California Commissioning Collaborative
Advisory Council Meeting

September 14, 2006
CCC Advisory Council Meeting

- 10:00 Announcements and Updates
  » Outcome: Comments on roadmap outline; volunteers for review committee
- 10:10 Commissioning Program Matrix
  » Outcome: Call for comments (via e-mail) on content of the matrix and any missing programs
- 10:50 Scope of Work for Verification of Savings project
- 11:00 Commissioning Guides distribution plan
  » Outcome: Comment on overall plan for distribution; identify missing opportunities for distribution
- 11:10 Update on ASHRAE activities
  » Outcome: Discuss how/if the CCC should be involved
- 11:20 Next meeting dates and agenda items
  » Outcome: Generate future agenda topic ideas
- 11:25 Brief announcements from attendees
- 11:30 Adjourn

Thanks to CEC for hosting this webcast!
Announcements and Updates

• Fall Newsletter deadline, September 19
• Cx/RCx Guidelines
• Current/Upcoming Projects:
  – Title 24 Acceptance Testing
  – Market Research
  – RCx Toolkit
  – Verification of Savings
• Future Projects:
  – Analysis of Educational Opportunities
  – Case Studies
  – Outreach to Owner Groups
• Commissioning Workgroup Report
Commissioning Work Group Roadmap

• Primary objective: Provide status of Cx Work Group and propose an approach to promote widespread use of commissioning (including new construction, existing buildings and maintenance of commissioning)
• Report will be forward-focused with recommendations that help achieve the goals of the Green Buildings Initiative
• Funding may be available through DGS
• Cx Work Group will review draft report outline
• Additional reviewers?
California Commissioning Programs

• We have developed a matrix of commissioning programs in California
• Planned to be published soon on CACx website
• Send corrections or updates to info@cacx.org
<table>
<thead>
<tr>
<th>Program</th>
<th>Type</th>
<th>Dates</th>
<th>Budget</th>
<th>Key Features</th>
<th>Status</th>
<th>Incentives</th>
<th>Eligibility/ Qualifications</th>
<th>Contact</th>
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</thead>
<tbody>
<tr>
<td>UC/CSU Partnership</td>
<td>Statewide</td>
<td>ongoing</td>
<td>?</td>
<td>● Incentive cap at 80% of project cost</td>
<td>Currently conducting evaluation of results from pilot program</td>
<td>Retrofits at</td>
<td>University of California and California State University campus facilities</td>
<td>Dave Hather 916.386.5007 <a href="mailto:DTH2@pge.com">DTH2@pge.com</a> Maric Munn 510.987.9392 <a href="mailto:maric.munn@ucop.edu">maric.munn@ucop.edu</a> Len Pettis 562.951.4122 <a href="mailto:lpettis@calstate.edu">lpettis@calstate.edu</a></td>
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<td></td>
<td></td>
<td>● Incentives in 2 payments (at contract signing and at completion of project)</td>
<td></td>
<td>● $0.15/kWh for lighting</td>
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<td></td>
<td>● 2004-05 program was a pilot with over $5 Million in funding from CPUC</td>
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<td>● $0.24/kWh for motors and other</td>
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<td></td>
<td>● Savings targets: 12.6 MW, 43.2 GWh, 1.5 MM therms</td>
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<td>● $0.42/kWh for HVAC</td>
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<td></td>
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<td></td>
<td>(continuation of 2004-2005 program)</td>
<td></td>
<td>● $1.00 per therm</td>
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<tr>
<td>California Community College Partnership</td>
<td>Statewide</td>
<td>2006</td>
<td>?</td>
<td>● Incentives based on annualized kWh and therms saved</td>
<td>First round of solicitations has occurred, more projects needed for SDG&amp;E territory</td>
<td>Retrofits and retrocommissioning at</td>
<td>Projects at the community college district level</td>
<td>Dave Hather 916.386.5007 <a href="mailto:DTH2@pge.com">DTH2@pge.com</a> Fred Harris 916.324.9508 <a href="mailto:fharris@cccco.edu">fharris@cccco.edu</a></td>
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<td></td>
<td></td>
<td>● Incentives primarily for permanent monitoring equipment and Cx consultants</td>
<td></td>
<td>● $0.24/kWh for motors and other</td>
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<td>● Training for MBCx and related topics offered throughout the state</td>
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<td>● $0.42/kWh for HVAC</td>
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<td></td>
<td>● Savings targets: 6.7 MW, 30.7 GWh, 0.99 MM therms</td>
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<tr>
<td>California Department of Corrections and Rehabilitation</td>
<td>Statewide</td>
<td>2006</td>
<td>?</td>
<td>● Energy Efficiency Retrofits-Electric/Gas</td>
<td>Waiting for contract to be signed</td>
<td>● $0.15/kWh for lighting</td>
<td>Corrections facilities (prisons)</td>
<td>Dave Hather 916.386.5007 <a href="mailto:DTH2@pge.com">DTH2@pge.com</a> Harry Franey 916.327.1134 <a href="mailto:hfraney@adminsvcs.corr.ca.gov">hfraney@adminsvcs.corr.ca.gov</a></td>
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<td></td>
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<td></td>
<td>● Monitoring Based Commissioning (MBCX-Electric/Gas)</td>
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<td>● $0.24/kWh for motors and other</td>
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<td></td>
<td>● Retrocommissioning is a small part of the program</td>
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<td>● $0.42/kWh for HVAC</td>
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California Commissioning Programs

- UC/CSU Partnership
- California Community College Partnership
- California Department of Corrections and Rehabilitation
- California Department of General Services/IOU Partnership Program
- SCE-SCG County of Los Angeles Partnership
- SDG&E RCx Program
- SCE RCx Program
- SMUD Cx Program
- PG&E RCx
- PG&E RCx
- LodgingSavers
- Monitoring-Based, Persistence Commissioning
- Enhanced Automation Initiative
- Hospitality Energy Efficiency Program
- Hospital Pilot Program
- Data Center Cooling Control Program
- Energy Watch Programs
UC/CSU Partnership

Type: Statewide
Dates: Ongoing (continuation of 2004-2005 program)
Eligibility: University of California and California State University campus facilities

Key Features:
- Incentive cap at 80% of project cost
- Incentives in 2 payments (at contract signing and at completion of project)
- 2004-05 program was a pilot with over $5 Million in funding from CPUC
- 2006-2008 MBCx Savings targets: 10.5 MW, 50.1 GWh, 2.5 MM Therms
- 2006-2008 Overall Savings targets 21.3 MW, 102.4 GWh, 4 MM Therms

Budget:
Incentives:
- Retrofits at:
  - $0.15/kWh for lighting
  - $0.24/kWh for motors and other
  - $0.24/kWh for HVAC
  - $1.00 per Therm
Industry Update

UC/CSU Partnership

Contact:

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California Department of General Services/IOU Partnership Program

Type: Statewide
Dates: 2006
Eligibility: All State facilities under the jurisdiction of executive branch.

Key Features:
- Accomplishes financing and execution aspects of Green Building Executive Order
- Financing and project delivery mechanism for energy projects identified through retrocommissioning and audits
- Partnership with IOUs to provide due diligence review of projects
- Uses defined process with ESCOs
- Utility funds to be matched with State funding using GS $Mart

Budget: $17 million
Incentives: TBD
Status:
- MOU signed by IOU’s and State
- Developing detailed action plan to be rolled out at September 27th State/IOU Energy Efficiency Forum
California Department of General Services/
IOU Partnership Program

Contact:

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Roy McBrayer
916.376.5035
Roy.McBrayer@dgs.ca.gov
California Community College Partnership

**Type:** Statewide  
**Dates:** 2006  
**Eligibility:** Projects at the community college district level  
**Key Features:**  
- Incentives based on annualized kWh and thermos saved  
- Incentive cap at 80% of project cost; primarily for monitoring equipment and consultants  
- Training for MBCx and related topics offered throughout the state  
- Savings targets: 6.7 MW, 30.7 GWh, 0.99 MM Therms  
**Budget:**  
**Incentives:**  
- Retrofits and retrocommissioning at  
  - $0.15/kWh for lighting  
  - $0.24/kWh for motors and other  
  - $0.24/kWh for HVAC  
**Status:** First round of solicitations has occurred, more projects needed for SDG&E territory. SCE has approved projects with 102% of SCE kWh goal
California Community College Partnership

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Fred Harris  
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fharris@cccco.edu
SCE-SCG County of Los Angeles Partnership

**Type:** Local  
**Dates:** 2006-2008  
**Eligibility:** All LA County facilities  
**Key Features:**  
- Focused on optimized HVAC performance with recommendations for retrofits/capital improvements  
- System-level analysis  
- Includes EEMIS tracking for persistent savings  
- LA County to provide co-funding for retrofit effort  
- Goals: 12.3MkWh, 2.6MW, 456,000 therms  
**Budget:** $4-5 million  
**Incentives:**  
- $0.25/kWh  
- $1.00 therm  
**Status:** Master agreement in place, RCx selected for implementation in 10 county buildings
SCE-SCG County of Los Angeles Partnership

Contact:

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pmorais@semprautilities.com

Nora Hernandez, City of LA
323.881.3949
nherandez@isd.co.la.ca.us
SCE RCx Program

**Type:** Local  
**Dates:** 2006-2008  
**Eligibility:**  
- SCE customer paying the California public goods charge  
- >100,000 sqft for commercial and institutional; >30,000 sqft for grocery stores (5 store minimum per chain)  
- Owner-occupied preferred; Equipment in good operating condition; with DDC  

**Key Features:**  
- Program does not include retrofits - retrofits referred to other programs  
- Includes track for grocery  
- Includes small retrofits  
- Incentive budget ~7M, paid at investigation, implementation and follow-up  

**Budget:**  
**Incentives:**  
- Investigation: $0.05 - $0.10 per square foot (paid to provider)  
- Implementation: custom incentive estimated at $0.05 per square foot (paid to owner)  
- Follow-up: $2,000 - 10,000 estimated at $0.02 per square foot (paid to provider)  
- Separate incentive structure for grocery  
**Status:** Program launched June 2006
Industry Update

SCE RCx Program

Contact:
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626.302.9224
steven.long@sce.com

Eliot Crowe
503.961.6123
ECrowe@peci.org
SDG&E RCx Program

Type: Local
Dates: 2006-2008
Eligibility:
  – SDG&E customer paying the California public goods charge
  – >100,000 sqft for commercial and institutional
  – Owner-occupied preferred
  – Equipment in good operating condition; with DDC

Key Features:
  – RCx for large commercial buildings: >100,000 sqft of conditioned space, high energy use, EMS in place
  – Similar to the 2004-2005 Third Party Program

Budget: $600,000

Incentives:
• Investigation: $0.05 - $0.10 per square foot (paid to provider)
• Implementation: custom incentive estimated at $0.05 per square foot (paid to owner)
• Follow-up: $2,000 - 10,000 estimated at $0.02 per square foot (paid to provider)

Status: Program launched August 2006
Industry Update

SDG&E RCx Program

Contact:
Jeff Alexander
858.636.5762
jalexander@semprautilities.com

Emily Moore
503.595.4498
EMoore@peci.org
SMUD Cx Program

**Type:** Local  
**Dates:** 2006-(annual budgets thereafter)

**Eligibility:**  
- Large commercial facilities (generally office space)  
- Customer committed to implementing recommendations

**Key Features:**  
- Cx agent hired by SMUD to assist customers  
- Initial focus on state buildings but expanding to private sector in 2007

**Budget:**  
**Incentives:**  
- SMUD pays for co-study which includes final report with recommendations  
- Customer pays to implement recommendations

**Status:** 2006 funding already committed ($100k). Requesting additional funds for 2007 and beyond
SMUD Cx Program

Contact:
Richard Oberg
916.732.7092
roberg@smud.org
California Department of Corrections and Rehabilitation

**Type:** Statewide  
**Dates:** 2006  
**Eligibility:** Corrections facilities  
**Key Features:**  
- Energy Efficiency Retrofits - Electric/Gas  
- Retrocommissioning  
- $0.24/kWh and $1.00/therm with funding cap of 50% of project cost for lighting-related measures and 80% cap for all other types of measures.  

**Budget:**  
**Incentives:**  
- $0.15/kWh for lighting  
- $0.24/kWh and $1.00/therm for HVAC, motors and other  

**Status:** Agreement under review by CDCR legal council. CDCR has identified potential projects to implement; in process of completing project forms.
Industry Update

California Department of Corrections and Rehabilitation

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michael.lo@sce.com

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Harry Franey  
916.327.1134  
hfraney@adminsvecs.corr.ca.gov
PG&E RCx Program

**Type:** Local (Utility-managed and 3P programs)  
**Dates:** 2006-2008  
**Eligibility:**  
- Utility: Must be both electric and gas customer  
- 3P: Pending outcome of proposals  
**Key Features:**  
- Similar program to SCE 2006-2008  
**Budget:**  
- Utility program:  
- 3P program:  
**Incentives:**  
- Utility program: Buy down most cost effective recommendations to one year payback or less  
- 3P program: Pending outcome of proposals  
**Status:**  
- Utility program: Under design, target availability October 1, 2006  
- 3P program: RFP process underway
PG&E RCx Program

Contact:
Greydon Hicks (utility program)
415.972.5392
GHH1@pge.com

Norm Stone (3P program)
PG&E Third-Party Programs

LodgingSavers (Ecology Action)
Retrofit program delivering multi-measure comprehensive retrofits and RCx to lodging facilities of all sizes. Offers RCx and post-installation continuous Cx for larger facilities.

Contact:
Mary Kay Gobris
415.973.1319
mkg3@pge.com

Mahlon Aldridge
831.426.5925, x116
emahlon@ecoact.org
PG&E Third-Party Programs

Enhanced Automation Initiative (KEMA)
Promotes investments in automation and control technologies by offering on-site assessments, technical assistance, and financial incentives for improvements to existing energy management systems.

Contact:
Jill Marver
510.891.0446, x4119
LKZ1@pge.com

Rich Barnes
415.973.0712
Rich.Barnes@US.KEMA.com
PG&E Third-Party Programs

**Hospitality Energy Efficiency Program (QuEST)**
Comprehensive turnkey program designed to improve the energy efficiency of hotel and motel properties. Includes retrofits, tune-ups, and RCx as well as referrals to PG&E’s Demand Response and Self-Generation programs.

**Contact:**
Mary Kay Gobris  
415.973.1319  
mkg3@pge.com

Derrick Rebello  
510.540.7200  
drebellot@quest-world.com
Hospital Pilot Program (QuEST)
Comprehensive turnkey program designed to improve the energy efficiency of large hospitals. HHP will provide a program design that couples in-depth energy engineering analysis with assistance in meeting regulatory requirements of Office of Statewide Health Planning and Development.

Contact:
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415.973.4237
LMC5@pge.com

Eric Eberhardt
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eeberhardt@quest-world.com
PG&E Third-Party Programs

Data Center Cooling Control Program
(QuEST/Federspiel Controls)
Uses wireless temperature-control systems for computer room air conditioning (CRAC) units and variable frequency drives (VFDs) for CRAC unit fans. Focuses on installation of advanced controls and VFDs rather than operational/design or major equipment changes.

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LMC5@pge.com

Clay Lewis
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claylewis@quest-world.com
PG&E Third-Party Programs

Energy Watch Programs
Program features vary; the following have RCx:
• Association of Monterey Bay Area
• Bakersfield & County of Kern Energy Watch
• East Bay Energy Watch Partnership
• Marin County Energy Watch Partnership
• Motherlode Energy Watch Partnership
• Silicon Valley Leadership Group Energy Watch
• Sonoma Energy Watch Partnership
Verification of Savings

- Scope was developed by the AC
- Project was selected for funding, but with reduced budget ($100k > $45k)
- Project scope will be phased
- Process for project initiation:
  - Request for proposal (work plan and rationale)
  - Review of proposal
  - Negotiation of scope
California Commissioning Guidelines

California Commissioning Guide: New Buildings

California Commissioning Guide: Existing Buildings
Distribution of Guidelines

• California Commissioning Collaborative
  – PDF download from website
  – Fulfill individual requests for printed copies
  – Advisory Council and Board members

• Government Agencies
  – California Energy Commission, printed copies to hand out; web link to CCC
  – Department of General Services, web link to CCC
  – EPA/ENERGY STAR, web link to CCC

• Utilities
  – Training/customer service centers, printed copies to hand out
  – Account reps for commercial customers, printed copies to hand out
  – Utility Cx/RCx programs, printed copies to hand out; web link to CCC

• Trade Associations
  – BOMA, web link to CCC
  – Real Estate Roundtable, web link to CCC

• Conferences, trade shows and industry events and training
  – BOMA Energy Efficiency Program (BEEP) for commercial real estate professionals, printed copies to hand out
  – North American Commercial Real Estate Congress (BOMA), printed copies to hand out
  – Energy Efficiency Forum (September 27); Green California Summit (March 13-14, 2007)
ASHRAE Commissioning Activities

• Guideline 0-2005: the Commissioning Process (continuous maintenance)
• Guideline 1-200X: HVAC Commissioning (available for public review soon)
• Guideline 30: Retrocommissioning (looking for members)
  – The purpose of this guideline is to describe the commissioning process for existing HVAC&R Systems
• Guideline 31: Training in Cx (looking for members)
  – The purpose of this guideline is to provide methodologies and formats for developing training plans, conducting training programs, and documenting training results for the operation and maintenance of building HVAC&R systems during the commissioning process
• ASHRAE considering developing certifications for commissioning, health care facility engineering, building operation, and sustainability.
• Other activities: GL 14, ALI
Upcoming Meetings

• Suggested Topics?

- November 16, 2006 (PG&E)
- February 8, 2007 (SMUD)
- April 12, 2007 (SDG&E)
- June 7, 2007 (PG&E)
- August 23, 2007 (SMUD)
- November 8, 2007 (SoCal Gas)
Adjourn!

- (Board members: please stick around for a few minutes for a quick board meeting)
Agenda

- Clarify Board Members/Alternates
  - SDG&E
  - SCG
  - PG&E
  - DGS