



## Certified Building Commissioning Professional<sup>®</sup> Training Program

*Building commissioning is the process of ensuring that new building systems are designed, installed, tested, and capable of being operated and maintained according to the owner's intent, requirements, and operational needs. Commissioning also can restore existing buildings to high productivity through renovation, upgrade and tune-up of existing systems.*

### About this Program

This training program provides an in-depth look at effective energy-efficient strategies for building commissioning. Over four days, attendees gain a clear understanding of building commissioning concepts, processes, and project management.

### What Will You Learn?

- Learn the commission process and how building owner requirements apply for efficient operation and desired occupancy.
- Learn proven steps, milestones, and practices needed to manage a project, including the considerations needed to bring all functional teams together for a common goal.
- Learn about important concepts in testing, renovation, and service to maintain efficient building systems.
- Learn valuable lessons from successfully completed projects at hospitals, data centers, airports, university campuses, school districts, commercial buildings, government properties, district heating and cooling, and research facilities.

### At-a-Glance

- » This training program prepares attendees to take the Certified Building Commissioning Professional<sup>®</sup> (CBCP<sup>®</sup>) exam.
- » This program is held over 4 days.
- » You earn 2.5 CEU | 25 PDH | 5.0 AEE Credits for completing this program.

### Key Takeaways

- » Work through practical examples to demonstrate the topics and procedures covered.
- » Review the various areas of the Body of Knowledge associated with AEE's certification exam.
- » Discuss how to apply what you have learned to your business and applications.
- » Leave with a course workbook that will become an invaluable desk reference.

### Registration

Candidates should contact their local AEE approved training provider for information about available training programs, the certification application process, exam registration, and associated fees. To find your local training provider visit

[aeecenter.org/training](http://aeecenter.org/training)

# Certified Building Commissioning Professional® Training Program

## Who Should Attend

The program is of great value to individuals responsible for building commissioning projects, whether directly managing these projects, or interacting with contractors and consultants that are undertaking these projects on your company's behalf. Attendees of this program have included energy engineers, energy managers, building owners, plant engineers, maintenance engineers, facilities managers, and energy consultants.

## Course Outline

- Building Commissioning History, Philosophy and Fundamentals
- Introduction to Building Commissioning
- Prominent Resources of Building Commissioning Guidelines and Organizations
- New Building Commissioning
- LEED® BD+C Commissioning
- Existing Building Commissioning (EBCx) and Retro-Commissioning (RCx)
- LEED® O+M Commissioning (LEED® Version of RCx)
- Building System Cx Know-How & RCx In-Depth
- Best Practices
- Class interactions, discussions and brain-storming Session
- Commissioning Software Tools
- Smart Building Commissioning

## Our Instructors

Each member of our team of professional instructors provides their own experience and focuses on specific areas essential to building commissioning. Their combined teaching and industry experience allows them to deliver information that is of the most relevance and practical value to attendees.

## Certification Eligibility

The prerequisites to qualify for the certification process take into account the diverse education and experience applicants may have. Each candidate must meet the required criteria at

[aeecenter.org/cbcp](http://aeecenter.org/cbcp)

## Global Training Programs

For a complete list of AEE training programs delivered globally visit

[education.aeecenter.org/global](http://education.aeecenter.org/global)

## Accreditation and Recognition

The Certified Building Commissioning Professional® (CBCP®) accreditation is one of the most globally respected in the field of energy management for buildings and facilities. For a full list of organizations that have recognized or accredited the CBCP® program visit

[aeecenter.org/cbcp](http://aeecenter.org/cbcp)

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## Detailed Agenda

### Intro to Commissioning (Cx)

- Cx Positive Impacts & Energy Savings
- Lifecycle Cost Comparison
- Keys to Successful Cx
- ASHRAE & TAB Related Guidelines
- Helpful Resources

### Pre-design Phase

- ASHRAE Guideline 0
- Phases of Commissioning
- Standard Scope of Cx Services
- Owners Project Requirements

### Design Phase

- Goals & Deliverables for Cx Activities
- Basis of Design Documentation
- Peer Reviews (Comment Tracking Forms)
- Cx Specifications
- General Commissioning Requirements

### Construction Phase

- Submittal Reviews
- Pre-functional & Functional Tests
- Issues Logs
- Statistical Sampling (Verification)
- Project Coordination

### Operation Phase

- Assisting with Training
- Issue Resolution & Minimization
- Deferred / Seasonal Testing / Seasonal Trend Reviews
- Energy Consumption Review
- Issuing Final Cx Report

### Existing Building Commissioning (EBCx)

- CBCx vs. EBCx
- Benchmarking
- EBCx Process (Costs & Benefits, Tracking Results)
- Monitoring Based Cx
- EBCx vs. Energy Auditing
- Phases of EBCx
- Building Automation Systems (BAS)
- Trend Logs

### Common EBCx Opportunities

- Scheduling
- Simultaneous Heating / Cooling
- Sensor, Actuator, & Setpoint Improvements
- TAB Opportunities

### Energy Engineering for EBCx

- Utility Bill Analysis
- Energy Engineering Calculation Methods
- EBCx Economics
- Sample EBCx Project Results
- Energy Star Technical Reference Materials

### LEED Commissioning

- Building Design & Construction (BD+C)
- Building Operations & Maintenance (O+M)
- Energy & Atmosphere Prerequisites & Credits

### TAB Fundamentals

- Engineering Fundamentals
- Terminology & Calculations
- TAB Procedures (Checklist)
- NEBB Helpful Resources

### Reviewing TAB Reports

- Early Steps & General Suggestions
- Specification Review
- Technical Review
- System Analysis
- Field Verification
- Sample Reports & Resources

### Electrical Systems Commissioning

- Requirements & Methods
- Levels of Cx
- Design Review
- Developing Cx Plan
- Cx Tools & Execution
- Variable Frequency Drives (VFDs)
- Delivered Product

### Building Envelope

- Design & Construction Document Review
- Lab & Onsite Performance Testing
- Construction Visual Inspecting
- ASHRAE Guideline 0-2005
- Test Methods & Standards

### Measuring Equipment

- Testing Preparations & Precautions
- Common Measuring Tools

### TAB Myths & Troubleshooting

- Common Myths Debunked
- Problem Solving (Troubleshooting)

### HVAC Project Troubleshooting

- Important Considerations
- Helpful Solutions