



## California Commissioning Collaborative Advisory Council Meeting

March 18, 2009



### Agenda

8:30 AM	Green California Summit: Keynote Presentation	
<b>CCC Meeting: Room 103</b>		
10:00 AM	Welcome, Introductions, and Announcements	Phil Welker
10:10 AM	Smart Grid Technology	Jim Parks
10:55 AM	Review and Discussion: CCC POV Draft	Phil Welker
12:00 PM	LUNCH	
1:00 PM	Next Steps for CCC Policy Initiative and Point of View Messages	Jim Flanagan Misti Bruceri
1:30 PM	CCC 2009-2011 Work Plan	Kirstin Pinit
1:50 PM	Roundtable Discussion: • Stimulus Funding Opportunities and Next Steps • Other Industry Developments	
2:15 PM	Wrap - Up	Phil Welker
2:30 PM	Advisory Council Meeting Adjourns	

## Meeting Objectives

- Morning Agenda
  - Overview of SMUD's Smart Grid activities
  - Clarify/Validate CCC point of view messages (follow up from January meeting)
- Afternoon Agenda
  - Consider proposed next steps for Policy Initiative
  - Consider proposed CCC work plan agenda for 2009 – 2011
  - Share information on stimulus funding opportunities

## Introductions & Announcements

## CCC Announcements

- Green California Summit Session
  - Tuesday, March 17 - Retrocommissioning - Optimizing Building Performance (3:15 - 4:30 pm)
  - Panel: Phil Welker (CCC), Len Pettis (CSU), Roy McBrayer (DGS)
- 2009-11 PIER Research Contract
  - Planned start: June 2009

## Smart Grid Activities at SMUD

*Jim Parks*  
SMUD

## CCC Point of View

### Discussion Objective:

- Review description and POV for each topic
- Identify and discuss any needs for revision/clarification
  
- Table any unresolved issues for future discussion/work session, if needed

## CCC Point of View

- Draft POV covers highest-ranked topics identified at January CCC meeting
  - No clear majority of votes on one topic or issue
  - Categorized topics according to actionable policy venues
  
- Categories
  - Building Standards
  - Short-Term CPUC Policy Opportunities
  - Long-Term CPUC Policy Opportunities
  - Expanding Commissioning Industry Infrastructure
  - Overarching Topics (Cx in the CAEESP and Occupant Comfort)

## CCC Point of View

- Cx and RCx in Building Standards
  - Require Building and/or System-Level Metering in Title 24 Standards for New Commercial Buildings
  - Improve Compliance with Title 24 Acceptance Test Requirements

## CCC Point of View: Cx and RCx in Building Standards

### *Require Building and/or System-Level Metering in Title 24 Standards for New Commercial Buildings*

- Description:
  - Buildings and systems that have adequate, logically-grouped metering equipment allow commissioning providers and building operators to more easily and effectively monitor the energy usage of major equipment and systems.
  - Monitoring at the system level supports the systems-oriented nature of commissioning activities. Rather than focusing on individual measures, the commissioning objective is to make the system work properly and efficiently.

## CCC Point of View: Cx and RCx in Building Standards

### *Require Building and/or System-Level Metering in Title 24 Standards for New Commercial Buildings*

- POV:
  - Require metering at the building and/or system-level in new commercial buildings.
  - Specify minimum requirements for communication, data collection, and data storage capabilities.
  - Consistent access to metering data will also provide documentation to support project savings impacts and persistence, and evaluation and verification needs.

## CCC Point of View: Cx and RCx in Building Standards

### *Improve Compliance with Title 24 Acceptance Test Requirements*

- Description:
  - In 2005, CEC adopted mandatory requirements to demonstrate that certain equipment installed in new commercial buildings meets minimum functional performance levels.
  - CEC has significantly expanded the equipment for which these tests are required in the upcoming 2008 Title 24 Standards (effective August 1, 2009).
  - Initial field studies and anecdotal information indicate there is currently very little compliance with this requirement.

## CCC Point of View: Cx and RCx in Building Standards

### *Improve Compliance with Title 24 Acceptance Test Requirements*

- POV:
  - Acceptance tests are one way to begin incorporating commissioning-related activities into Title 24.
  - When conducted properly, they provide a mechanism for ensuring that building equipment functions as intended upon installation.
  - Improving compliance with Acceptance Test requirements is a key step in achieving the zero net energy goals for new commercial buildings articulated in the CAEESP.

## CCC Point of View

- Short-term CPUC Policy Opportunities
  - Develop Standardized Approaches to Savings Calculations And M&V Requirements For Common RCx Measures
  - Improve Estimates of RCx Measure Life and Increase Savings Persistence
  - Agree on Minimum Data Requirements for Impact Evaluation of DSM Programs

## CCC Point of View: Short-term CPUC Policy Opportunities

### *Develop Standardized Approaches to Savings Calcs & M&V Requirements For Common RCx Measures*

- Description:
  - Providers may arrive at unique savings estimates for the same project.
  - There is a lack of agreement with regard to pre- and post-installation monitoring/metering requirements.
  - Lack of consistent and accurate savings estimates reduce the value of RCx programs to both customers and program managers.

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## CCC Point of View: Short-term CPUC Policy Opportunities

### *Develop Standardized Approaches to Savings Calcs & M&V Requirements For Common RCx Measures*

- POV:
  - Standardized calculations and M&V requirements can reduce project cost for RCx providers, increase reliability for building owners and reduce administration costs for program managers.
  - A guideline that would serve to simplify some savings calculations and offer clarity with regard to monitoring requirements would be useful.
  - Need PUC evaluators the table to determine ways to simplify or bolster savings calculations and M&V methodologies.

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## CCC Point of View: Short-term CPUC Policy Opportunities

### *Improve Estimates of RCx Measure Life and Increase Savings Persistence*

- Description:
  - Need: clarification about approved useful measure life and ways to demonstrate and/or increase savings persistence.
  - Clarification and consistency of measure reporting improves the accuracy required for utility resource planning efforts and allows utility programs to offer greater incentives for longer life measures.

## CCC Point of View: Short-term CPUC Policy Opportunities

### *Improve Estimates of RCx Measure Life and Increase Savings Persistence*

- POV:
  - CCC supports improved accuracy in tracking and reporting of RCx measure lives and encourages techniques that cost-effectively improve persistence.
  - More complex techniques to extend measure life should be encouraged through incentives commensurate with the enhanced value delivered to utility programs.

## CCC Point of View: Short-term CPUC Policy Opportunities

### *Agree on Minimum Data Requirements for Impact Evaluation of DSM Programs*

- Description:
  - There are no data requirement guidelines for determining the baseline for many RCx measures.
  - Without a clear understanding of data requirements for utility RCx programs, providers cannot determine the amount of data and associated cost of developing a project or measure.

## CCC Point of View: Short-term CPUC Policy Opportunities

### *Agree on Minimum Data Requirements for Impact Evaluation of DSM Programs*

- POV:
  - Prescribed minimum data requirements can reduce project cost for RCx providers, increase reliability for building owners and reduce administration costs for program managers.
  - A collaborative approach is needed to reach acceptable best practices for minimum data requirements to satisfy PUC, utility and customers.

## CCC Point of View

- Long-term CPUC Policy Opportunities
  - Demonstrate the Value of Continuous Monitoring and the Use of Performance Metrics for Building Systems to Building Owners and Regulators
  - Encourage the CPUC to a Systems-Based Approach to Measuring and Incentivizing Complex RCx Projects at Large Facilities
  - Seek to Clarify Requirements and Incentives for Integrating Demand Response and RCx Under Utility Programs

## CCC Point of View: Long-term CPUC Policy Opportunities

### ***Demonstrate the Value of Continuous Monitoring and the Use of Performance Metrics for Building Systems to Building Owners and Regulators***

- Description:
  - Building owners should be able to specify data points and look for performance based on these points.
  - This is a form of ongoing commissioning that can use trend data over time to develop expectations about building systems performance.
  - Increased monitoring and performance metrics can both be used to increase persistence of energy savings.

## CCC Point of View: Long-term CPUC Policy Opportunities

### *Demonstrate the Value of Continuous Monitoring and the Use of Performance Metrics for Building Systems to Building Owners and Regulators*

- POV:
  - The CCC supports increased use of continuous systems monitoring and the development of comparative metrics that building operators can use to benchmark their individual system performance within utility programs.

## CCC Point of View: Long-term CPUC Policy Opportunities

### *Encourage the CPUC to a Systems-Based Approach to Measuring and Incentivizing Complex RCx Projects at Large Facilities*

- Description:
  - Current CPUC funding strategy is primarily designed around an individual measure-based approach.
  - RCx projects may span over multiple systems or pieces of equipment and may include numerous intervention points and operational changes over the course of the year.
  - RCx is an ongoing and comprehensive, system-based process that requires different means to measure and incentivize improvements.

## CCC Point of View: Long-term CPUC Policy Opportunities

### *Encourage the CPUC to a Systems-Based Approach to Measuring and Incentivizing Complex RCx Projects at Large Facilities*

- POV:
  - It is complicated and expensive to report energy savings in the format requested by the CPUC.
  - A measure-based approach is expensive to evaluate.
  - A systems approach accommodates comparative benchmarking between building owners and RCx providers and can greatly simplify the evaluation process by providing data points for built-up systems that can be examined much more easily to identify trends and savings.

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## CCC Point of View: Long-term CPUC Policy Opportunities

### *Seek to Clarify Requirements and Incentives for Integrating Demand Response and RCx Under Utility Programs*

- Description:
  - The CPUC has directed the IOU's to offer integrated programs, but has not yet devised a simple funding mechanism that lets these otherwise separate pots of money to be intermingled.
  - Separating out the costs and savings attributable to demand response (DR) or, RCx (or other energy efficiency programs/measures) in these very complex projects is difficult.

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## CCC Point of View: Long-term CPUC Policy Opportunities

*Seek to Clarify Requirements and Incentives for  
Integrating Demand Response and RCx Under Utility  
Programs*

- POV:
  - Clear and simple requirements for providing integrated DR and energy efficiency within utility funded RCx programs will increase program participation.

## CCC Point of View

- Expand Cx Industry Infrastructure
  - Standardize Commissioning Technician Roles, Responsibilities, and Education and Training Requirements
  - Standardize HVAC System Control Sequences

## CCC Point of View: Expand Cx Industry Infrastructure

### ***Standardize Commissioning Technician Roles, Responsibilities, and Education and Training Requirements***

- Description:
  - The Cx technician tasks and responsibilities, training and/or certification needed to perform this role are not well-defined.
  - As the commissioning infrastructure is developing, the technician role has been identified and defined by various organizations resulting in positions with similar titles that include a broad range of roles and responsibilities.

## CCC Point of View: Expand Cx Industry Infrastructure

### ***Standardize Commissioning Technician Roles, Responsibilities, and Education and Training Requirements***

- POV:
  - Commissioning technician roles, responsibilities, education/experience requirements and especially certification requirements should be standardized and well-documented
  - Standardizing the terminology will provide greater consistency in commissioning services and costs, and can help develop the infrastructure required to support implementation of Cx

## CCC Point of View: Expand Cx Industry Infrastructure

### *Standardize HVAC System Control Sequences*

- Description:
  - Control sequences and systems are often complicated, can be decidedly unfriendly to users, and are often manufacturer- and/or equipment-specific.
  - Changes to control strategies in existing systems impacts other equipment and the operator must understand the interactions to ensure the new control strategies will not adversely affect other equipment.
  - Several organizations are developing standard control sequences to optimize energy savings and equipment performance for common HVAC system operations requirements.

## CCC Point of View: Expand Cx Industry Infrastructure

### *Standardize HVAC System Control Sequences*

- POV:
  - Standardizing common HVAC control sequences can save significant energy as it will eliminate some barriers for designers, engineers and building operators to effectively manage system energy use through control systems
  - Standardization will increase persistence of savings garnered during commissioning and system optimization

## CCC Point of View

- Overarching Topics
  - Commissioning-Related Impacts in the California Long-Term Energy Efficiency Strategic Plan (CAEESP)
  - Commissioning for Occupant Comfort in New and Existing Buildings

## CCC Point of View: Cx-Related Impacts in CAEESP

### California Long-Term Energy Efficiency Strategic Plan

- Commissioning is cited in:
  - Commercial Buildings
  - Local Government
  - HVAC
  - Codes and Standards
  - Workforce Education and Training
  - Research and Technology
- Not a policy document itself.
  - CAEESP identifies ways to implement CA policies

## CCC Point of View: Cx-Related Impacts in CAEESP

- Existing Buildings
  - Ongoing / continuous monitoring of energy-using systems is necessary to ensure savings are maximized and persist
- Codes and Standards
  - Encourages more Cx requirements in codes as a mid-term (2012 – 2014) strategy
  - Encourages coordination between Title 24, the California Green Building Standards and other green building rating systems
- Financing
  - Identifies the need to quantify the value of commissioning new buildings more concretely

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## CCC Point of View: Cx-Related Impacts in CAEESP

- Workforce Education and Training
  - More education needed for: the design and building industry; integrated design; operations and maintenance
- Research:
  - Recommends enhancing existing technologies to improve operations and increase performance (includes continuous monitoring, and automated building commissioning)
- Local Governments
  - Recommends LEED certification and commissioning requirements for new and existing municipal buildings by December 2011

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## CCC Point of View: Cx-Related Impacts in CAEESP

- POV:
  - CAEESP recommendations are ambitious, especially given the relatively young Cx industry, and short implementation period
  - Policy implementation efforts must include support for industry development, including education and training

## CCC Point of View: Cx for Occupant Comfort

- Description:
  - Commissioning is a whole-building process that addresses occupant comfort, IAQ, noise control, and energy efficiency.
  - When optimizing system operations with the objective of saving energy, it can unintentionally result in a compromise to occupant comfort.

## CCC Point of View: Cx for Occupant Comfort

- POV:
  - The CCC supports implementation of commissioning for the purpose of optimizing systems and meeting the needs of the building owner and occupants.
  - While current initiatives in CA seek to utilize the Cx process to reduce energy use, it is important that policies and practices are designed to achieve energy savings without sacrificing other benefits of commissioning.

## CCC Point of View

- Final Comments
- Next Steps
  - Incorporate feedback into POV doc
  - Feed these messages into Policy Initiative Next Steps

## Lunch

12:00-1:00

## Policy Initiative: Next Steps

*Misti Bruceri*

*Jim Flanagan*

## CCC Work Plan, 2009-2011

Objectives for this discussion:

- Review Strategic Planning process and priorities
- Consider the “next” needed tasks/projects/activities for the CCC work plan

### 2007 Strategic Plan Priorities

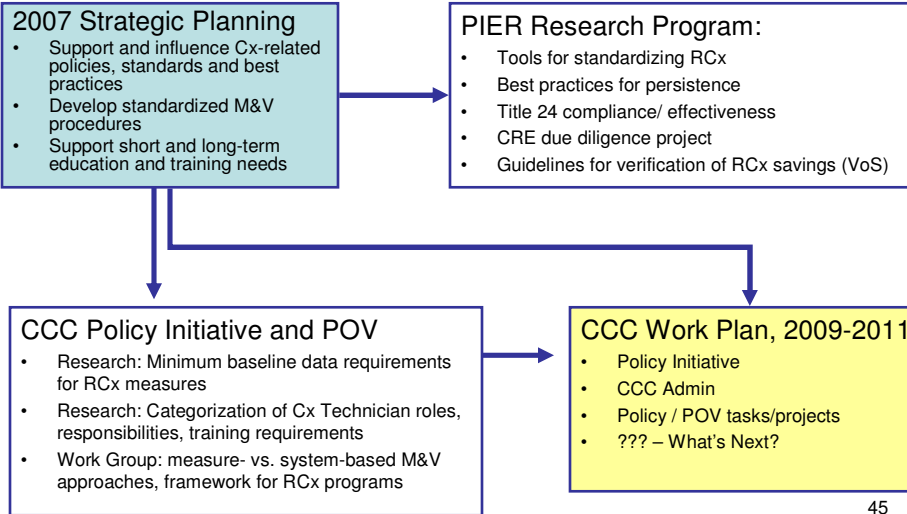
- Support and influence Cx-related policies, standards and best practices
- Develop standardized M&V procedures
- Support short and long-term education and training needs

## 2009-2011 Program Plan

*Developed in early 2008*

- **Policy Initiative**
  - Participate in policy-making processes
  - Become a resource for utilities and others
- **M&V**
  - M&V Research (CCC PIER)
  - M&V Training
  - M&V Tool development
- **Technical Research**
  - Development/testing of RCx Toolkit (CCC PIER)
  - Title 24 development and revisions
  - Title 24 research (CCC PIER)
- **Training and Education**
  - Technical training
  - Marketing, outreach and education for owners
- **Management and Admin**
  - Project planning and oversight, including “cost-share” for PIER research
  - Financial management
  - Meeting planning and facilitation
  - Marketing, outreach, website maintenance

## CCC Work Plan



## “Next” Project Ideas

CCC Strategic Plan	PIER Research Projects	Other Project Needs	Policy Support Needs
Support and influence Cx-related policies, standards and best practices	<ul style="list-style-type: none"> <li>Tools for standardizing RCx</li> <li>Best practices for persistence</li> <li>Title 24 compliance/ effectiveness</li> <li>CRE due diligence project</li> </ul>	<ul style="list-style-type: none"> <li>Research: Building Codes and Standards, Cx Req's</li> <li>Cx incentive program effectiveness, requirements, survey of national efforts</li> <li>Update/enhance CCC online resources to maintain relevancy to the market</li> </ul>	
Develop standardized M&V procedures	<ul style="list-style-type: none"> <li>Guidelines for verification of RCx savings (VoS)</li> <li>Pilot of Option B/C Guideline</li> </ul>	<ul style="list-style-type: none"> <li>Pilots of additional M&amp;V approaches developed under PIER contract</li> <li>Tool dev: modeling and uncertainty analysis tools for VoS / IPMVP methods</li> <li>Database of hardware meters, including costs</li> </ul>	<ul style="list-style-type: none"> <li>Survey of national RCx program approaches for baseline and post-implementation data requirements and savings estimation methods</li> <li>Measure- &amp; system-based M&amp;V approaches, framework for RCx programs</li> </ul>
Support short and long-term education and training needs		<p>Comprehensive Cx/RCx training:</p> <ul style="list-style-type: none"> <li>Advanced Technical Training (RCx) for providers</li> <li>M&amp;V Training: IPMVP foundation and use of VoS approaches</li> <li>Technical training for controls contractors and Cx technicians (common measures, persistence)</li> <li>Cx training for designers</li> </ul> <p>Owner education and outreach</p>	<ul style="list-style-type: none"> <li>Title 24 training</li> <li>Research: Categorization of Cx Technician roles, responsibilities, training requirements</li> </ul>

## “Next” Project Ideas

- Discussion

## Roundtable Discussion

- Stimulus Funding Opportunities and Next Steps
- Other Industry Developments

## Wrap Up

### 2009 Meeting Schedule

Date	Location	Host
May 21	SoCal - TBD	SCE
August 20	SMUD Customer Service Center	SMUD
October 22	San Diego	Sempra

## Next Meeting: Thursday, May 21

Location: TBD

Host: Southern California Edison

### Agenda Topics

- TBD
- Topics of Interest
  - Technical topics
  - Case studies – volunteers or invitations?
  - Program updates – volunteers or invitations?
  - Other needs?

## Adjourn

*Thanks to  
SMUD  
and  
Green California Summit  
for hosting the meeting today!*