



## CCC 5-Year Strategic Plan (2016-2020) v1

### Purpose of this Document

Since its inception the CCC's activities have been guided by its core purpose (see below), under the auspices of its Board of Directors and with the support of a voluntary Advisory Council. CCC Activities have been driven through the development of Annual Work Plans approved by the Board. This strategic plan has been developed in order to support consistent Work Plan development over the next five years. Development of this strategic plan has been strongly influenced by the California Commissioning Summit hosted by CCC in August 2015, which brought industry stakeholders together to discuss industry opportunities and challenges.

### Foundation

CCC's strategic plan is built upon its purpose and values, and acknowledges the California policy framework within which the commissioning industry operates. These foundational aspects are summarized below.

#### CCC's purpose (per CCC Bylaws):

- To improve building and system performance by **developing** and **promoting** viable building commissioning practices in California.
- To **facilitate** the development of cost effective programs, tools, techniques and service delivery infrastructure to **enable** the implementation of building commissioning processes.
- To **educate** and **inform** concerning building commissioning processes.
- To **identify opportunities, establish priorities and promote solutions** relating to building commissioning processes in California.

#### Core Values (CCC document, July 2001):

To further the belief that buildings can and should perform optimally as they were intended; putting politics and business opportunities aside as we look for the best paths.

#### What we do best (2015) (See Appendix A for examples):

- CCC supports free and open sharing of its own resources, and helps to publicize the resources of others;
- CCC is recognized as an unbiased source of commissioning-related information;
- CCC supports the growth of consistent, high quality RCx programs;
- CCC brings people together to ensure that commissioning remains a part of the statewide energy efficiency conversation.

#### The policy environment within which we operate (See Appendix B for more detail):

- **California Long Term Energy Efficiency Strategic Plan.** First published in 2008, updated in 2011, and currently being updated. Commissioning and RCx called out as activities to support achievement of long term strategic goals.

- **California Public Utilities Commission (CPUC) Rulemaking R.13-11-005.** This rulemaking is the umbrella for investor-owned utility program implementation. Under Phase II of R.13-11-005 programs will soon be moving to “rolling portfolios” and energy efficiency goals will be set for 2016 and beyond. CPUC also sets the policies which determine RCx measure eligibility criteria and the baseline for claiming RCx project savings.
- **Senate Bill 350 (“The Clean Energy and Pollution Reduction Act of 2015”).** Doubles California’s Energy Efficiency goal, and specifically calls out RCx as a program approach to support achievement of that goal.
- **Assembly Bill 802.** Calls for recognition of all energy savings based on normalized metered energy consumption, and calls out RCx programs as being in-scope for that approach.
- **Assembly Bill 758.** AB 758 directs the California Energy Commission to develop a comprehensive energy efficiency program for existing buildings. This program is in the early planning stage; the program’s Action Plan, published in September 2015, features RCx and specifically calls for collaboration with the CCC to make RCx standard practice.
- **San Francisco’s Existing Commercial Buildings Energy Performance Ordinance.** Since 2011 commercial buildings in San Francisco have been required to perform energy audits or commissioning every five years. San Francisco’s Ordinance takes a lead that could potentially be followed by other cities in California.
- **Title 24 Building Code.** Since 2011 commissioning for nonresidential new construction has been required under “CALGreen” (Title 24, Part 11). In 2014 these commissioning requirements were copied across to the Building Energy Efficiency Standards (Title 24, Part 6), with the additional requirement for design phase design review. Acceptance testing for installed equipment is also required under Title 24, Part 6; while this does not constitute “commissioning” as such, it is a related activity for which CCC has played an active role since its inception.

## Strategy Overview

The growth of commissioning in California has been broadly characterized by development of tools/guidelines, programmatic approaches, outreach, and training in order to achieve a consistent framework for defining industry best practice. While there will continue to be a need for these types of resources it is anticipated that continued industry growth will be largely driven at the codes/policy level. The strategic objectives below would leverage the CCC’s unique role to support the industry’s engagement in delivering high quality commissioning in alignment with the policies outlined above.

## 5-Year Strategic Objectives (See Appendix C for potential activities)

### 1. Existing Building Commissioning

- a. Support the creation of successful ‘AB 802-compliant’ utility RCx program models.
- b. Play an active role in the integration of RCx into the Energy Commission’s Comprehensive Energy Efficiency Program.
- c. Develop and/or collate resources to support public sector efforts to accelerate RCx activity.

## **2. New Construction Commissioning**

- a. Become the go-to organization for finding out current implementation status of the commissioning elements of Title 24 (ie. quality and compliance-related issues relating to existing requirements).
- b. Support the continued improvement of commissioning-related aspects of Title 24.
- c. Create consistent messaging and resources that clearly distinguish between “code compliance” and “commissioning best practice.”

## **3. Commissioning Industry Infrastructure & Resources**

- a. Support the establishment and adoption of clear qualification requirements for commissioning work in California (eg. As required by Title 24) that promote consistent high quality work.
- b. Provide a comprehensive and easily navigable suite of resources for commissioning practitioners and other stakeholders in California.
- c. Provide a forum for sharing industry best practices and advances in building technologies/strategies.

## **4. CCC Operations**

- a. Reorient the CCC around its strategic objectives and secure funding to ensure CCC’s long term sustainability.

## Appendix A: Examples of Past CCC Activities

- Hosted 93 meetings; a combination of public in-person meetings, Board meetings, and webinars;
- Presented a Whole Building workshop in 2012, leading to a summary report and supporting the creation of the whole building demonstration program;
- Convened the California Commissioning Summit in 2015, to assess the state of the industry and identify opportunities for further industry growth;
- Developed of a suite of commissioning resources such as:
  - Commissioning Guides for new and existing buildings
  - “C-BOA” savings calculation tool, adopted by several California utility programs
  - Guidelines for Verifying Savings from Commissioning Existing Buildings
  - Pump & fan savings calculation workbooks
  - Energy Charting and Metrics (ECAM) tool (co-funder)
  - The Building Performance Tracking Handbook
  - The Facility Operations Assessment Toolkit
  - Acceptance Testing infographic, bid sheet, and case study
- Conducted industry research, such as Title 24, Part 6, acceptance testing research that supported a move towards requiring certification for acceptance test technicians;
- Developed the Design Phase Design Review measure for Title 24, Part 6, through the “CASE” measure development process.
- Created and maintained a comprehensive website of tools and resources, for free download (see screenshots below).

## Verification Guidelines

Comprehensive guidelines for verifying energy savings in existing projects. Learn about verification methods, how they are applied, and how to use them.

[Learn More](#)

### TOOLS AND TEMPLATES

#### ACCEPTANCE TESTING

#### COMMISSIONING GUIDES

#### COMMISSIONING R&D

#### SELECTING A PROVIDER

#### CERTIFICATION

#### PROVIDER LIST

#### CASE STUDIES

#### LIBRARY

#### LINKS



Guidelines for Verifying Savings from Commissioning Existing Buildings



### BUILDING PERFORMANCE TRACKING HANDBOOK

This free handbook defines best practice for owners to manage building performance and describes the state-of-the-art tools available to support building optimization.

[Learn More](#)



### BUILDING COMMISSIONING IS:

The process of ensuring that systems are designed, installed, functionally tested and capable of being operated and maintained according to the owner's operational needs. Check out our resources for more information.

[Learn More](#)



### UPCOMING MEETING

The CCC regularly holds in-person and web meetings that include educational presentations and discussions related to the commissioning industry. Agendas and past presentations are available here.

[Learn More](#)

#### SIGN UP FOR NEWS

Email Address:

#### GET CONNECTED

Network with CCC members and discuss commissioning

#### MEETING INFO

[September 24, 2015](#)  
[Meeting Archive](#)

### TOOLS & TEMPLATES

[Commissioning](#)

[Existing](#)

[Building Cx](#)

## Existing Building Commissioning Resources

The Existing Building Commissioning (EBCx) Toolkit assists EBCx practitioners and building owners/managers in providing consistent, effective, and cost-efficient services.



- Guide for Commissioning Existing Buildings**—This guide presents an introduction to the goals, costs, and benefits of EBCx. It also provides detailed information on the processes, team structure and persistence strategies that lead to successful projects.
- Facility Operations Assessment (FOA) toolkit**—The FOA toolkit offers a standardized approach to determining the feasibility of EBCx for a commercial building. This toolkit can be used by property buyers to assess a potential purchase, or by anyone who wants to determine a building's potential for operations and maintenance (O&M) improvements.
- Savings Calculation Tools**—Calculate energy savings for many common EBCx measures using these Microsoft Excel® workbooks.
- Energy Analysis Tools**—Use these Microsoft Excel®-based tools to record, organize, and analyze data collected during the EBCx process.
- Guidelines for Verifying Savings from Commissioning Existing Buildings**—These guidelines provide standardized methods to calculate and verify energy savings in EBCx projects. They also assist EBCx service providers in selecting the ideal verification methodology for a given project.
- Templates and Sample Documents**—These documents provide examples of many typical EBCx deliverables and reports.

## Appendix B: Policy Environment

Below find expanded summaries of the policies cited in the CCC strategic plan, specifically calling out aspects relating to commissioning.

### *California Long Term Energy Efficiency Strategic Plan<sup>1</sup>*

The 2011 version of the EE Strategic Plan includes the following direction relative to commissioning:

- Under the goal to reach zero net energy for all commercial new construction by 2030 one action states: *“Led by the utilities’ energy efficiency programs, the Energy Commission and the BSC, in partnership with the AIA, ASHRAE, USGBC, the California Architects Board, and construction and development organizations, should promote the use of building **commissioning**, **retro-commissioning**, and ongoing building measurement and verification to validate the building performance goals of integrated design teams.”*
- Under the goal for 50 percent of existing buildings to achieve zero net energy by 2030 the EE Strategic Plan references a 2005 Energy Commission Report<sup>2</sup> which *“adopted two strategies for commercial buildings – benchmarking tools and **retro-commissioning** guidelines and implementation.”* The Strategic Plan states *“The Energy Commission’s benchmarking and **retro-commissioning** strategies must be further implemented by actions to better align commercial building benchmarking, and operations and maintenance practices with labeling and financial incentives.”* The Strategic Plan then goes on to state *“The Energy Commission’s 2005 Existing Buildings Report identified development of **retrocommissioning guidelines** by the Energy Commission as a key step in the strategy for existing buildings. The Energy Commission should develop such guidelines in the near future. The IOUs should strengthen their existing **retro-commissioning** efforts by using benchmarking information to strategically identify the best candidates for **retro-commissioning** and promote whole-building approaches and incentives. Collaboration must occur among the Energy Commission, CPUC, the building industry, and national laboratories to develop tools and strategies to further reduce energy consumption via information, behavioral strategies, **commissioning and retro-commissioning**, and operating practices. An effective communications strategy to make the business and environmental case for owners and tenants to demand high voluntary performance levels must also be delivered.*
- Under Strategy 2-5 the Strategic Plan called for development of commissioning tools and strategies. In response CCC developed C-BOA, M&V Guidelines, the Building Performance Tracking Handbook, the Facility Operations Assessment, the Design Phase Design Review measure for Title 24 Part 6.
- The Strategic Plan also references retro-commissioning as a focus area for improving agricultural irrigation, refrigeration, and process heating efficiency.
- Under a Code Enhancement section of the Strategic Plan the CPUC calls for *“Increase[d] use of building commissioning requirements for new buildings and retrofits.”* The Energy Commission

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<sup>1</sup> Available at <http://www.cpuc.ca.gov/PUC/energy/Energy+Efficiency/eesp/>.

<sup>2</sup> Options for Energy Efficiency in Existing Buildings. Available at <http://www.energy.ca.gov/2005publications/CEC-400-2005-039/CEC-400-2005-039-CMF.PDF>

has since then introduced commissioning as a requirement of Title 24 Part 6 (2013), and the CCC developed the Design Phase Design Review code measure.

- The Strategic Plan calls for local governments to “*lead by example,*” with commissioning/retro-commissioning requirements as a suggested goal. One example of this is Governor Brown’s Executive Order B-18-12 which required state agencies to incorporate building commissioning for major renovations of buildings over 5,000 square feet.

The EE Strategic Plan is apparently in the process of being updated; public review process and expected release date are not known.

### ***California Public Utilities Commission (CPUC) Rulemaking R.13-11-005<sup>3</sup>***

The CPUC’s Proposed Decision issued August 18, 2015 initiates Phase II of rulemaking R.13-11-005. Under this decision the CPUC:

- Adopts “aggressive yet achievable” energy savings goals for ratepayer-funded energy efficiency program portfolios (portfolios) for 2016 and beyond;
- Establishes a “Rolling Portfolio” process for regularly reviewing and revising portfolios;
- Updates various energy efficiency program portfolio metrics, including Database of Energy Efficient Resources values, effective January 1, 2016.

The Proposed Decision acknowledges that a “*second decision on remaining Phase II issues will follow early next year.*” Retrocommissioning is mentioned in connection with ex-ante project review and the classification of RCx as a “Retrofit Add-on (REA)” measure (the Decision notes feedback from PG&E that it “*has received several custom project ex-ante dispositions that limit its ability to pursue comprehensive retrocommissioning opportunities*”). The Decision also notes the Western HVAC Performance Alliance (WHPA) as being involved in a stakeholder process that includes HVAC system commissioning as an element.

### ***Senate Bill 350 (“The Clean Energy and Pollution Reduction Act of 2015”)<sup>4</sup>***

SB 350’s objectives include a call “*To double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation*” by 2030 (Sec 2(a)(2)). This target “*may be achieved through energy efficiency savings and demand reduction resulting from a variety of programs that include, but are not limited to...Programs of electrical or gas corporations, local publicly owned electric utilities, or community choice aggregators, that achieve energy efficiency savings through operational, behavioral, and **retrocommissioning** activities.*” (Sec 6(d)(8))

SB 350 specifically calls upon the California Public Utilities Commission to review and update its policies, instructing that the commission shall, “*Authorize programs to achieve deeper savings through operational, behavioral, and retrocommissioning activities.*”

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<sup>3</sup> Proposed Decision on Phase II of Rulemaking R.13-11-005. Available at <http://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=154225993>

<sup>4</sup> SB 350 available at [https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill\\_id=201520160SB350](https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350).

### ***Assembly Bill 802<sup>5</sup>***

AB 802 amends Section 381.2 of the Public Utilities Code; the amendments state that the CPUC “...shall, by September 1, 2016, authorize electrical corporations or gas corporations to provide financial incentives, rebates, technical assistance, and support to their customers to increase the energy efficiency of existing buildings **based on all estimated energy savings and energy usage reductions, taking into consideration the overall reduction in normalized metered energy consumption as a measure of energy savings.** Those programs shall include energy usage reductions resulting from the adoption of a measure or installation of equipment required for modifications to existing buildings to bring them into conformity with, or exceed, the requirements of Title 24 of the California Code of Regulations, as well as operational, behavioral, and **retrocommissioning activities reasonably expected to produce multiyear savings** ... The commission shall authorize an electrical corporation and gas corporation to count all energy savings achieved through the authorized programs created by this subdivision, unless determined otherwise, toward overall energy efficiency goals or targets established by the commission.”(AB 802 Sec 6(b)).

### ***Assembly Bill 758<sup>6</sup>***

AB 758 requires the Energy Commission to “develop a comprehensive program to achieve greater energy savings in the state’s existing residential and nonresidential building stock.” In September 2015 the Energy Commission released the final version of the Existing Buildings Energy Efficiency Action Plan<sup>7</sup>, after a period of public review. The Action Plan does not call for retrocommissioning to be mandatory but suggests that it may be considered as a mandatory measure in the future (based on “Evaluation of disclosure policy effectiveness within 2 –5 years of implementation for each sector”).

The training section of the Action Plan suggests that “Training and certifications for energy auditing should include the scope of retrocommissioning.” Strategy 3.3.6, Special Skills Training, states “Work with the California Commissioning Collaborative (CCC) to integrate retrocommissioning curricula into core WE&T training and education programs” and the related metric is “RCx is standard practice for buildings 25,000 sf and bigger by 2020.”

### ***San Francisco’s Existing Commercial Buildings Energy Performance Ordinance<sup>8</sup>***

Since 2011 San Francisco has required all buildings ≥50,000 square feet to undergo an ASHRAE Level 2 audit every five years; retrocommissioning is suggested as a qualifying alternative and is “encouraged” for large facilities and buildings with complex systems. Based on a 2015 presentation<sup>9</sup>, of the almost 500 buildings that have complied with the audit requirement, only a handful documented retrocommissioning as their compliance path. A 2015 report<sup>10</sup> documented the value of

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<sup>5</sup> AB 802 available at [https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill\\_id=201520160AB802](https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB802).

<sup>6</sup> AB 758 text available at [http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill\\_id=200920100AB758](http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200920100AB758).

<sup>7</sup> Existing Buildings Energy Efficiency Action Plan. Available at <http://www.energy.ca.gov/2015publications/CEC-400-2015-013/CEC-400-2015-013-D.pdf>

<sup>8</sup> Details at <http://www.sfenvironment.org/energy/energy-efficiency/commercial-and-multifamily-properties/existing-commercial-buildings-energy-performance-ordinance>.

<sup>9</sup> CCC Webinar by Barry Hooper of SF Environment. Available at <http://www.cacx.org/meetings/>.

<sup>10</sup> San Francisco Existing Commercial Buildings Performance Report 2010-2014. Available at: <http://sfenvironment.org/download/san-francisco-existing-commercial-buildings-performance-report-20102014>

retrocommissioning savings opportunities as having a net present value (NPV) of almost \$30 million, which suggests that retrocommissioning measures were commonly identified through energy audits (the high NPV would not be possible solely from the small number of projects denoted as “retrocommissioning”).

### ***Title 24 Building Code***

Building commissioning features in Chapters 6 (Building Energy Efficiency Standards) and 11 (California Green Building Standards Code, or “CALGreen”) of the California Code of Regulations. The requirements call for commissioning of nonresidential new construction, and set specific activities and commissioning deliverables. CALGreen introduced the commissioning requirements in 2011, and these were copied over to Chapter 6, with the addition of design phase design review, effective July 1, 2014.