Building a Better Clean Energy Workforce

Tuesday, May 16, 2017
3:45-5:00 pm
Panelists

- Roger Grant, National Institute of Building Sciences
- Liz Fischer, Building Commissioning Certification Board
- Matt Nelson, ASHRAE
Roger Grant

National Institute of Building Sciences
## Agenda and Speakers

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**Moderator:** Roger Grant, National Institute of Building Sciences (NIBS)

**Session speakers:**
- Liz Fischer, Building Commissioning Certification Board
- Matt Nelson, American Society of Heating, Refrigerating, and Air-conditioning Engineers (ASHRAE)

**Session lead:** Priya Swamy, Department of Energy
The Better Buildings Initiative is a broad, multi-strategy initiative to make commercial and industrial buildings 20% more energy efficient over the next 10 years. DOE is currently pursuing strategies across five pillars to catalyze change and accelerate private sector investment in energy efficiency.

The pillars are:
- Developing Innovative, Replicable Solutions with Market Leaders
- Making Energy Efficiency Investment Easier
- Improving Effectiveness of Federal Incentives
- Federal Government Leading by Example
- Developing a Skilled Clean Energy Workforce

www.eere.energy.gov/workforce

www.nibs.org/cwcc
Value of Energy Management

• Energy efficiency improvements with very favorable payback periods often do not get implemented due to other operational priorities
• Energy efficiency projects that are implemented may not be sustained due to lack of supportive operational and maintenance practices
• Commissioning or re-commissioning new equipment or systems only addresses a point in time
• The only constant in the life of most commercial buildings is change
  - personnel, space use and configuration, operating hours -

Problem: Energy efficiency is not integrated into daily management practices.

Solution: Staff at all levels within an organization need to be engaged in the management of energy on an ongoing basis.
Energy Savings Results - BOC

- Building Operator Certification (BOC®) positive documented energy savings
- Since 2000, independent third-party evaluators have assessed and documented BOC’s energy savings impacts
- BOC Energy Savings FAQ [www.theBOC.info](http://www.theBOC.info)
Workforce Barriers

• Patchwork of Technical Standards, Codes and Work Specifications
  – Not incorporated into workforce programs

• Lack of National Skill Standards for Emerging Energy-Related Jobs
  – Need comprehensive Job Analyses based on clear technical standards

• Nonaligned Training Content, Platforms, Programs
  – Training not always based on a Job Analysis; not up to date with technology and best practices
  – Availability, cost, and quality are also concerns

• No Infrastructure to Support National Credentials
  – Multitude of certificate and certification programs (some overlapping or duplicative)

• Minimal Uptake of Accreditation Standards for Training and Certification Programs
  – Lack of demand because value proposition is not compelling

• Lack of Recognition of Quality Workforce Credentials
  – Employers and policymakers have a difficult time identifying quality workers
Identifying High Quality Training and Certification Programs
Third-party Accreditation and DOE Recognition

Who are the skilled and qualified workers in advanced energy occupations?

- **Define Skills**: Voluntary Better Buildings Workforce Guidelines, defined by industry and government
- **Verify**: Third-party accreditation of certification or training programs
- **Recognize**: DOE recognition of accredited programs—consumer trust in program quality and workforce performance

CONFUSION ➔ CONFIDENCE
Program structure
A Government and Industry Partnership to Advance Commercial Workforce Quality

NIBS* CWCC** develops Better Buildings Workforce Guidelines

Industry Technical Standards

Job task analyses***

Guidelines for certification programs (common certification schemes)

Guidelines for certificate programs (content outlines and learning objectives)

Which are implemented by:

Industry certification bodies

Certificate program providers

Which seek accreditation under appropriate standard:

ISO/IEC 17024

IREC 14732 and/or others TBD

Department of Energy recognizes accredited programs meeting voluntary Better Buildings Workforce Guidelines

*National Institute of Building Sciences
**Commercial Workforce Credentialing Council
***Building Energy Auditor; Building Commissioning Professional; Energy Manager; Building Operations Professional; Facility Manager (Government and FBPTA focus)
BBWG – A DOE Recognized Program

Criteria for recognition:
1) ANSI/IAS accredited per BBWG JTAs & schemes
2) Fill out online form with basic information on program on Workforce Partnership website
Update on Accreditation and Recognition

DOE Recognition

Third-party Accreditation

The Department of Energy recognizes certification programs that are aligned with the Better Buildings Workforce Guidelines and which have received qualified accreditation by the American Standards National Institute, International Accreditation Service, or other qualified accreditation bodies who are in compliance with ISO/IEC 17024:2012. Once programs have received accreditation, they can submit their request for recognition through an online form.

Department of Energy Recognized Programs

Association of Energy Engineers, CEM® - A DOE Recognized Program
The Certified Energy Manager is the first recognized program under the Better Buildings Workforce Guidelines. Certified Energy Managers are individuals who optimize the energy performance of a facility, building or industrial plant. The CEM® is a systems integrator for electrical, mechanical, process and building infrastructure, analyzing the optimum solutions to reduce energy consumption in a cost effective approach.

Association of Energy Engineers, CEA® - A DOE Recognized Program
The Certified Energy Auditor program is the first energy auditing program recognized under the Better Buildings Workforce Guidelines. Certified Energy Auditors are individuals who evaluate and analyze how energy is being used in a facility, identify energy conservation opportunities and make recommendations where consumption can be reduced or optimized.

Building Commissioning Association, CCP - A DOE Recognized Program
The Certified Commissioning Professional is the first commissioning certification to be recognized under the Better Buildings Workforce Guidelines. Certified Commissioning Professionals are individuals who lead, plan, coordinate and manage commissioning for new and existing buildings.

AABC Commissioning Group, CxA - A DOE Recognized Program
The Certified Commissioning Authority (CxA) certification is available to independent professionals who implement commissioning processes in new and existing buildings. They serve building owners’ best interests by delivering facilities with systems that perform as intended.

https://betterbuildingssolutioncenter.energy.gov/workforce/participating-certifying-organizations
Certificate Program Guidelines

• Recognized 3rd party standards
  – ANSI/ASTM E-2659
  – IREC 14732

• Certificates vs. Certifications

• Accreditation Requirements

• Planning for Accreditation

• Achieving DOE Recognition
Outreach and Deployment

1. Support credentialing bodies developing jobs that align with BBWG jobs

2. Identify and build demand for Energy Efficiency Job Opportunities
   a. Commercial Buildings Energy Efficiency Workforce Labor Market Analysis
   b. Create pull through procurement language, policies and regulations

3. Education program development to align with the BBW jobs
   a. Course Outlines and Learning Objectives
   b. Embedding Energy Efficiency Jobs in Community College Curriculum

4. Certificate program for education supporting each BBW job
Analyzing Building Energy Efficiency Job Opportunities Report – Key Findings

- Earn 14.3% above national average and are projected to grow at 9.6% from 2013 – 2018
- Provide opportunities for workers with less than a BA degree and with limited experience
- Limited academic and training programs
- Some of the jobs do not have educational programs to meet their requirements
- 46-64% of 2014 workers across each job are expected to retire over the next 20 years
- Predominance of men and white workers in the sector
- Opportunity for developing training programs to prepare new and diverse workers
Additional Market Pull

City Energy Project: Audit and Commissioning Ordinances

Federal Buildings Personnel Training Act

Public Law 111–308
111th Congress

An Act

To provide for the training of Federal building personnel, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Federal Buildings Personnel Training Act of 2010".

SEC. 2. TRAINING OF FEDERAL BUILDING PERSONNEL.

(a) IDENTIFICATION OF CORE COMPETENCIES.—Not later than 18 months after the date of enactment of this Act, and annually thereafter, the Administrator of General Services, in consultation with representatives of relevant professional societies, industry associations, and apprenticeship training providers, and after providing notice and an opportunity for comment, shall identify the

Employers, Building Owners, Certification Programs and more
Federal Government Adoption

• The U.S. General Services Administration is committed to adopting the BBWG and incorporating these qualifications as contributing to compliance by federal and contractor personnel who operate and maintain federal buildings.

• GSA recognizes these standards as contributing to compliance by federal and contractor personnel with the requirements of the Federal Buildings Personnel Training Act of 2010 (FBPTA) in the roles of energy management, building operations, and commissioning.

• As credentials are established and accredited to these standards they will be added to annual updates to FBPTA Core Competencies and Curriculum posted at the Facilities Management Institute and may ultimately replace the FBPTA-Aligned qualifications for those roles.
Integrating BBWG into Curriculum
BBWG/CWCC

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Building Commissioning Certification Board
Why Accredit Your Certification?

Setting the standard for commissioning certifications

Liz Fischer, Certification Director
Building Commissioning Certification Board
Who we are:

Building Commissioning Association (BCxA) – Founded 1998

• One of the findings from the Road Mapping Session at NCBC 1998 sponsored by DOE

• With funding from the Northwest Energy Efficiency Alliance, the founders created the BCxA Attributes

• Promoting/advocating for the commissioning process and commissioning providers

• Educating and training all stakeholders

• Creating and maintaining Best Practice documents and other Cx resources
Who we are:

Building Commissioning Certification Board (BCCB)

• Founded in 2004 by the BCxA to be an independent certification body

• Providing Commissioning Certifications at the appropriate level for the market needs
Who we are:

BCA Scholarship Foundation

- Founded in 2014
- Providing Scholarships to:
  - Current university/trade school students
  - Current employees in the Cx field
- To date we have provided $8,500 in scholarships to 6 individuals
What is a Commissioning Provider (CxP)

A Building Commissioning Provider is an individual who leads, plans, coordinates and manages a commissioning team to implement commissioning processes in new and existing buildings.
A little history…

• 2002 a Certification Committee formed by the BCxA
• The BCCB was formed and received funding from the Northwest Energy Efficiency Alliance
• Program developed with psychometric consultants to the ISO 17024 standard
  • Job Task Analysis
  • Test Development
  • Eligibility Requirements
  • Beta Testing
• 2004 Program rolled out to public
Challenges in the Market

• No business case for commissioning providers (CxP) to get certified
• CCP perceived as too difficult to obtain
• Plenty of inexpensive and easy-to-get certifications
What changed?

- Voluntary building rating systems
- Unhappy Owners
- Confusion in the market about Cx – definition, value
- Contracting practices not aligned
- Call to consolidation of certifications
- Better Buildings Program created the Commercial Workforce Credentialing Council (CWCC) with the National Institute of Building Sciences
  - Job Task Analysis
  - Scheme for Certification
2015 BCxA Survey

- In 2015, 83% of respondents supported having an accredited certification for CxPs

![Bar chart showing the percentage of respondents planning to get a Cx Certification and the value in obtaining work in 2015 and 2016.](chart.png)
80% always hire a third party provider
60% require a certification

Top Three Quality Challenges
1. Quality of CxP - qualifications
2. Thoroughness of overall Cx efforts – scope of work
3. Number of unqualified Cx firms due to rise in Cx projects
The Move to ANSI Accreditation

BCCB revamped the program to meet the revised ISO 17024:2012 standard and the terms of the licensed documents from CWCC

• We cross-referenced our current CCP certification with new standard
• Adjusted our test to the new blueprint
• Built our new Policies and Procedures
If you are considering accreditation:

- Have strong market research to justify the need and expense
- Prepare staff and current certification holders to expect and plan for changes
- Timing – 12-24 months to prepare
- Don’t underestimate the cost
- Budget for future audits by ANSI
Benefits

• Quality Program
• Elevates you above the competition
• Recognition from a respected third party like ANSI
• International Recognition
• With the Better Buildings recognition we also have Federal Government acknowledgment
Today

BCCB is seeing:

• Increase in the number of individuals seeking certification

• Increase in the number of companies requiring accredited certifications, including – and sometimes specifically naming – the CCP

• ICC Energy Codes and individual states are specifying accredited commissioning certifications as qualified to perform certification
Thank You

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Building a Better Clean Energy Workforce

Matthew J. Nelson, PE, CPMP, BEAP
Tuesday, May 16, 2017
Better Buildings Summit 2017
ASHRAE advances the arts and sciences of heating, ventilation, air conditioning and refrigeration to serve humanity and promote a sustainable world. With more than 57,000 members from over 132 nations, ASHRAE is a diverse organization representing building system design and industrial processes professionals around the world.

How do we lead?

- Develop Standards
- Publish Technical Reference Material
- Organize Conferences and ALI Courses
- Certify Built Environment Professionals
Building a Better Clean Energy Workforce

Our Professional Certifications

• HBDP - High-Performance Building Design – ANSI
• HFDP - Healthcare Facility Design
• OPMP - Building Operations
• BEMP - Energy Modeling – ANSI
• BEAP - Energy Assessment - ANSI
• BCxP - Building Commissioning – (CPMP ANSI)
2016 “Value of Certification” Survey

The benefits of getting certified are many and this is what respondents had to say:

- I'm proud to hold my ASHRAE certification (94%),
- ASHRAE certification validates my level of specialized knowledge and ability (89%),
- ASHRAE Certification is a good barometer of how serious someone is about their career (83%)
- ASHRAE certification helps differentiate me from my peers (82%),
- Studying for the ASHRAE Certification Exam enhanced the breadth and depth of my knowledge and ability (77%),
- In my field, ASHRAE Certification has provided me with greater professional recognition (73%).
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Better Building Workforce Guidelines

- Important to support the initiative
- Sets a competence level / expectation
- Benefits our certificate holders
- Group effort in terms of promotion
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Energy Assessment Certification Path

Where we started: ANSI, complete certification

What Changed:
- Adopted the BBWG Scheme
- Performed a crosswalk
- Updated test form
- Included changes with our annual maintenance
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Building Commissioning Certification Path

Where we started: ANSI for CPMP, complete certification

What Changed:
- Adopted the BBWG Scheme
- **Performed a crosswalk (Road block)**
- Identified holes, Developed questions, New test form
- Changed Name, Educated current certificants
- Navigated ANSI process a second time
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The Road Ahead

BEAP – Energy Assessment Certification
- ANSI validation letter (June 2017)
- DOE recognition

BCxP – Building Commissioning Certification
- New Test is in use
- ANSI accreditation and validation (June 2017)
- DOE recognition
- CPMP is being phase out January 1, 2020
Thank You

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