California Commissioning Collaborative
Advisory Council Meeting

August 20, 2009
## Agenda – A.M.

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter(s)</th>
</tr>
</thead>
</table>
| 9:30 a.m. | Welcome, Introductions and Announcements                               | Don Frey  
CCC Advisory Council Chair                                                                 |
| 9:40 a.m. | CCC Announcements                                                       | Phil Welker, CCC Executive Director  
Kirstin Pinit, CCC Program Manager  
Misti Bruceri, CCC Consultant  
Jim Flanagan, CCC Consultant                                                                 |
| 10 a.m.  | Acceptance Testing Enforcement - findings from the field               | Tav Commins, CEC  
Roger Fuller, Sacramento County                                                                 |
| 10:45 a.m. | BREAK                                                                 |                                                                               |
| 11 a.m.  | SMACNA Acceptance Testing White Paper                                  | Jim Rosier, Equal Air Balance  
Mark Kamrath, Bell Products Mechanical                                                                 |
| 11:45 a.m. | LUNCH (Provided)                                                      |                                                                               |
# Agenda – P.M.

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Presenter/Group</th>
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</thead>
<tbody>
<tr>
<td>12:45 p.m.</td>
<td>Acceptance Testing Assistant – software demonstration</td>
<td>Lynn Benningfield, Benningfield Group</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>PIER Research Program Kick-Off</td>
<td>Eliot Crowe, CCC Research Program Manager</td>
</tr>
<tr>
<td>1:45 p.m.</td>
<td>CCC Policy Research: Specifications for Monitoring, Data Collection, Storage, and Communication Capabilities in New and Existing Buildings</td>
<td>Misti Bruceri</td>
</tr>
<tr>
<td>2:15 p.m.</td>
<td>Discussion: Effects of the Economy on the Cx Industry</td>
<td>Don Frey</td>
</tr>
<tr>
<td>2:45 p.m.</td>
<td>Wrap-Up</td>
<td>Don Frey</td>
</tr>
<tr>
<td>3 p.m.</td>
<td>Advisory Council Meeting Adjourns</td>
<td></td>
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Introductions & Announcements
Funding Opportunities for Cx Training

• CCC staff tracking funding opportunities at state and federal levels
• Opportunities considered:
  – CA Employment Training Panel (ETP) – funds delivery of training, pay for performance basis
  – DOE Funding Opportunity with CEC cost-share – curriculum development for Energy Cx Agents/Auditors
• No CCC budget in 2009 to pursue

• Options to partner/support other proposals to DOE:
  – Sacramento City College
  – PECI / CEC / BCA / NEEA / NYSERDA
Other CCC Announcements

• 2006-08 PIER Research Contract complete
  – Final report submitted in June
  – Many follow-on projects in upcoming 2009-11 contract

• ASHRAE GL 0.2 and 1.2 to reference CCC templates and sample documents
  – Will acknowledge CCC in the guidelines

• CCC documents cataloged in CEC Library and Library of Congress database
  – California Commissioning Guides: New and Existing Buildings
  – 2007 CA RCx Market Characterization
Policy Activities

Misti Bruceri
Jim Flanagan
Acceptance Testing Enforcement: Findings from the field

Tav Commins

Roger Fuller
Break

10:45-11:00 a.m.
SMACNA Acceptance Testing White Paper

Jim Rosier
Mark Kamrath
Lunch

12:00-1:00 p.m.
Acceptance Testing Assistant
Software demonstration

Lynn Benningfield
CCC PIER 2009-2012 Integrated Research Program

Building Commissioning: Strategies & Technologies for Energy Efficiency

Eliot Crowe
Overview

- 5 projects
- 7 firms
- Contract in place, CEC ↔ CCC
- Subcontractor contracts in process
- Program officially kicked off July 2009
- All projects due to kick-off by end August 2009
- Projects due to end late 2010 / 2011
Project 2: Energy Info + CRE Transactions
- Principal Investigator: Eliot Crowe (PECI)
- Project Manager: Eliot Crowe (PECI)
- Subcontractors: PECI, HMG
- Technical Advisory Group (TAG)

Project 3: RCx Tools
- Principal Investigator: Asim Tahir (AEC)
- Project Manager: Eliot Crowe (PECI)
- Subcontractors: PECI, AEC, QuEST, EMC
- Technical Advisory Group (TAG)

Project 4: RCx Persistence Guidelines
- Principal Investigator: Hannah Friedman (PECI)
- Project Manager: Eliot Crowe (PECI)
- Subcontractors: PECI, Enovity
- Technical Advisory Group (TAG)

Project 5: Verification of RCx Savings
- Principal Investigator: David Jump (QuEST)
- Project Manager: David Jump (QuEST)
- Subcontractors: PECI, AEC, QuEST, 2 RCx Providers
- Technical Advisory Group (TAG)

Project 6: Title 24 Requirements/Effectiveness
- Principal Investigator: Jon McHugh (MEC)
- Project Manager: Eliot Crowe (PECI)
- Subcontractors: PECI, MEC
- Technical Advisory Group (TAG)
Specifications for Monitoring, Data Collection, Storage, and Communication Capabilities in New and Existing Buildings

Misti Bruceri
RCx Provider Survey – Draft

- Introduction
- Provider / Project Information
- Data Acquisition for Commissioning
- Other Items / Follow-up Call
Data Acquisition for Commissioning

- What is your level of experience with the following data collection technologies?

<table>
<thead>
<tr>
<th>EMCS</th>
<th>Portable Data Loggers</th>
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</thead>
<tbody>
<tr>
<td>Energy Information Systems</td>
<td>Fault Detection and Diagnostic Tools</td>
</tr>
<tr>
<td>Advanced Meters</td>
<td>Advanced Metering Systems</td>
</tr>
<tr>
<td>Interval Meters</td>
<td>Other?</td>
</tr>
</tbody>
</table>
EMCS Data Acquisition Elements

- Do you believe EMCS systems are generally capable of providing enough data for monitoring and diagnostic purposes?
  - If no, rate items that reduce usefulness:

<table>
<thead>
<tr>
<th>System Capacity Inadequate</th>
<th>Number of Points Inadequate</th>
</tr>
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<tbody>
<tr>
<td>Collection Frequency Inadequate</td>
<td>Data Storage Time Inadequate</td>
</tr>
<tr>
<td>Other?</td>
<td></td>
</tr>
</tbody>
</table>
## Data Collection Technologies

- Which data collection technologies, if installed perfectly, could enhance your ability to deliver cost-effective Cx services?

<table>
<thead>
<tr>
<th>Smart Meters</th>
<th>Energy Information Systems</th>
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<tbody>
<tr>
<td>Energy Management Control Systems</td>
<td>Advanced Meters</td>
</tr>
<tr>
<td>End-Use Meters</td>
<td>Interval metering</td>
</tr>
<tr>
<td>Fault Detection and Diagnostics</td>
<td>Advanced Metering Systems</td>
</tr>
</tbody>
</table>
Additional Items

• Ideal / Adequate / Minimum
• Additional Ideas
• Telephone Follow-Up Interview
  – Additional detail, open-ended questions
  – CA Providers
  – Case Studies / Projects
Effects of the Economy on the Cx Industry

• Purpose: gather thoughts and observations from industry participants to provide a starting point for Advisory Council discussion
  – On-line survey to CCC email list
  – 10 responses
How would you describe your role in the Cx industry?
Demand for New Building Cx

Past Year

Past 6 Months
Demand for Existing Building Cx

Past Year

In the past year, do you think the demand for existing building commissioning has:

- Grown: 7
- Decreased: 3
- Stayed the same: 1

Past 6 Months

In the past six months, do you think the demand for existing building commissioning has:

- Grown: 6
- Decreased: 2
- Stayed the same: 3
How are you mitigating the effects of the economic recession? Commissioning Provider

If you are a commissioning provider, what are you or your company doing to mitigate the effect of the economic recession on your business?

- Cancel or delay business investments such as new hires or training for existing staff: 1
- Increase marketing efforts to win new clients or projects: 6
- No changes: 1
- Not a commissioning provider: 2
- Other: 2
How are you mitigating the effects of the economic recession? Utility Representative

If you are a utility representative, what are you doing to mitigate the effect of the economic recession on your business?

- Cancel or delay incentive program development or research projects: 1
- Modify current program designs or budgets: 1
- Increase marketing efforts to reach new customers: 1
- No changes: 1
- Not a utility representative: 7
- Other: 0
Responses on how the economy is affecting the Cx industry (open-ended question):

- No Cx initiatives are undertaken during this recession.
- The slow-down for large capital projects will come in '10 & '11.
- Building Owners and Managers are foregoing Cx on most projects or doing a lighter type of Cx for all projects.
- Business is good and getting better in Houston, TX. There is a shortage of capable Cx people.
- No- and low-cost measures that save energy and money are getting attention. When the economy is booming, new construction and/or keeping up with expanding markets is the focus.
Effects of the Economy on the Cx Industry

Discussion

• Advisory Council reactions and observations
• Next steps for…
  – Policy makers?
  – Private firms?
  – Utilities?
  – CCC?
Wrap Up

Next Meeting: Thursday, October 22
Location: San Diego Hilton (Airport/Harbor Island)
Host: Sempra

Agenda Topics
• Update/status of PIER research program
• Other Topics of Interest
  – Technical topics
  – Case studies – volunteers or invitations?
  – Program updates – volunteers or invitations?
  – Other needs?
## Tentative 2010 Meeting Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Host</th>
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<tbody>
<tr>
<td>January 14</td>
<td>PG&amp;E</td>
</tr>
<tr>
<td>March 25</td>
<td>SMUD</td>
</tr>
<tr>
<td>June 10</td>
<td>SCE</td>
</tr>
<tr>
<td>Sept. 9</td>
<td>SMUD</td>
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<tr>
<td>Nov. 18</td>
<td>Sempra</td>
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- Move to quarterly meetings in 2010?
Adjourn

Thanks to SMUD for hosting the meeting today!