California Commissioning Collaborative
Meeting Minutes
April 27th, 2005
CTAC
Irwindale, CA

Attendees

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<th>Board</th>
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<tr>
<td>Gregg Ander</td>
<td>Martha Brook</td>
<td>Jeff Bisson</td>
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<td>Ed Becker</td>
<td>Doug Chamberlin</td>
<td>Jeff Cox</td>
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<td>Bill Boyce (taking the place of Jim Parks)</td>
<td>Tav Commins</td>
<td>Marti Frank</td>
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<td>Dan Burgoyne (alternate for David Thorman)</td>
<td>Don Frey</td>
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<td>Nancy Jenkins</td>
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<td>Arun Jhaveri (by telecom at Board Meeting)</td>
<td>David Jump</td>
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<td>Jim Parks</td>
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<td>Bill Pennington</td>
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Advisory Council Meeting

Welcome & Introductions

Gregg Ander, SCE
Don Frey, Advisory Council Chairperson

Presentations

1. Review of CCC programs – Kristin Heinemeier, PECI

This presentation gave a brief overview of the status of CCC projects:

- Completed projects: an update of CCC’s website
- Almost complete: a report to support utility Cx programs
2. Cx Seminar for Owners – Phil Welker, PECI

The Cx Seminar (formal title: Getting Started with Commissioning: for Owners and Managers) is a one-day training for facility and energy managers to assist them in taking the first steps towards implementing Cx/RCx in their facilities. The first seminar will be held on June 23rd at the City of San Diego Environmental Services Department. Confirmed speakers include Len Pettis, CSU and EJ Hilts, Marriott. The CCC is still looking for an additional owner and a technical presenter. A promotional brochure has been created and PECI is now beginning to market the seminar in the San Diego area. Attendees were asked to assist with this effort by recommending contacts at various organizations. Several names were offered.

Action Item: PECI will follow up with attendees who offered to assist with marketing.

3. Approaches for EM&V for Cx and RCx – Kristin Heinemeier, PECI

This presentation reviewed the overlapping objectives of Cx and EM&V. M&V challenges for RCx were mentioned, including:

- Measurements are already conducted by the CxP
- RCx can include a wide range of measures, you don’t know which ones when designing program or starting project
- Difficult to unambiguously define nature of intervention
- Difficulty of determining whether a process is it RCx or a retrofit
- Operational measures notoriously difficult to measure
- Difficult to measure the right things at the right time
- Evaluators need to exercise quality control over verification activities conducted by RCx providers

The importance of the difference between verifying improvements, energy savings and monitoring persistence over time was emphasized. Questions about how one determines a building’s baseline were raised, as was the problem of making up for a lack of consistent, long-term data. It was noted that IPMVP is often referenced by owners and contractors, although few are actually know what it includes. It was also noted that ASHRAE 14 references IPMVP.

Following the presentation, attendees engaged in a discussion, led by Advisory Council Chair Don Frey, about when M&V is required, whether there is a need for common methods and guidelines, the context in which these practices may be necessary, and the role of CCC in developing them. The following is a summary of key points raised:
- The CPUC and utilities need reliable, consistent, defensible EM&V data for measuring real energy savings and predicting potential savings from Cx/RCx in order to implement them as standard, larger scale program offerings.
- A CCC-designated set of procedures could benefit the effort to document Cx/RCx benefits in the same way that USGBC’s LEED green building standards increased people’s understanding of what constitutes a green building.
- An ASHRAE Board member requested that that organization develop a standard for measurement or a tool and they are moving in that direction.
- One problem with Cx/RCx is the high cost of obtaining verified measurements.
- Attendees did not see a significant need for standardized M&V procedures in the private sector, since owners value the results of good M&V but don’t ask for it by name. They are more interested in outcomes: energy bill savings, smoother turnover, increased training, longer equipment life. It was also noted that owners may not be willing to pay for more rigorous M&V. The only cases where private owners may demand EM&V and want standardized procedures is in the case of energy service performance contracting.
- It was suggested that the CCC look at TVA’s methods for measuring performance of equipment. It was reported that TVA audits a percentage of installed equipment to ensure that it performs as expected and also audits a percentage of Cx jobs.
- Common metrics to consider are before and after utility bill data and energy intensity per square foot. However, these do not take into account other changes to the building’s baseline, like retrofits or changes in occupancy.
- An M&V standard from the CCC was said to help providers by: serving as a guideline in conformance with national guidelines, giving the CPUC its needs, helping in the design of Cx/RCx programs, providing guidelines for owners and providers to give to M&V contractors, and smoothing hand-off to a third-party provider.
- Providers said they would follow an M&V standard procedure if it “makes sense.”
- It was noted that these procedures would benefit State buildings.
- It was mentioned that LEED requirements could spur people to use it.
- LA County noted that they struggle with their diverse building stock and with M&V being handed over to third-party – noting they would need guidelines that were flexible and promoted the integration of M&V into RCx.
- It was noted that the first question in developing any guidelines is: what is purpose of RCx: optimum performance or energy savings? And that the answer will guide M&V requirements.
- The comment was made that perhaps the industry is embarking on an evolution of needs in the shape of a bell curve. As with any new process, the market needs new M&V requirements to demonstrate its value and those needs will eventually fade as the results become more accepted.

In wrapping up, the group agreed that the CCC should produce some guidelines because the CPUC wants them and it will benefit the ability of utilities to fund larger Cx/RCx programs. Utility program managers also agreed that until widely accepted M&V results are commonplace, Cx/RCx will remain on the level of personal advocacy within their
organizations. It may also encourage use of emerging PIER-funded diagnostic tools, and could spur development of additional tools. It was noted that research into establishing these procedures should be drawn from the experience of existing Cx/RCx programs; the guidelines should apply to private sector; and the issue of “fox guarding the henhouse” will need to be addressed, in terms of defining roles and allowable tasks.

**Action Item:** PECI will synthesize the debate and recommend next steps to the CCC.

**Action Item:** Based on the success of this discussion, PECI will collect suggested topics for another discussion at the next meeting.

4. **Report to Support Utility Cx Programs – Eric Swan, RLW Analytics**

The CCC has contracted with RLW Analytics of Sonoma, CA to produce a fast-tracked research assessment of current utility Cx/RCx programs and to recommend best practices moving forward. The report will be based on both a summary of existing research and executive interviews conducted with utility reps and program managers. It will be qualitative not quantitative or objective.

In conducting their research, RLW used a standard questionnaire to conduct 16 interviews. They also examined secondary literature including California program/pilot literature, out-of-state program literature, cost-benefit studies. Their interim findings include:

**General perceptions of Cx:**

- Many opportunities for expansion
- Lack of awareness the most common barrier
- Misconceptions Exist
- Clients need to educated on the service

**On CPUC policy:**

- Respondents see CPUC as willing to go forward
- Evaluation of current programs is key
- TRC is stacked against RCx programs

**Successful program elements:**

- Outreach and marketing
- Preliminary benchmarking
- Initial assessment incentives
- Measure incentives
- Training
- Clarity for deliverables
- M&V strategies
• Ensuring persistence
• Non-energy benefits

Recommended program elements:

• Marketing and Outreach strategies
  • There is greater potential savings for labs and to a lesser extent Class A office; however all building types have potential savings, limiting building types leads to lost opportunities
  • Market RCx to building operators as well as owners. The building operators network could benefit program once their confidence is gained
  • Integrate Cx Marketing with SBD representatives
    - Contacts and relationships are in place
    - Timely influence is crucial
    - Most SBD representatives are on board

• Screening and scoping
  • Use Interact with benchmarking/load shape analysis tools to determine RCx candidates
  • Completely fund initial screening/assessment/scoping study

• Bundle RCx with existing retrofit programs (standard offer)
  • Define requirements for providers
  • May have supply side issues

• Integrate Cx and RCx into demand response programs
  • Holistic approach to demand response
  • Improving controls and operation will increase demand response capabilities
  • Case studies are needed

• Include persistence strategies in program design
  • Rolling whole premise EUI at minimum
  • Include regular performance verification at the end-use or equipment level

• Improved permanent monitoring and automation
  • Provide for increased points
  • Improve access
  • Justified by persistence (longer EUL)
  • Yields better evaluation data

• Focus Cx incentives on design review and design intent documentation
  • Design teams closer to being on board than owners
  • These services are schedule dependent
  • Reduces lost opportunities
• Define service requirements for RCx providers
  • Limit interpretation of requirements
  • Establish definitions of ambiguous terms or concepts
  • Example: Original Design Intent or Optimal Performance

• Provider training requirements and offer training for providers
  • Addresses supply-side issues
  • Establishes minimum service requirements
  • Clears possible misconceptions

• Conduct simultaneous EM&V
  • Diagnostic data doubles as evaluation data
  • Secondary check on monitoring plans etc.

Other findings of note include:
• It may be necessary to expand the Cx/RCx scope to improve current practices to meet the current best practices.
• It may be easier to market to operators who are new to the building because they don’t see RCx as a referendum on their past performance. Thus tapping into the changeovers and marketing to these people.
• Also may be beneficial to tap into existing operator networks and create groundswell support in that way.
• There may be a use for web-based monitoring tools for persistence.
• Design intent documentation is not happening because no incentives are being offered for it. Although it was in the past through SBD, the offering was eliminated because there were no takers. It was noted by attendees that design review incentives can appear to owners as a small amount of money for a lot of inconvenience.
• There was caution in using the Mills data because it includes retrofits in addition to RCx.

There was an emphasis from respondents on the value of seminars or executive briefings from NYSERDA’s program, as well as one-to-one marketing; it was mentioned that seven contacts are the optimal number to convince owners, and that it’s not enough to give them a pamphlet. They also pointed out that Mills’ data doesn’t account for the age of a building. They recommended not using Mills’ California data alone because it is too small to provide a significant estimate. The larger national data sample thus more appropriate. Finally, it was noted that one RCx program provider is considering including low/no cost measures to the audit to demonstrate savings up front and ease into back end of project.

**Action Item:** PECI will remind the group to give RLW feedback and advice on which direction to head in their concluding days.
**Action Item:** PECI will email RLW’s presentation to the Board and Advisory Council and post to the website.

**Action Item:** RLW will focus report on providing **recommendations and strategies** for utility program managers; identifying any emerging technology requests.

5. **Update on CCC Programs – Kristin Heinemeier, PECI**

**FEMP Training:** The project is underway and involves developing a commissioning training strategy for California – due July 2005, holding a training for federal facility managers – held April 19 with more than 50 attendees, and writing two case studies on federal buildings – due December 2005.

**Cx/RCx Guidelines:** PECI is developing draft outlines of new guidelines, to be final July 1. Drafts will be delivered Sept/Oct 2005 and final versions February 2006. A workshop will be held in November 2004. A Cx and RCx toolkit will also be developed under a separate project, with the workplan developed in this project.

**Action Item:** Dan Burgoyne will be included in the Guidelines kick-off meeting and the review team. Other interested parties should contact Martha Brook to be included.

**Action Item:** The kick-off meeting will include a discussion of whether this project should address training needs.

**CEC Title 24 Training:** The project is just being initiated and will involved the development of curriculum for acceptance testing for designers, building departments, and test providers, and the production of training for each of these parties. Curriculum will be final in June 20045 and training held in August/September 2005. Utilities will implement trainings in their areas and they will be sequenced according to construction process – curriculum and trainings first for earlier players like designers.

**Action Item:** PECI will consult with Steve Blanc at PG&E to incorporate the results of their field tests.

**Revision of Cx Database:** The initial objectives to revise, populate and analyze the existing CCC Case Study Database have changed. It is no longer needed to justify programs to CPUC and needs to dovetail with the LBNL data collected for the Mills study and the CCC’s upcoming market research project. Its new primary object will be to compel owners to ask for Cx/RCx. A new scope needs to be drafted, with work expected to begin in Fall 2005.

**Action Item:** PECI will draft a scope for CCC Board and Advisory to comment on at next meeting.
CCC Administrative Activities: PECI works to keep the CCC organized – this includes the CCC’s legal, accounting, logistics and meeting preparation. It also includes developing scopes of work. Specific administrative tasks to report on are:

- **Update CCC website:** The website update is now complete. A new section, for owners on how to select a provider, is nearing completion. It will include instructions on selecting a provider, recommended provider qualifications, sample documents and a list of providers.

  **Action Item:** PECI will discuss the idea of charging providers a service fee to be listed and will check with Mark Alcorn, the CCC’s attorney, to be sure that listing providers will not raise any legal issues of endorsement.

- **Add Cx Assistant to CCC website:** CCC wants to rebrand this tool with its “look and feel” and feature it on the CCC website. This raises the question of whether the tool would exist separately from its current incarnation on the EDR website, and if so, if they would continue to grow and change in sync. CCC members agreed this was a reasonable project for the CCC to undertake.

  **Action Item:** PECI will work with EDR and CTG Energetics (creators of Cx Assistant) to add the Cx Assistant to the CCC website. Progress will be reported at the next meeting.

- **Assemble a pool of pre-approved contractors:** An RFQ was released and responses received from 13 firms. They will be discussed in the Board meeting and direction given to PECI as to next steps.

  **Announcements**

1. Evan Mills’ presentation on the cost-benefit study he headed was given to DGS and had about 150 attendees. It was recommended that the utilities to invite Mr. Mills to give the presentation as it generated actionable results among DGS staff.

  **Action Item:** The CCC will invite Mills to present at the next CCC meeting and will consider asking him to present at the Cx Seminar. His presentation will also be put on the CCC website. The CCC will consider compensating him for this presentation.

2. The UC Santa Cruz Sustainability Conference will be held June 21-22 and it is recommended to attendees.

3. The Southwestern Region BCA meeting will take place at NCBC at 7:30am on Thursday. This chapter includes northern California and CCC attendees are welcome to attend.