot program does not claim savings. When pilot participants apply for incentives from other IOU programs, the resulting energy savings are counted through these other programs. This is a major concern for the future of the CEI program because: (1) energy savings from capital measures will be attributed to other programs, and (2) energy savings from O&M or behavioral changes are difficult to quantify. Thus, the inability to quantify or attribute savings to the CEI program may impact funding for a full-scale program if those not directly involved with CEI do not recognize its benefits.

Certifications

The IOUs encourage customers to pursue energy management certifications to ensure CEI will persist after program participation ends. Based on responses from CEI advisors, the importance of certifications (such as SEP, ISO, LEED, and ENERGY STAR) to commercial, industrial, and agricultural customers varies by customer, and CEI advisors noted some customers are simply not interested.

Documentation-oriented customers are more likely to pursue certifications. However, other customers may find the process—especially the ISO 50001 requirements—overly burdensome.

If a full-scale CEI program requires certifications, this could present a barrier to sustained engagement.

Several respondents explained a driver must exist for customers to pursue certifications, such as a corporate directive or an incentive from the IOU. The CPUC staff member stated it was too early in the program to determine how critical certifications will be to CEI's success and suggested possibly offering certifications through the CEI program. The staff member also agreed the program should offer support in pursuing certification, but certification should not be required.

SCE and SCG emphasized their program provides support for customers pursuing certifications (e.g., ISO 50001). Early adopters have been involved with the military (preparing to meet the ISO 50001 standard) and food processing (for branding purposes).

Program Goals and Objectives

Program managers and CPUC staff emphasized that they primarily considered the pilot to be a learning opportunity, and CEI advisors also recognized this as the pilot's main goal. The pilot provided an opportunity to test a comprehensive approach through a variety of CEI delivery mechanisms, recruiting strategies, and customer sectors. Ideally, this opportunity will enable the IOUs to identify successes and lessons for application to design and implement successful, full-scale programs.

For this pilot effort, the IOUs have collaborated on and implemented similar-but-unique programs. The statewide program design aspects, geared towards learning how best to implement the program, included the following:

- Working with five CEI advisory firms to learn how different contractors would approach CEI.
- Recruiting large customers who would benefit from a comprehensive approach and who offer a large potential for energy savings that would justify the costs.
- Recruiting a diverse group of large C&I participants to test participant characteristics important to success.
- Testing different recruitment methods (relying on AEs, on CEI advisors, or on a combination of both) to enlist program participants. This method differs from many other IOU incentive programs, which neither train nor involve AEs in program details.
- Conducting regular meetings with IOUs and CEI advisors to learn from their experiences.

The pilot also offered an opportunity to identify these key elements: (1) implementation challenges; (2) benefits participants could realize; and (3) CEI's sustainability.

The program managers stressed their hopes to apply the lessons learned through the pilot and create a viable statewide program, which could cost-effectively serve a broader customer base. Currently, the program focuses on large customers, as participants must be of sufficient size to devote resources to the program and to achieve energy savings that justify costs and technical skills of CEI advisors. In the future, program managers will explore methods to extend the program to small- and medium-size customers, which have not historically been as heavily

targeted for DSM. This effort could potentially lead to bigger pools of untapped savings, but it also may require alterations in CEI's delivery methods so that the program is cost-effective for those smaller customers.

Secondary program goals encompass success on an organizational level and in terms of productivity and cost savings for projects of all types, including: annual energy savings; peak demand reduction; waste mitigation; renewable energy; and other quantifiable areas. Additionally, the program is designed to enable IOUs to document their involvement in decisions to improve energy efficiency and subsequently claim those savings. The program has also been designed to complement a customer's other environmental or cost-savings goals. This will help participants become self-sufficient in their continuous improvement efforts, with little involvement from IOUs and CEI advisors over the long term.

All utility representatives reported the pilot did not include savings targets, noting this prevented CEI advisors and participants from focusing on energy savings at the expense of organizational improvements. The IOUs also said that, by CEI's very nature, the flexible approach ensures the pilot is tailored to each participant. Participants set their own goals, and the IOUs supported these when the goals were reasonable. CEI advisors recognized the ultimate goal of any CEI program would be having participating customers fully integrate energy management practices into their long-term strategic plans.

Program Implementation

IOUs said their program implementation involvement solely occurred through managing the CEI advisor, not through direct contact with participants. CEI advisors recruited participants and worked directly with participants in the implementation.

When asked which program implementation aspects they found challenging, one CEI advisor noted the rigidity of program processes sometimes presented difficulties in adapting to unique circumstances at participating facilities. Others, however, said they could adapt easily to on-site realities—that despite having standardized processes and deliverables, the actual process and specific content of deliverables could be adapted to each facility's unique needs.

Generally, CEI advisors cited having a defined structure as important to helping the advisors deliver similar programs, particularly with customers participating in different IOU territories and with different CEI advisors. Only one CEI advisory firm found program processes and deliverables too inflexible to allow them to tailor the process and deliverables more for particular customers. This advisory firm's perception may have been influenced by having worked primarily with commercial customers, as the other advisors worked primarily with industrial customers. (Historically, CEI has targeted industrial customers, as reflected in the current program design.)

Participant Recruitment

CEI advisors identified the target market as large commercial, industrial, and agricultural customers. They noted the ideal customer would:

- Take a strong leadership role;
- Have previous experience with management initiatives; and

- Adopt a proactive outlook regarding energy efficiency, but not yet have implemented significant projects.

CEI advisors noted that, unlike the pilot, a future full-scale program should include customers who lack previous experience with management initiatives or energy efficiency. While the strategy of having experienced, informed customers helped pilot participants engage in CEI more quickly, it limited the overall pool of potential participants.

When marketing the program, CEI advisors first sought to understand the customer's business, so they could present the CEI pilot program in a manner most straightforward and beneficial to the customer. CEI advisors often focused on both the resources the program offered and CEI's long-term benefits to customers. However, customers sometimes found it difficult to shift their focus from short-term, day-to-day facility operations to a more long-term, energy management strategy. Still, one CEI advisor said the CEI's long-term time frame aligns with customers' views of their overall strategic business plans.

All four program managers said they used AEs as their primary marketing agents, relying on the strong relationships between AEs and customers. Usually, when AEs recommended a customer to the program manager, this provided assurance that the customer would become involved. SCG's program manager also cited two secondary marketing avenues:

- Setting up tables at business expositions to recruit commercial customers; and
- Holding quarterly Webinars for eligible customers, introducing them to CEI.

Additionally, all four IOUs relied on CEI advisors to recruit customers, and many of these recruitments resulted from a CEI advisor's connections with previous programs or projects.

The AE recruitment approach presented two challenges: (1) selling the program to AEs; and (2) continuing to find willing participants after exhausting initial lists of customers who appeared to be promising candidates. Selling the program to AEs proved difficult:

- Some expressed skepticism about the program, and questioned whether funding could be guaranteed;
- Some did not understand the program, perceive how it benefited customers, or discern differences from other IOU offerings; and
- Some did not see the direct benefits of investing time in recruiting customers for the program. AEs receive bonuses when enrolling customers in resource programs, allowing IOUs to claim energy savings, but they do not receive bonuses for non-resource programs (such as the Pilot CEI program) in which energy savings are not claimed.

SCG said that AEs are very busy and are frequently presented with new programs, so emphasizing the CEI program's secure funding and great potential for energy savings and persistence proved important. Emphasizing the CEI program's integration with other IOU offerings also proved important, as AEs received incentives based on energy savings achieved by the customers they refer to IOU incentive programs (which can then claim savings).

Once AEs accepted the program, other difficulties remained in identifying suitable customers for the program. SCE said that while some customers became early adopters, other candidates shortlisted for the program expressed no interest in it or, upon closer inspection, appeared unsuitable for the program. To remedy this, SCE and SCG expanded their searches to all leads offered by CEI advisors. This allowed them to enroll other customers in late 2011.

SDG&E noted that while using the AEs to enroll strong candidates was effective, using this approach meant the AEs could only talk to a few candidates at a time, for fear of overbooking the small pilot program. The program manager emphasized the pilot's three-year limit, so this delay in enrolling participants resulted in less time available for implementation.

Experiences with the marketing, outreach, and the customer recruitment process varied between CEI advisors, as did AE involvement levels.

- In some service territories, AEs provided CEI advisors with lists of customers as possible CEI candidates.
- In other service territories, AEs did not provide leads, and CEI advisors had to identify and recruit potential participants.
- Some CEI advisors noted AEs did not thoroughly understand differences between the CEI pilot program and energy-efficiency programs run by the IOUs, and this made it difficult for them to identify potential participants. Thus, some CEI advisors suggested that ensuring AEs had an in-depth understanding of CEI could improve the recruitment process.

Market Barriers

All program managers and CEI advisors said the program's primary market barrier was the customers' lack of human resources. They emphasized the importance of having a dedicated and motivated energy champion who was directly involved with management and implementation of the action plan. However, one IOU noted that helping customers with human resources was beyond the program's current scope.

SCG mentioned the importance of establishing customer responsibilities with potential participants and emphasizing that the program was a major commitment requiring involvement by senior staff. The utility had one customer who signed the memo of understanding (MOU) and then drop out because of insufficient time to commit to the program. Understandably, utilities try to avoid this situation since engaging customers requires substantial investments in time and cost.

PG&E agreed customers must clearly understand what commitment entails, but emphasized the importance of having mechanisms allowing customers to reprioritize and accelerate (or decelerate) the process. The program manager provided several examples of such adjustments:

- An agricultural customer who had to defer projects until after harvest; and
- A commercial customer who was initially very excited about the program, but had to withdraw after a few meetings due to the need to commit resources previously dedicated to CEI to corporate expansion.

Other participants remained in the program through reassessment of the first program cycle before deciding they did well enough with CEI to continue the process on their own.

The CPUC noted the initial audit cost as being one the biggest barriers both to enrollment and to maximizing savings. Audits often have limited scopes, focusing only on energy-efficiency or demand-response opportunities. Thus, unless customers pay for multiple audits, they typically do not develop a full understanding of how they can use multiple strategies to reduce consumption and shift loads. The CPUC staffer said that as the CEI program matures and undergoes reconsideration for future planning cycles, having strategies for integrating multiple DSM options into audits will be important to the CEI program's success.

CEI advisors commented on the project implementation time frame as a barrier. For some customers, receiving approval and funding for a major project can be a three- or four-year process. Coupled with time required to implement a large project, this situation can pose problems for customers attempting to implement major projects within the program's time frame. This issue also underscores the need for senior management support of energy project funding as a priority. As CEI involves long-term planning, such projects can be written into plans as long-term goals that are completed within several years with less-expensive and less-intensive projects implemented in the short term.

To prevent participants from stalling out in the program due to such barriers, PG&E included off-ramps at each stage, allowing customers to discontinue their program participation when unable to move forward, while still retaining their relationships with the IOU. Off-ramps control IOU expenditures and ensure customers maintain momentum. However, off-ramps only should only be an option in extreme circumstances that adversely impact resources available for CEI. Typically, such circumstances result from decisions made at corporate rather than facility levels. Examples of when off-ramps are needed include companies that are downsizing or pursuing other resource-intensive goals, such as expansion (both of which decrease or eliminate resources previously dedicated to CEI).

Participants' Engagement and Satisfaction

Overall, CEI advisors reported that participants expressed satisfaction with the CEI pilot program. Although many participants remain in the pilot's early implementation phases, CEI advisors said most understand the benefits—including financial benefits— that can be realized. Also, customers' understanding notably increases after completing one cycle.

Although formal feedback mechanisms have not been established, customers are always able to contact their AE to provide feedback. The AE would then communicate with the program manager. Program managers said they have not heard complaints from customers. CEI advisors said the program brings much needed resources to participants, noting that most participants stay engaged in the program once enrolled. Based on CEI advisor responses, customers find particular value in the post-audit engineering support from CEI advisors, the energy-focused organizational assessment, and tying audits and assessments to energy-efficiency opportunities.

Some participants dropped out before completing a full program cycle, citing staff or resources needed to be diverted to other business needs. IOUs and the CPUC believe the vetting process works well, but noted the importance of including off-ramps within program design for adapting

unforeseen circumstances. One IOU staffer recommended adding flexibility to allow participants to return to the program when they are again able to commit the necessary resources.

Communication

During the program's first year, CEI program managers and advisors held a monthly call to discuss the program's progress. After the first year, this changed to every two months. In addition to the regularly scheduled meetings, there have been a few educational meetings to discuss program strategies, such as PG&E's company cohort model. (Also, program managers hold quarterly calls with the CPUC to report on their activities.)

IOUs said these communication levels were sufficient to implement the program successfully, noting that program managers contact each other directly, as needed. The CPUC staff member agreed that the communication levels have been good and, on a whole, the IOUs have been very organized in helping make the oversight process run smoothly.

Annual, in-person meetings have also been held. One program manager found in-person meetings valuable and recommended such meetings be held twice a year. Another respondent cited the educational meetings as being particularly useful.

IOUs varied in how frequently they communicated with CEI advisors. All IOUs reported satisfaction with CEI advisors' communication levels. One IOU appreciated the chance to provide feedback when CEI advisors asked for recommendations or direction on ways to proceed. Another IOU said its CEI advisor apprised its program manager of developments and responded quickly to questions.

Based on CEI advisors' responses, the communication between the IOUs and the CEI advisors appears effective and frequent. Most CEI advisors said the degree of communication with IOUs was sufficient to effectively implement the program, and the advisors described the IOUs as being very responsive. Only one CEI advisor said IOU communication could be improved and cited they a lacked clear direction on how to adapt the program to different types of participants.

Commonly across IOUs, only AEs and CEI advisors communicated directly with program participants. CEI advisors notified program managers when they met with participants. The frequency of these meetings was driven by the schedule outlined when participants first join the program, although they also depended on how quickly customers implemented their projects. CEI advisors remained in regular contact with participants, whether they were ahead or behind schedule. One IOU noted some CEI advisors communicated with participants more frequently than others.

Program Tracking

To gauge progress, CEI advisors monitored participant data such as electricity and gas consumption and production information to track energy intensity ratios over time. IOUs provide energy-use data, but production data has been more difficult to collect.

CEI advisors who rely on participating facilities for production data have encountered a few challenges regarding confidentiality. In one case, the facility expressed unwillingness to share

production data and only agreed to share these data multiplied by a constant, but confidential factor. This allowed the CEI advisor to calculate a scaled energy intensity ratio to track progress.

Program managers generally expressed satisfaction with the data tracked, including all conversations, recommendations, and documentation provided to the customer. SCE and SCG developed a tracking Website, which stores technical assessment forms and allows CEI advisors to maintain monthly journals. One IOU noted some CEI advisors collected and tracked data better than others, but program managers did their best to enforce these requirements. The IOU noted ISO 50001 and other certification programs also require such data.

Program Challenges

Program staff reported six main challenges regarding the pilot.

- **Recruiting participants.** Some program managers found recruiting pilot participants took longer than expected. This was attributed in part to seeking participants having previous experience with other ISO or similar certifications, as they would be able to implement CEI immediately. Program staff also cited a lack of resources at companies that expressed interest in the concept but could not devote staff time or funding.
- **Addressing participants that do not progress.** All program managers agreed a full-scale program should include an exit strategy, similar to off-ramps in PG&E's program. Program managers also mentioned a need to define parameters, establishing when long-term engagements were no longer progressing and should be discontinued.
- **Lack of incentives.** One program manager said that without incentives, participants progressed slowly in implementing CEI; whereas having incentives could encourage participants to engage more fully in the process.
- **Incorporating integrated DSM into the program design.** One program staff member predicted incorporating integrated DSM will be one of the largest challenges moving forward. This staff member said that determining the best ways to offer a comprehensive program promoting all types of savings would be a challenge, but could create substantial benefits.
- **Attributing energy savings to the program.** IOUs also agreed that without a method to estimate energy savings or to attribute capital measure savings to the CEI program, obtaining future CEI funding might be difficult. This could also make receiving additional program funding for incentives difficult.
- **Attributing spillover to the program.** For the CEI program, spillover occurs when facilities implement projects that are in addition to the CEI plan or when facilities continue practicing CEI after their engagement with the program ends. Currently, data is not collected after facilities end their engagement with the program and there is no method for estimating energy savings from spillover.

Program Successes

Program managers emphasized that a major success of the program was that all participants had learned about managing energy, and all IOUs said participants understood CEI benefits. One participant who completed the first program cycle within PG&E's program then transitioned to self-sufficient CEI. Other PG&E participants have demonstrated active engagement with the

program, either through starting a second program cycle or by expressing interest in enrolling more than one of their sites. PG&E also reported receiving a great deal of interest from customers who heard about the program from current participants, and this was interpreted as an indicator of program success.

CPUC staff said that while recruiting participants at the beginning of the program was challenging, the IOUs and CEI advisors developed an effective method over time for promoting the program, which proved to be a major success.

Program managers said their program was well-designed. One IOU said it had a strong program implementation plan containing clear guidelines. Another IOU said the process of recruiting participants through the AEs enabled the successful identification of customers interested and suited to the program.

All program managers commented on successful collaborations between the IOUs and CEI advisors in developing and implementing the program. The CPUC staff member also said that IOUs involved in the program collaborated very well with each other and the CPUC, and this enabled the program to standardize approaches easily and utilize best practices.

Utility AE Interview Results

Cadmus conducted interviews with a total of eight AEs, two from each of the four participating utilities (PG&E, SDG&E, SCG, and SCE). The AEs had titles such as senior account executive, account executive, customer relationship manager, and senior account manager. The following sections summarize interview results. (Appendix E contains the interview guide.)

Program Involvement and Awareness

AEs generally described their role as serving as the main utility representative for their customers and acting as the go-to person when customers had questions or needed energy-related services. AEs typically help customers in several ways:

- Showing them how to use electricity efficiently;
- Helping with billing and rate issues; and
- Informing customers about energy- and money-saving programs available through the utility.

Typically, the AEs had one or two customers enrolled in the CEI program (although one reported having four). These CEI participants tended to be larger companies with complex energy needs and strong preexisting relationships with the utility AEs.

AEs cited a variety of channels as their initial source for information about CEI through: CEI advisors briefed three AEs on the program; three AEs learned of it through a series of ongoing briefings about new programs; and two learned of it through marketing materials.

The AEs spoke positively about their interactions with CEI advisors. When asked if the CEI advisor was well informed about the program, one AE stated; "*She did a good job, she showed it was more about developing a plan than offering a product."* Two others said their advisors were

very well informed. Another two AEs reported receiving enough information from their CEI advisor to be able to explain the program to their customers.

Five AEs said they regularly communicated with CEI advisors, typically by phone and, overall, they expressed satisfaction with their level of communication with the advisors. AEs did not offer specific recommendations for improving communications between the IOUs, CEI advisors, and participating customers; however, two wanted more information from utilities about CEI program details. Neither AE requested this additional information, but one said the program details had not been finalized at the time he learned of the CEI Pilot, so he had an incomplete understanding of how the program would operate.

Although Cadmus asked AEs why they actively promoted the program, this proved to be a difficult question to answer. Only two AEs answered the question directly, saying it was just one of a set of programs and resources they regularly offered to customers. Most AEs, however, talked about the types of companies they saw as good matches with the CEI program.

- One said companies without a full-time energy manager or those less organized could benefit from CEI.
- Another offered a similar answer, saying the company had to have appropriate qualities, such as not yet having a dedicated energy manager, but still being large enough to devote staff to CEI.
- One mentioned having a company that fit the program well, but said the CEI program was likely not a good fit for other customers, as the customer would not be able to provide the level of rigor required.
- Another liked the holistic approach CEI offered, but said this program was difficult to implement, as companies often could not devote the time required to set up a plan.

Program Goals and Objectives

AEs generally agreed that program's main goals were these: (1) developing an internal energy plan; (2) identifying projects not addressed by typical rebate and incentive programs; and (3) fostering an energy-efficiency culture at each company. Only one AE was unfamiliar with the program's goals.

One AE said that CEI could help companies both define what it is effective in terms of saving energy and specify places where the companies could use assistance in achieving this. Another AE said, "*CEI is 'don't take your eye off the ball.' My relationship with you the customer is to look after the big picture, not just one thing."*

For customers, AEs saw the program's main benefit as providing assistance in developing and maintaining an organized energy-efficiency plan, rather than the customers focusing on unrelated side projects. For customers not previously focused on energy efficiency, CEI provides a means for continually considering energy efficiency and prioritizing company efforts accordingly. One AE reported having a customer already somewhat dedicated to energy efficiency who, through CEI, identified the source of a huge energy use spike, which the customer found very useful.

The AE with four customers in the program said benefits varied by company, ranging from achieving ISO certification (or other accreditation) to just finding better ways to achieve efficiency. Another said the program reduced costs for their customer who then increased profits.

Opinions varied across AEs in terms of markets to target and types of companies to pursue. However, many qualities cited by AEs reflected the ideal participant characteristics also reported by IOUs and CEI advisors:

- *"Those who were the most disorganized I thought would benefit most*."
- *"There's a sweet spot—if you have 12 or fewer employees you don't have the time or money to do it. Also if they are very big, chances are that energy efficiency is part of their culture already."*

One AE said most of his customers were too large to benefit, presuming they already had in-house energy-efficiency managers. Another cited the importance of technical staff and senior management agreeing on program goals. One other AE emphasized having capital available to invest as important; without this, the company may identify projects, but not be able to move forward.

Marketing and Outreach

AEs described their marketing strategy as personal outreach. With CEI as one of many program offerings potentially available to their customers, the AEs emphasized the energy-efficiency opportunities thought to be the best fit, so, they did not cite specific key messages.

- AEs suggested more CEI-focused marketing materials might be useful in motivating customers to commit to the program.
- One said, *"You might be able to promote it better with hard literature, which if it's out there I'm not aware of it*."
- Another AE suggested providing companies with ways to use CEI to market their products more effectively, although he did not offer specifics.
- One AE recalled a one-page flow chart called "Small Steps, Big Savings," which proved very useful in initial CEI meetings with customers, although the AE was unsure whether it remained available.
- Another said that if the program focused more in terms of its target audience, the AEs could tailor market messages and the program to that group.

Program Participation

Cadmus more generally asked AEs about motivations for customer commitment to the program. Responses focused on the importance of ongoing communication and, through that, demonstrating ways CEI can help a company achieve its long-term goals. One AE had a customer who, before starting CEI, had a goal of reducing energy 2% to 3% per year over five years. Demonstrating how CEI could provide ways to meet that goal greatly motivated that customer to participate in the program.

Communication was also cited as being essential, with AEs saying IOUs must inform customers about program details and goals, explain motivations behind CEI, and provide high support levels.

AEs said participants tended to understand, at a minimum, CEI's potential benefits, although, at the time of the interviews (May 2012), most participants were in the early stages of participation. AEs reported that some companies that ultimately did not participate claimed they already managed energy well and did not need a program such as CEI.

AEs reported ongoing involvement in customers' participation in the CEI program. Two AEs said they used client meetings to maintain regular contacts and monitor progress. Another said his involvement varied from company to company, but he remained heavily involved with any activities specifically related to energy efficiency. A third AE reported checking in regularly with customers and attending some meetings.

Overall, AEs reported their customers stayed engaged with the program. In one case, however, a recent change in corporate ownership made it difficult to predict how engaged the customer would remain, as CEI participation requires support from upper management. One AE noted that ongoing time commitments and meeting frequencies became quite overwhelming for one participant.

When asked about participants' satisfaction with program processes, responses ranged from neutral to mostly positive. One AE said that after the customer developed a formal plan for energy efficiency, the customer had a format they were very familiar with and could move forward more easily. Two AEs said it was too early to determine customer satisfaction. Another AE said he was unsure about satisfaction, but had heard no complaints to date. Overall, AEs had not heard any negative experiences regarding CEI.

Market Barriers

The AEs' opinions varied regarding barriers preventing customers from enrolling in the program.

- Three AEs cited the large time commitment also mentioned by several program staff members.
- One AE said, *"The common issue is no one has enough time to address even simple paperwork for incentives. It takes a special company (to get involved in CEI)."*
- Another AE offered a similar opinion, saying customers were more interested in "quick fix" programs or in measures not requiring the same time commitments and planning that CEI requires.
- An AE also identified companies' indifference to energy efficiency as a barrier.

To enroll customers, AEs said it was important to develop better marketing materials, including case studies to show: (1) how the program benefitted other customers, and (2) how CEI can align with a corporation's goals. One AE said the program might be designed to move faster; her primary customer expressed concerns about the program's current pace, while other companies might seek faster results. The AE also suggested that other utility programs might be offered in tandem with CEI to engage companies with long-term objectives.

Cadmus asked if any issues prevented AEs from promoting the program and, if so, what could be done to encourage more AEs to play an active role in the program's promotion. AEs provided a wide range of responses—two said no barriers existed, another said CEI advisors already did an effective job in promoting the program, and several offered specific methods to improve promotion among AEs.

One AE said more marketing materials, such as a CEI fact sheet, would enable AEs to promote the program more effectively. Another said that AE's performance goals did not include promoting CEI, but if CEI were included in the goals, he would expect more AEs to promote the program. Another said that the long startup times (about six months) presented difficulties in maintaining customers' interest in the program. One AE suggested that training new AEs in CEI (in case of AE turnover) would help maintain consistent messaging to the customer and program continuity.

Program Participant Interview Results

During June and July 2012, Cadmus conducted interviews with 18 of the 38 program participants (nine from PG&E's territory, six from SCE/SCG's territory, and three from SDG&E's territory). These 18 participants were from eight of the 12 segments (see Table 8) represented by the CEI program's participants. (Appendix F contains the interview guide.) .

Table 8. Participants by Segment

Segment	Sample Frame		Interviewed Sample	
	Participants (n)	Percentages	Participants (n)	Percentages
Food Processing	18	47%	8	44%
Manufacturing	5	13%	2	11%
Smelter	1	3%	0	0%
Laundry	2	5%	0	0%
Hotel	1	3%	1	6%
Restaurant	1	3%	1	6%
Retail	1	3%	0	0%
Government	1	3%	1	6%
School	2	5%	1	6%
Office	2	5%	2	11%
Corporate Office	3	8%	2	11%
Biomanufacturing	1	3%	0	0%
Total	**38**	**100%**	**18**	**100%**

Our interviews were designed to assess participants' experiences and satisfaction with the program. The topics we addressed were: program involvement and awareness; program enrollment and staff interaction; program activities; market barriers; and program satisfaction. The following sections discuss the results of Cadmus' program participant interviews.

Program Involvement and Awareness

All interviewed participants served managerial roles at their respective companies. Interviewees from the food processing or manufacturing sectors served as managers or controllers of plants participating in the program. Others served in roles overseeing energy usage, maintenance, or

supply management. All interviewees were the designated "Energy Champions" for the CEI program.

The majority of participants (n=9) reported first learning of the program through the CEI advisor, with three others learning about it from their AE. (In two cases, participants reported learning about the program from both the CEI Advisor and their AE.)

All interviewees said their CEI Advisor or AE was well informed about the program, and many praised them for playing an instrumental role in their eventual participation. Interviewees did not indicate that CEI Advisors or AEs could have performed better.

All said their primary motivation for participating in the program was either to increase energy efficiency or to cut costs. Other motivating factors mentioned were: striving to be more environmentally friendly; taking advantage of management support; and monitoring energy usage better. One participant said: *"CEI focuses on the behavioral and corporate cultural aspects of energy and that's what was most appealing to me. It moves [the importance of energy efficiency] to a more permanent place in senior management's perspective."*

Eleven participants described their companies' existing corporate practices or philosophies regarding sustainability and energy efficiency made CEI implementation easier. Nine respondents reported previously participating in SCE, SCG, PG&E, or SDG&E's other energy-efficiency programs before participating in CEI, as shown in Table 9. Respondents most commonly mentioned receiving incentives for lighting retrofits, but also mentioned equipment testing, demand response, cogeneration, windows, pumps, compressors, HVAC, and other appliances.

Table 9. Percentage of Surveyed Participants by Segment Who Are Past Participants in IOU Energy Efficiency Programs

Segment	Participants Interviewed (n)	Percentage of Past Participants in IOU Energy Efficiency Programs (%)
Food Processing	8	33%
Manufacturing	2	50%
Hotel	1	100%
Restaurant	1	100%
Government	1	100%
School	1	100%
Office	2	50%
Corporate Office	2	100%
Total	**18**	**61%**

Program Enrollment and Staff Interactions

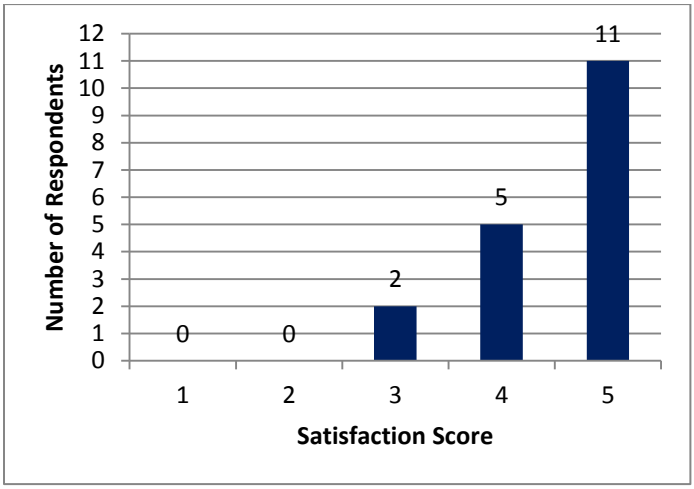
Eight participants said their CEI advisors were very helpful with the enrollment process, providing paperwork and covering logistics to the extent that several interviewees could not

remember what steps they took to become enrolled. As one participant said, *"It got set up without any effort on my part."*

Aside from administrative tasks associated with the enrollment process, seven participants mentioned having to obtain approval from higher levels of management, and one spoke of having the company's legal representatives review the documentation.

All participants reported high satisfaction levels with the overall enrollment process, rating it an average rating 4.5 on a scale of 1 to 5 (with 1 being "not at all satisfied" and 5 being "very satisfied"). Figure 1 shows the distribution of satisfaction with the overall enrollment process as reported by participants.

Figure 1. Participant Satisfaction With the Overall Enrollment Process



Since enrolling in the program, participants described frequent interactions with their CEI advisors, including weekly e-mails and monthly in-person meetings. All participants praised their CEI Advisors for providing instrumental information and excellent support.

- Two participants said their CEI advisors provided the additional credibility necessary to push projects forward that had stalled at upper management levels: *"They brought in good resources with very credible, specific…and expert knowledge to help identify conservation opportunities."*
- One participant said: *"We wouldn't be anywhere without them."*
- Nine said their CEI Advisors had been invaluable in keeping the tasks on track and monitoring their progress.

Participants also described interactions with their AEs since enrolling in the program. These interactions mainly consisted of attendance at the monthly group meetings and occasional e-mail exchanges. All participants reported generally less involvement from their AEs than from their CEI Advisors, although many felt their AEs' level of participation appropriate. When asked what their AEs did well, six said they maintained consistent and reliably responsive communication.

When asked what respondents thought was the best method for promoting the program, the three responses were these:

- Eight said leveraging the existing relationships AEs have with utility commercial clients.
- Seven said showing results from previous participants would be an effective way to promote the program.
- Two specifically mentioned demonstrating results by showing percentage of change in energy usage or costs.

Program Activities

Fifteen interviewees reported participating in the kick-off meeting, the energy audit, organizational assessment, and the drafting their CEI Plan. While 13 participants had started their plan implementation, most activities were only in the beginning stages at the time of Cadmus' interviews. Only five participants had progressed far enough in the implementation processes to report that changes made an impact on their energy usage. One said this impact most noticeable on his company's corporate culture: *"The culture change has had the most significant payback."*

Of those making changes, all participants reported that the changes remained in place, and all participants awarded high ratings for how useful they felt the completed activities had been, thus far.

All participants reported that their CEI Advisor encouraged them to include demand response or distributed generation in their CEI Plan. However, after discussing these options with their CEI Advisor, only three saw potential for demand response at their facility; one saw potential for distributed generation; and one saw potential for both demand response and distributed generation.

When the other participants were asked why they did not see the potential for demand response, five explained that the nature of their business or their production schedules did not allow them to engage in that type of program.

When other participants were asked why they did not see the potential for distributed generation, three said the capital investment too expensive or the cost-benefit analysis unjustifiable. One respondent in the restaurant industry said, "*The logistics of [distributed generation] would be difficult to justify given how small our stores are and demand response would have limited value."*

When asked what their utility or CEI Advisor could do to help implement demand response or distributed generation, one participant suggested offering more financial incentives to help mitigate the large capital investments necessary for distributed generation. Another said that having assistance in procuring and installing smart meters—which could help companies better analyze real-time data and trends—would ultimately help to justify undertaking demand response or distributed generation.

Two of the 18 interviewees said they participated in other utility programs since enrolling in CEI, and another three said they considered participating in other offerings. Of the two participating in other utility programs, both reported their participation in CEI had a very strong influence on their decision to pursue other offerings. Overall, six participants said they felt more aware of the availability of other utility offerings since enrolling in CEI.

When asked what training could be offered to staff at their facilities to improve energy performance, participants suggested topics as general energy awareness, such as: electricity or gas delivery methods; energy bill calculations; or information allowing nontechnical staff to identify small, energy-saving measures. Two participants suggested offering technical training on the proper or most-efficient usage of equipment such as air compressors or refrigeration.

Market Barriers

As shown in Table 10, Cadmus' surveys asked participants about market barriers to CEI program participation, and the most-frequently cited responses were the costs and the time required. Six participants cited the program's potential cost-effectiveness, and five participants cited difficulties in obtaining senior management support. (Note that three of these five participants worked in the food processing industry; the other two worked in the government sector.)

One respondent from the real estate industry mentioned the timing of unit vacancies (when retrofitting is possible) as another factor possibly affecting decisions to participate in CEI.

Table 10. Market Barriers to CEI Participation

Barrier	Mentions (n=18)
Cost of time	7
Perceived cost-effectiveness	6
Obtaining senior management support	5

Only two participants reported experiencing challenges when deciding to participate in the program, with both saying the difficulty arose from convincing senior management to support the initiative.

- In one case, senior management wanted to see proof of program results before making the time and financial commitment. This created a dilemma, as noted by the respondent, because the CEI advisors do not estimate energy savings before a participant enrolls in the program.
- The second respondent said that senior management exhibited hesitancy about participating because of a negative experience with a utility program a few years earlier.

In both instances, these challenges were overcome in part by long-standing company commitments to promote sustainability. In the first case, this helped persuade managers that the program was worth trying in spite of initial skepticism. In the second case, senior managers had a positive experience with a demand response program and were able to convince the plant manager and other senior managers that the CEI program was worthwhile.

When asked if respondents felt they had sufficient staff and capital resources to continue with CEI long-term, only two reported not having enough staff or capital resources. Two others said

their staffing was sufficient, but they needed more capital. A third respondent mentioned having sufficient capital, but not enough staff.

Fourteen participants said upper management exhibited very supportive and positive attitudes and perceptions regarding CEI.

- One participant said, "They are curiously positive and seem very interested to see the progress of our plan."
- Another said, "They have very high hopes since they're always talking about energy conservation and what we can do to improve."

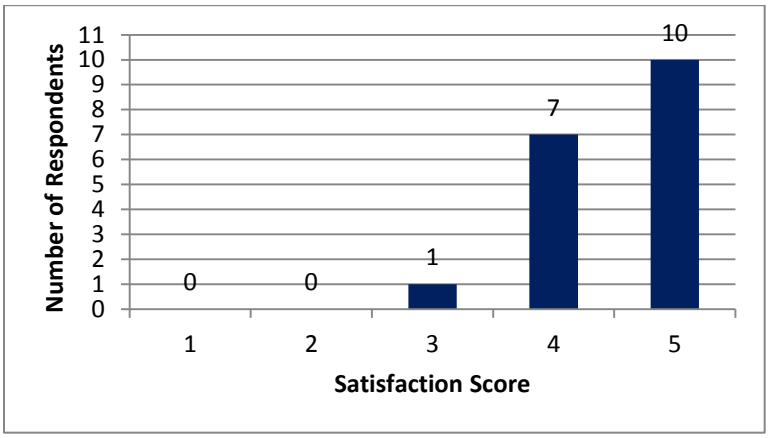
Only two respondents reported upper management was not supportive. One said upper management expressed skepticism regarding the program's value and wondered what the utility will tell them that they did not already know. The second said upper management was indifferent.

Regarding staff, all participants reported their staffs had generally positive attitudes about the program.

Satisfaction

In general, respondents expressed strong satisfaction with the program, rating it an average of 4.5 on a 5-point scale (where 1 is "very dissatisfied" and 5 is "very satisfied"). The distribution of the satisfaction with the program as reported by participants is shown in Figure 2.

Figure 2. Participant Satisfaction with the Program



All respondents said they planned to continue participation in the program, although three stipulated their continued participation could depend on availability of capital. Fourteen participants said they believed and hoped their CEI commitment level would remain the same, even if the program ends and their CEI Advisor can no longer assist them.

Participants also discussed the program's most useful aspects. Six respondents described the value of having an advisor to turn to, not only for resources, expert opinions, and motivation, but also for validation of previously discussed opportunities, of which upper management may have been skeptical. Three participants found energy mapping and analysis the most useful aspects.

Other useful aspects cited included:

- Benefitting from having the discussions, ideas, and analysis well-documented (n=1);
- Generating internal company-wide discussions about energy efficiency (n=2);
- Structuring the process (n=1); and
- Facilitating collaboration between utilities and the commercial sector regarding energy conservation (n=1).

Respondents had few suggestions for improving the CEI program. In terms of developing the CEI Plan,

- One participant requested more technical or mechanical consulting capacities.
- Another wanted the CEI plan to have a scope longer than just a year.
- Three participants praised this program aspect for effectively dividing up work and outlining an effective execution. *"[The CEI Plan] was great in disseminating the work correctly to staff based on their talents."*

Participants also had a few suggestions for improving implementation of projects, although most were for internal improvements. These included: staying on task and on schedule; and increasing staff numbers and funding amounts dedicated to implementation.

Ten participants requested greater availability of incentives to reduce the amount of capital necessary for certain projects, particularly those involving distributed generation or retrofitting large machinery or systems.

Nonparticipant Survey Results

Of the 17 contacts that were provided by the IOUs, Cadmus conducted nonparticipant interviews with nine customers (eight SCE/SCG customers, and one SDG&E customer). The sample was drawn from companies that were provided program information, but then chose not to proceed. PG&E did not track these customers; therefore, it could not provide a nonparticipant sample for the study. (Appendix F provides the interview guide.)

Cadmus spoke with contacts at the company who would have led the energy team, had the company participated in the program. The nine nonparticipants contacted came from a wide range of business areas and industries, including: biotechnology research, defense, commercial real estate, digital communications, higher education, government research and laboratories, waste management, medical technology, and food processing.

These respondents consisted of senior managers, engineers, and maintenance managers—and despite industry differences, they tended to have similar duties.

- Seven had broad oversight of all corporate facilities. Within this group, five described themselves as (at least) part-time energy managers.
- One respondent held a more financial role, overseeing profit and loss statements and accounting.

- One had been involved in past energy savings programs at his company.

All respondents played a role in their company's decision not to participate in the CEI program, although their involvement levels and the involvement of others varied across companies.

- Three respondents were the sole decision makers (with one citing he did not feel the program was worth taking to upper-level management).
- Three respondents said they arrived at a joint decision between themselves and a manager, supervisor, or colleague.
- The remaining three respondents said corporate offices or upper management made the decision.

Current Energy Practices among Nonparticipants

All respondents reported their facility engaged in energy management in some capacity, such as:

- Using energy management systems;
- Enrolling in demand bidding programs;
- Installing high-efficiency HVAC systems, lighting fixtures, and PV systems;
- Participating in federal energy management programs;
- Obtaining or pursuing LEED certification; and
- Implementing distributed generation.

Additionally, all respondents indicated their company had potential for and high interest in energy efficiency, as shown in Table 11.

Table 11. Company's Interest Level in Energy Efficiency, Demand Response, and Distributed Generation

Interest Level	Energy Efficiency	Demand Response	Distributed Generation
High Interest	9	4	0
Medium Interest	0	2	2
Low Interest	0	3	5
Don't Know/No Answer	0	0	1
Total	**9**	**9**	**9**

About one-half (four of nine) expressed high interest in demand response, with one of the four currently enrolled in SCE's Demand Bidding program. Two indicated medium interest, and three indicated low interest, explaining that demand response was not practical, given businesses' requirements.

Respondents were less interested in distributed generation. No companies reported having a high interest and two reported a medium interest. One respondent who expressed medium interest had installed a 1-megawatt distributed generation system in the past but had shut it down; however, he was considering distributed generation in the future.

Program Awareness and Marketing Effectiveness

The majority of respondents (seven of nine) said they learned about the program through their utility's AE; one learned about it from a CEI advisor; and one referenced a third-party representative (but could not remember the representative's name or company name).

When prompted, five respondents reported they did not lack information about the program, and their AE or the CEI advisor explained the details well. However, due to the long time lapse between their decision not to participate and the interviews (from six months to a year had passed), it was common for respondents to struggle with recalling the details of the presentation.

When asked if the AE could have taken action to better promote the program, five respondents did not suggest improvements, and four respondents expressed positive comments about their AEs.

Four respondents reported, however, the presentation and marketing material they received regarding CEI did not prove effective. Two respondents said they needed more detailed information about energy savings and cost savings in presentations, which directly impacted decisions to participate or seek approval to participate. One said the presentation did not convince them of CEI's value, and another respondent found the presentation condescending.

Nonparticipants' comments included these:

- *"They have to put it into realistic terms. They need to get more detailed and more customized– I want to know about my facilities and my account, this is my cost and these are the savings. They lacked information on the cost and the requirements of the program. And what will my rate be?"*
- *"It's possible that they could do some further calculations about our energy use on their end. They have our energy usage. That way they could provide us with the numbers that we need to take to the boss."*
- *"They assumed we know nothing and they know everything. Somehow the way they presented it… it was just something I wasn't interested in. I felt threatened by it."*
- *"I liked the DOE program (SEP) because it had widespread reach. The resources that it would provide would be tremendous. I didn't get the same impression from the [CEI advisor] presentation. CEI seemed like something we would do on our own, and it didn't have enough impact."*

Participation Decisions and Market Barriers

Nonparticipants chose not to participate in CEI for varied reasons, but four themes emerged:

- **Companies questioned CEI's value** when considering the resources they could dedicate to the program. Companies could not dedicate required staff time and/or capital to achieve potential energy and cost savings to make the program worthwhile.
- **Companies already had an energy management strategy in place.** Some companies were already involved with programs (such as DOE SEP or other federal building protocols), and the respondents reported preferring these programs over the pilot.

  - One respondent said the DOE SEP program was a better fit, as it focused on manufacturing.
  - Another said his company was already involved in numerous utility programs, and he did not feel a great deal of additional benefit would result from enrolling in CEI.
  - A third respondent said his company already conformed to DOE standards, and he did not think CEI would provide added value.
- **Companies could not convince senior management** of the CEI program's value without having energy savings data and cost-savings data for their specific facilities. Four respondents reported senior management's unwillingness to dedicate staff or capital resources to the program without knowing the savings potential. In two of these cases, respondents indicated internal politics played a role in decision making. For example, one respondent reported strong competition within the company for resources, and he stressed the need to carefully choose which projects to advocate. Even if they thought CEI could be beneficial, they reported being unlikely to advocate for resources and approval until they had solid information about the project's impact on their company's bottom line.
- **Confusion about CEI requirements**. One respondent, thinking that demand response was a requirement, recalled not choosing CEI for that reason.

When asked what generally prevented large companies in their industries from participating in the program, respondents generally spoke in terms of their own company. Emerging themes reflected and supported what respondents reported as their own company's reasons for not participating (uniqueness, urgency, lack of information, and lack of value).

- **Uniqueness.** Two respondents mentioned unique energy demands within their organizations that might make a CEI program difficult to implement. They offered examples such as data centers, energy-intensive classrooms, and residence halls.
- **Urgency.** One respondent mentioned government cutbacks, which had hurt the company: "We can't assign an employee and we can't match funds. We really have to see the immediate benefits if we are going to participate."

  Another respondent spoke of the relative lack of importance of efficiency compared to more pressing requirements, saying, "Efficiency is like a 4 on a scale of 1 to 10 in terms of plant priorities. One discharge violation could cost you 10 times the savings you get from energy efficiency."
- **Lack of information.** One respondent referred to the "fear factor," described as not understanding how the CEI program would impact plant productivity. Three respondents said showing estimated savings numbers up front to upper management would make a stronger case for a program such as CEI.
- **Lack of value.** Two respondents cited a perceived lack of value, given existing, ongoing energy savings programs at a typical, large company. One respondent said, *"If it's a government facility, they probably don't see the value. It would be like recreating the wheel."*

Program Perception and Value

In general, respondents said they thought CEI's premise valuable, but they struggled to remember the specific program components. When asked about CEI's most valuable features, responses included:

- Providing an expert to help at no cost (n=1);
- A SCE and SCG joint partnership, not seen offered very often (n=1); and
- Energy cost savings (n=1).

Cadmus' surveys asked respondents about their likes and dislikes of these five CEI program features, and their responses are summarized in Table 12:

- Long-term approach.
- Time commitment.
- Level of capital investment.
- Need for involvement of numerous staff members.
- Holistic approach.

About one-half of nonparticipants could not recall enough about CEI program features to comment on this question. However, among those commenting, the features "Long-term approach"' and "Holistic approach" proved most popular. "Time commitment" and "Need for numerous staff members to be involved" proved least popular.

One respondent expressed especially negative sentiments regarding involving a large number of staff members. This respondent had committed to a project-based, third-party review of energy-efficiency savings options, which he said worked better for his waste management company.

Five nonparticipants thought the program would require time commitments, but not large capital investments and, therefore, did not have an opinion on this. Two respondents said they were "okay" with the capital investment level involved, but did not have a strong opinion on this program component.

Table 12. Nonparticipants' Likes and Dislikes about CEI Program Features

Response	Long-Term Approach	Time Commitment	Level of Capital Investment	Need for Numerous Staff Members to be Involved	Holistic Approach
Like	4	1	0	0	4
Dislike	1	4	0	4	0
Don't Know / NA	4	4	9	5	5
Total	**9**	**9**	**9**	**9**	**9**

All respondents expressed interest in attending workshops with other companies that were implementing CEI. One specifically said wanted to attend a workshop with other companies in his line of work. None reacted negatively to the idea of attending such workshops.

Future Participation in CEI and Other Utility-Sponsored Programs

The precedent for participating in other utility trainings or DSM programs ran extremely high with this customer base, as did the customer's likelihood in participating in future trainings or workshops.

Energy-Efficiency Incentive Programs

All but one of nine respondents had participated in utility energy-efficiency programs previously. Respondents reported participating in programs offering services and features such as: energy audits, lighting rebates, retrocommissioning, existing building retrofits, and a data center project. The respondent who has not participated in the past suggested a change had occurred within his company, resulting in energy savings becoming a greater priority. He said his company is now more open to such programs than it was in the past.

Utility Trainings on Energy Efficiency

Surveys asked nonparticipants about their interest in participating in future IOU trainings. Four of the respondents said they already participated in utility trainings, and they reported high satisfaction with them. Suggestions for valuable topics in future trainings included:

- General operations and maintenance and maintaining peak performance (n=2);
- Data center energy use and maintenance (n=2)
- Employee workplace behavior/best practices for energy efficiency (n=1); and
- Energy auditing and advanced accreditation programs, including LEED Accreditation (n=2).

Table 13 lists the likelihood for future customer participation in three topics: training for energy managers; utilizing IOU assistance with energy certifications (such as ISO 50001 or SEP); and participating in the CEI program. Although most respondents said there were not likely to participate in CEI, they reported a high likelihood of attending an energy manager workshop with other companies participating in CEI to learn about their experiences.

Table 13. Likelihood to Participate in IOU Offerings

	Participate in Energy Manager Training Workshop	Utilize IOU Assistance With Energy Certifications	Participate in CEI in the Future
Very Likely	7	1	1
Somewhat Likely	1	3	1
Neutral	1	1	2
Not too Likely	0	4	5
Not at all Likely	0	0	0
Total	**9**	**9**	**9**

Suggested CEI Program Improvements

Cadmus asked nonparticipants what changes, if any, could be made to the program that would make their company more likely to participate.

- Two mentioned the importance of emphasizing the value-added proposition.
- Two suggested adding a larger public relations component, which could generate more interest among upper management and their commercial clients.
- Two expressed positive impressions regarding how the program had been presented, and they said nothing had to be changed.
- One said any changes would not have mattered, as his company already had a program in place.

CONCLUSIONS AND CONSIDERATIONS

The CEI pilot program was designed primarily to provide a learning forum for IOUs, allowing them to test different program concepts and implementation strategies.

In this regard, the pilot can be considered a success. IOUs collaborated well in designing similar programs (although with distinct features) and communicated often once programs had been implemented. The CEI advisors who had the most experience in energy management shared their insights with the IOUs and other CEI advisors during program design and implementation. Additionally, at regular program meetings, CEI advisors discussed their customer experiences during the pilot, and these discussions fostered facility-level CEI implementation to be improved. Program managers reported learning a great deal from the pilot, and they have built a solid foundation for a future full-scale program.

The evaluation findings indicate that in addition to the IOUs gaining program implementation experience, the pilot program remains on track to meet the facility-level goals of: (1) engaging facilities in long-term energy planning strategies, and (2) integrating energy management permanently into facility business planning at all organizational levels, from the shop floor through corporate management.

Participant interview responses supported this, with 18 participants stating they intended to continue with CEI once their engagement with the program ended.

The next section provides a summary of both lessons learned and identified market barriers. This is followed by items to consider when planning for a future full-scale program.

Lessons Learned

Program managers, AEs, and CEI advisors highlighted the following lessons from the pilot program:

- **Screening participants.** Due to the commitment level required by CEI and the pilot's short time frame, AEs or CEI advisors screened customers before approaching them about program participation. Program staff considered the screening successful because: (1) fewer resources were needed to market the program; (2) participants could engage with CEI quickly; and (3) few participants dropped out of the program. However, the screening criteria used for the pilot may slow recruitment or limit participation in a full-scale program.
- **Recruiting participants.** The recruitment of customers by AEs and CEI advisors for program participation produced mixed results.
  - CEI advisors reported difficulty in educating AEs and selling the program to them—a critical step in recruitment.
  - AEs who chose to enroll customers had a narrow view of customer types suitable for the program, which limited numbers of candidates.
  - Some CEI advisors used a list of companies they had previously worked with to recruit participants successfully. However, CEI advisors who attempted to recruit through cold calls were less successful.

- **Communicating commitment levels.** When initially approaching customers about the program, recruiters found it was important to emphasize the commitment required for participation. Several participants dropped out of the program because they could not sustain the staff or capital resources required to move forward with CEI.
- **Creating off-ramps.** As CEI requires long-term commitments, the program must continually engage participants. The possibility exists, however, that participating facilities may undergo unforeseeable changes. (For example, staff turnover or company expansions may impede a facility's ability to continue to participate.) Thus, program staff agreed off-ramps should be included in facility-level CEI plans, allowing customers to disengage from the program while still maintaining a relationship with the IOU. This would also reduce the likelihood of IOUs investing money in energy management consulting services without realizing results at facilities.
- **Leveraging other IOU programs.** Information provided by IOU staff to CEI advisors about other IOU program offerings allowed for the leveraging of incentives or services. Regarding equipment rebates, this helped offset capital project costs for two participants who had begun to implement projects. However, regarding audit programs, one CEI advisor felt that scheduling and coordinating with other contractors extended the time required to develop a CEI plan for a facility.
- **Integrating demand-side management (DSM).** CEI advisors encouraged participants to consider demand response and distributed generation in their CEI plans, in addition to energy-efficiency measures. However, few participants saw potential for demand response or distributed generation at their facilities.
- **Claiming savings.** The program does not currently quantify or claim savings, and IOU staff voiced concerns that this may limit recognition of a full-scale program's success and hinder the ability for the program to receive funding in the future. The main barrier to claiming energy savings is that these types of programs are relatively new; consequently, and most programs do not claim savings, nor have they been evaluated.

  However, there are a few exceptions. The energy management programs offered by NEEA, BPA, and BC Hydro have been evaluated and energy savings achievements have been quantified. The methodology used in quantifying energy savings through these programs was based on a billing analysis approach, and is described in detail in Appendix A. One strength of this approach is that capital measure savings are determined separately and can be subtracted from total facility energy savings, which avoids the risk of double-counting savings for capital measures that should be attributed to the IOU program providing the incentive.

Market Barriers

Participant and nonparticipant interviews identified these primary barriers to CEI participation:

- **Lack of resources.** Participants and nonparticipants cited a lack of staff time as the primary barrier to program enrollment. Some also cited a lack of capital.
- **Skeptical of benefits.** Participants and nonparticipants reported skepticism regarding CEI benefits, uncertain they could achieve noticeable impacts in energy consumption and cut

energy costs. This skepticism largely arose from the lack of facility-specific information available the customer regarding energy and cost savings.

- **Inability to convince senior management.** Without energy savings or cost-savings data specific to their facilities, participants and nonparticipants reported difficulty in explaining the program's value to senior management. Reportedly, senior management expressed skepticism about the program ***and*** an unwillingness to proceed without strong evidence of energy- and cost-saving potentials.
- Confusion about CEI requirements. Two nonparticipants chose not to enroll in the program due to misperceptions about program requirements. One customer reported not participating because he mistakenly believed the program required his company to enroll in demand response. In actuality, CEI did not require specific measures, as each facility is considered unique; the measures and strategies recommended are based on what is most appropriate for each individual facility. However, participants expressed satisfaction with CEI advisors, as they lent credibility to energy projects, and this helped in obtaining management approval.

Table 14 provides an overview of the market barriers that various interviewed stakeholders mentioned and the frequency of which each barrier was mentioned. Note that the market barriers cited most often were the lack of staff time and lack of management support.

Table 14. Summary of Market Barriers Mentioned by Different Stakeholders

Market Barriers	Program Managers	CEI Advisors	Account Executives	Participants	Non-Participants
Capital Costs	●	○	○	○	○
Lack of Time and Staff Resources	●	●	◒	◒	●
Lack of Energy Efficiency Experience		○	○		○
Lack of Management Support	◒	●	◒	◒	◒
Poor relationship with Program Staff or Utility		○	○	○	○
Program not a good fit for some companies	◒	○	○		
Program Requirements Unclear		○			○
Already Implementing Energy Efficiency Projects on Their Own	○	○			○

Legend: ○ = 1 to less than 1/3 of those interviewed mentioned this barrier
◒ = 1/3 to less than 2/3 of those interviewed mentioned this barrier
● = 2/3 or more of those interviewed mentioned this barrier
Note that interviewees were not asked specifically about each of these different barriers, but were instead asked an open-ended question about what they thought the market barriers were to participation in the program.

Eleven 11 of 18 participants interviewed, however, reported already having some sort of sustainability practice or culture in place at their companies and, therefore, they were open to the

CEI concept. Participants primarily enrolled in the program to save energy and cut costs. They appreciated the free technical expertise provided from CEI advisors, as it added credibility to proposed projects and enabled them to move forward with projects that otherwise would not have been implemented.

Considerations for a Future Program

Based on the literature review and interviews, Cadmus presents the following considerations for a future program. These considerations are organized under three categories: presented by program design, program marketing, and PPMs.

Program Design and Offerings

Cadmus suggests the following considerations for program design.

1. **Quantify program impacts.** A full-scale program should employ a standard methodology for calculating facility-level energy savings attributed to the program. This will ensure recognition of CEI benefits and impacts by the facilities, CEI advisors, and IOUs. It will also facilitate the calculation of program cost-effectiveness. Appendix A provides a methodology for estimating energy savings based on evaluation methodologies developed and used for other energy management programs.
2. **Offer Incentives**. As staff resources presented the largest participation barrier, a future program should offer co-funding towards an energy manager's salary. Three of the reviewed programs (PSE, BC Hydro, and BPA) have contributed (or currently contribute) to energy managers' salaries. Each of those programs has a slightly different design, so we recommend speaking with the program managers from each program to learn how successful each structure has been and to determine which approach would work best in California. IOUs should also consider offering savings-based incentives for projects that would not receive incentives through other IOU offerings.
3. **Leverage other IOU offerings.** CEI advisors should continue to encourage participation in other IOU offerings, as this will lessen the participants' capital investments in energy projects. CEI advisors should also continue to recommend demand response and distributed generation. One way to encourage adoption of all strategies is to offer additional incentives to participants who successfully integrate all three DSM aspects (energy efficiency, demand response, and distributed generation).
4. **Incentives for AEs**. Although the program relied on AEs for recruiting customers, some AEs (according to program managers and CEI advisors) were not motivated to invest time recruiting customers for a non-resource program.[9] If AEs continue to play a key role in program marketing, they should receive incentives for recruiting customers. If the full-scale program claims savings, as recommended, this will facilitate offering incentives to AEs. Also, when AEs are introduced to the CEI program, they should understand CEI advisors often counsel participants to apply for incentives from other IOU programs, from which AEs would benefit.

[9] A nonresource program does not claim energy savings. AEs receive incentives based on energy savings when they refer customers to an IOU program claiming savings.

5. **Include off-ramps**. As discussed in Lessons Learned, any facility-level CEI plan should include off-ramps, as these will allow customers to disengage from the program if they cannot proceed with the next steps and will minimize program costs.
6. **Support firms pursuing certification.** Some (but not all) firms expressed interest in pursuing certification. For some firms, having energy conservation-related certification does not provide tangible benefits and requires additional staff time, which may not be available. If facilities must devote additional time to certification, for which they see no benefit, they may become discouraged with CEI and drop out of the program. Therefore, requiring certification may limit participation in the program, or may cause participants to drop out early. The program should remain flexible by design, providing information and consultation to facilities interested in pursuing different sorts of energy management certifications, but recognizing when certification is not in a facility's best interest.
7. **Offer workforce education and training.** Participants and nonparticipants expressed interest in workshops or trainings regarding energy management. A future program could offer workshops on technical training (regarding the use of equipment) and the application of energy management strategies. Such workshops could leverage the experiences of pilot participants, who could share their CEI program experiences, which might aid in recruiting a new wave of participants.
8. **Encourage company cohorts.** PG&E currently offers to the option for companies to enroll multiple facilities in CEI. This cost-effective strategy allows companies to focus on managing energy at two to three locations. Chosen facilities typically have different energy managers assigned, who can collaborate on projects and motivate one another to remain engaged with the program. This model enrolls more participants in the program, requiring less recruitment time and effort and lessening risk, as more energy managers are involved who understand the process and can train others at the company in the event of staff turnover.
9. **Offer options for small- and medium-sized businesses.** A CEI program may be difficult to implement cost-effectively for small- and medium-sized businesses, as these customers offer smaller potential for energy savings, and have less staff time and capital to devote to energy projects. Such businesses could be reached more cost-effectively as part of a cohort model where a CEI advisor works with a group of similar businesses, or through energy management workshops and trainings.
10. **Offer public relations support.** Some nonparticipants commented that publically promoting the participating company's energy-efficiency actions could provide an added benefit for the CEI program. For example, once a facility participating in the SEP program has achieved certification, SEP staff submits a press release. These press releases can also serve as case studies to be provided to potential participants, thus serving as additional program marketing materials.

Program Marketing and Participant Recruitment

Based on feedback mainly received from AEs and nonparticipants, Cadmus offers the following considerations for improving program marketing and participant recruitment.

1. **Define target markets.** CEI can be adapted to any business type, although a certain group of customers will benefit most from CEI. Defining this group is a necessary step for effectively guiding the program's marketing effort. CEI advisors, AEs, and

IOUs/CPUC offered different ideas regarding the target markets to include. AEs expressed the narrowest view, which may have limited recruitment efforts during the pilot. Defining and expanding the target market may improve recruitment efforts for a full-scale program.

2. **Offer workforce education and training.** Workshops and trainings could be used to increase knowledge about the CEI program and to recruit participants. Invite pilot program participants to present their achievements and to discuss the program with workshop attendees.
3. **Present a program information sheet.** This fact sheet should clearly state the program requirements and should highlight potential benefits of program participation. Having this to give to customers would alleviate confusion or misunderstanding regarding CEI advisors' or AEs' presentations. Additionally the fact sheet could present case studies from previous participants, which could show actual program results and alleviate skepticism regarding achievable program benefits.
4. **Emphasize how the program can assist in energy certifications offered by ISO or DOE.** Two companies did not participate in the program because they already participated in other energy-management programs. When recruiting such companies, it should be emphasized that the CEI advisor can provide further expertise, which may result in the company achieving certification more quickly and at less cost.

Program Performance Metrics Considerations

Cadmus reviewed PPMs used to measure the current pilot program's accomplishments and success. Based on our review, we propose metrics for a future, full-scale, statewide CEI program.

The key pilot program metrics were these:

1. The number and percentage of commercial, industrial, and agricultural CEI participants meeting short-term (2010–2012) milestones, as identified through their long-term energy plans.
2. Development of lessons learned, best practices, and plans to ramp up the CEI program.
3. The number and percentage of commercial, industrial, and agricultural customers who created an energy plan via CEI.

For a full-scale, statewide CEI program, Cadmus proposes keeping the first and third metrics listed above and adding the following metrics:

- Annual energy savings goals by sector, expressed as a percentage of baseline energy consumption for participants within that sector.
- The number and percentage of participants graduating from CEI and continuing to practice energy management.
- The number and percentage of participants leveraging incentives or services from other utility programs.
- The number of attendees by sector at energy manager trainings.

- The percentage of facilities within each sector adopting CEI on their own. This includes: (1) companies enrolled in the program and applying CEI concepts at other facility locations, and (2) nonparticipating companies practicing CEI on their own.
- Participant satisfaction in these three areas (at a minimum): with the program overall, with the CEI advisor, and with the energy savings achieved.

Next Steps

The success of a future program depends upon these key factors:

- Recruiting participants and keeping them engaged in the program, and
- The ability to quantify energy savings to show the value of the program.

Therefore, Cadmus recommends conducting further research into these two areas.

Recruiting and Retaining Participants

Staff resources were reported as the largest barrier to program participation and the most common reason that participants drop out. We suggest addressing this barrier by offering incentives for energy managers. As mentioned, PSE, BC Hydro, and BPA have energy-management programs that provide energy manager salary co-funding. However, process evaluation results and cost-effectiveness results are not currently publically available for these programs, so insight into how these incentives are working must be obtained by interviewing the program managers. Through those interviews, the IOUs and CPUC can determine the incentive structure that will best suit California customers.

Pilot Impact Evaluation

As part of the CEI Pilot program evaluation, Cadmus will conduct a pilot impact evaluation to demonstrate the energy savings estimation methodology presented in Appendix A. This impact evaluation will include an evaluability review. Up to six sites will be selected for the energy savings estimation, and the results will become available in early 2013.