The History of Commissioning

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In the beginning...

- Public Works Canada begins to use Cx in its project delivery system.
• Disney World includes cx in the design, construction and start-up of the Epcot Center
• University of Wisconsin, Madison begins to offer Cx courses

• ASHRAE HVAC Cx Guideline Committee is formed
Texas LoanStar Program applies monitoring and existing building Cx
• 1<sup>st</sup> edition of BPA’s Building Cx Guideline Published
• Montgomery County, Maryland institutes Cx Program
• University of Michigan establishes facilities evaluation and Cx group

1989
• Electric utilities begin to require Cx on energy efficiency installations
• BPA tests Commissioning Guideline on buildings in Portland.
• 2nd edition of the BPA Building Cx Guidelines Published
• BPA and PECI convene Cx Roundtables
• US GSA develops HVAC Functional Inspection & Testing Guide
1981

1984

1988

1989

1991

1992

1977

1993

NCBC

1993

NCBC

- Pacific Energy Center Offers it’s Cx Course
- National Grid develops Cx guide for commercial customers
- Army Corps develops Cx specifications
- University of Washington begins to require Cx and develops Cx specs

- 1st NCBC
- Hosted by Sacramento Municipal Utility District (SMUD)
- The conference has approximately 120 attendees. Attendees spent time defining commissioning and understanding who the stakeholders were in the process.
1981

1984

1988

1991

1992

1993

1994

NCBC

- Public Works Canada published Project Commissioning Manual
- Florida Design Initiative introduces e-Design Online.
- Army Corp develops HVAC Cx Procedures
- SMUD offers incentives to owners who develop Cx Plans

1994

NCBC

- 2nd NCBC
- Hosted by Florida Design Initiative
- Much of this conference was spent addressing utility concerns with the performance of funded energy efficiency measures and whole building approach to Cx.
**1981**
- Energy Star Building Partnership Program includes Cx

**1984**
- US GSA publishes Building Cx Guide and initiates Cx Program

**1988**
- State of Washington Requires Cx

**1989**
- 3rd NCBC • Hosted by Energy Center of Wisconsin
  - This conference identified barriers to making commissioning business as usual. Defining Cx was complete now the hard work of making it “Business as Usual” had begun.

**1991**
- NCBC

**1992**

**1993**

**1994**

**1995**
1981
- ASHRAE publishes Guideline 1-1996: The HVAC Cx Process
- EPRI conducts market study of firms providing Cx services.
- International Measurement & Verification Protocols recommends Cx in all projects
- State of TN begins EBCx program for state buildings

1991
- 4th NCBC
- Hosted by Florida Design Initiative
- Participants worked to further define the roles of the various stakeholders. Additionally this year the “Great Debate Session” was a discussion on certification for CxAs.

1996
- Initial Formation of the Northwest Building Commissioning Association. Six NW members started the process of forming an association.
- FEMP publishes Model Cx Plan Guide Specification
- NEEA conducts Commissioning Baseline and Market Research Study
- Federal EBCx demonstration projects are conducted in the NW

- 5th NCBC
- Hosted by Southern California Edison
- Attendees discussed the coordination of current efforts in the industry as we work to make Cx “Business as Usual”. The “Great Debate Session” addressed the topics of: Do we really need the additional layer of Cx and the role of the contractor in the Cx process.

- Bylaws and the Essential Attributes were created
- US DOE sponsors the National Strategy for Building Cx.
- LEED criteria includes Cx
- WA State Board of Education recommends matching funds for Cx of K-12 Schools
- GSA announces Comprehensive Building Cx Program.
- MaterSpec begins to integrate Cx specifications
- NEEA Funds Cx of Public Bldgs
- Seattle Energy Code incorporates Cx for HVAC and lighting controls.

- 6th NCBC
- Hosted by Florida Design Initiative
- The conference was held at the Disney’s Coronado Springs Resort where the discuss centered on Cx and Benchmarking, Cx and the design phase. Also presented this year was the DOE/FEMP National Strategy for Building Commissioning

- BCA incorporated as a not-for-profit trade Association with funding from NEEA
- State of Tennessee begins New Construction Commissioning Initiative.
- SMUD offers EBCx program
- ASERTTI Cx training curriculum is used in seven state workshops.
- ComEd launches Maintenance Operations and Repairs Program (MORES) which includes EBCx and begins offering Cx as one of its Advisory Services.

- 7th NCBC
- Hosted by Portland General Electric
- The 1st Benner Award is presented to Charles Dorgan in recognition of his outstanding work making Cx “Business as Usual”
- The participants spent time in small working groups discussing the BCA Attributes as an industry wide program, whole building Cx process, evaluating Cx scope and investment.

- The NW BCA becomes an international trade association.
- Six US regions are created.
• PG&E publishes California Cx Market Characterization Study
• CA Cx Collaborative is Formed
• PG&E, NYSERDA, Xcel include Cx in their programs
• ARTI launches research on automated Cx activities.

• 8th NCBC
• Hosted by the Sprint World Headquarters Cx Team
• 2nd Benner Award to Carl Lawson
• Hot topics this year included Guidelines and Standards, utility programs, diagnostic tools, training for CxA and building operators, Cx for Green Buildings

• BCA
• Develops first training on the new construction process
- CERL produces Commissionpedia CD-ROM
- States of Massachusetts and Hawaii incorporates aspects of Cx in bldg. code
- PIER Project investigates persistence of Cx

2001

- 9th NCBC
- Hosted by GPU Energy
- 4th Benner Award presented to Karl Stum
- Hot topics include Cx in mission critical bldgs., discussions on CxA liability risk, and the need for (or not) certifications for CxA

- First strategic plan developed to create a vision and plan for future development
- PIER Program funds development of Functional Testing Guide
- Energy Design Resources publishes online energy design tools and resources
- NYSERDA, FEMP, and AABC publish Cx guidelines

10th NCBC
- Hosted by ComEd
- 4th Benner Award presented to Rick Casault and Emory University
- This year’s conference included a site tour of the Adler Planetarium and sessions on LEED Cx, management strategies for the Cx process and emerging tools for Cx

BCA
- BCA hires a management company to help them develop the organization
**Cx INDUSTRY**
- SDG&E offers EBCx program
- PG&E publishes Cx Test Protocol Library
- CCC develops online library of Cx-related research, articles, brochures and white papers

**NCBC**
- 11th NCBC
- Hosted by Southern California Edison
- 5th Benner Award presented to ASHRAE
- Attendees participated in an on-site existing building cx demonstration project.

**BCA**
- Development of Committee Structure
- Created an internship program to help new providers in the field

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**Timeline**
- 1977
- 1981
- 1984
- 1988
- 1989
- 1991
- 1992
- 1993
- 1994
- 1995
- 1996
- 1997
- 1998
- 1999
- 2000
- 2001
- 2002
- 2003

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**Images**
- Building Commissioning Association (BCA)
- Notre Dame Commissioning Mentorship (NCBC)
- Commissioning Industry (Cx Industry)
MBCx Program launched by UC/CSU/IOU Partnership
LBNL releases *The Cost-Effectiveness of Commissioning*
USGBC introduces LEED-EB
12th NCBC
Hosted by Emory University
6th Benner Award presented to Chad Dorgan
“The Great Debate” this year included presentations by the current Cx Certification groups. The conference also had several tours of the Emory Campus and its systems.

BCA Launches the CCP program
Chapters are formed in the Southeast and Southwest
ASHRAE publishes Guideline 0: The Cx Process
ASHRAE begins developing Guideline 1.2: The Cx Process for Existing HVAC&R Systems
NEMI publishes a national study of marketing potential for new building commissioning

13th NCBC
Hosted by NYSERDA
7th Benner Award presented to Paul Tseng and NYSERDA
This year marked the addition of more technically focused sessions on fire life safety, Cx geothermal Heat Pumps, Air Capture Hood Measurement Basics, and building envelop

Chapters are formed in the Northwest, Mid-Atlantic, and Central
A training partnership with the University of Wisconsin is formed
• California utilities roll out large-scale EBCx programs
• PIER publishes *Specifications Guide for Performance Monitoring Systems and Functional Testing and Design Guides*
• NIBS Guideline 3 is published covering the building enclosure.

• 14th NCBC
• Hosted by Pacific Gas and Electric
• 8th Benner Award presented to Mary Ann Piette and USGBC’s LEED Green Building Rating System
• Technical sessions continue with a ½ session on DDC Systems as Cx Tools, Underfloor Air Distribution, use of data loggers, Cx of lighting

• The Northeast Chapter is formed
• The first Tools and Tech Expo is held in Austin, TX
• First Release of the BCA Templates designed to help move the industry forward
- North Carolina includes Cx in a bill to increase energy efficiency in state buildings.
- Massachusetts energy efficiency standards for state buildings require 3rd party Cx for projects over 20,000 sf.

15th NCBC

- Hosted by ComEd
- 9th Benner Award presented to Dan Turner and the BCA
- Highlights from this conference include a track on the Business of Cx and the Amazing Finding Challenge

BCA

- BCA Convention and Expo held in Jacksonville, FL
- Membership increases more than 30%
USGBC restructures LEED-EB to LEED-EBOM.

ComEd launches large-scale EBCx and retrofit initiative.

CCC expands EBCx Toolkit to include the Spreadsheet Tools

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ComEd launches large-scale EBCx and retrofit initiative.

CCC expands EBCx Toolkit to include the Spreadsheet Tools

16th NCBC

Hosted by Southern California Edison

8th Benner Award presented to Michael English and the CCC

This was the year of the Town Hall Meeting.

Best Practices for Existing Buildings is published

BCA Convention and Expo in Long Island, NY

- 17th NCBC
- Hosted by BetterBricks
- 11th Benner Award presented to Don Frey
- Highlights include metering and performance metrics, a showcase of controls manufactures, and discussion on the Smart Grid and Cx

- Eastern Canada Chapter is Formed
- BCA Convention and Expo in Columbus, OH
PECI receives $749K Stimulus Grant for development of training curriculum for CxAs and auditors.

18th NCBC
Hosted by ComEd
12th Benner Award presented to Carl Lundstrom, PE, CCP
Town Hall meeting to discuss the downturn in the economy and certification

Texas Chapter Formed
Formal Liaisons are formed with AIA, ASHRAE, USGBC
- California Green Bldg. Standards Code
- International Green Construction Code
- Phoenix, AZ Green Construction Code
- ASHRAE approved the 202 Standard Code Committee

- 19th NCBC
- Hosted by PECI in conjunction with GovEnergy
- This was the first year of partnering with another conference.

- ACP Unveiled
- Best Practices-New Construction Published
- Developed 3-Day Training for new NYC Building Codes
Hot Topic this year – Who is qualified to provide Cx?

20th NCBC
Hosted by BCA & PECI

In-House Staff – with Executive Director
California and Western Canadian Chapters are formed
Co-host the NCBC