



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

BUILDING A BETTER CLEAN ENERGY WORKFORCE

Better Buildings Summit

May 16, 3:45-5:00 pm



**Commercial Workforce
Credentialing Council**
a council of the National Institute of Building Sciences



**National Institute of
BUILDING SCIENCES**

An Authoritative Source of Innovative Solutions for the Built Environment

Agenda and Speakers

3:45 – 3:50	Introductions and Opening Remarks	Roger Grant
3:50 – 4:00	Overview and Update	Roger Grant
4:00 – 4:20	Building Commissioning Association Experience with DOE Recognition Program	Liz Fischer
4:20 – 4:40	ASHRAE Plans for Seeking Accreditation and DOE Recognition	Matt Nelson
4:40 – 4:55	Discussion	All
4:55 – 5:00	Wrap Up	Roger Grant

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

Better Buildings Workforce Program



BETTER BUILDINGS WORKFORCE

U.S. DEPARTMENT OF ENERGY

Home Framework Resources Projects Participate



Interested in aligning your program with Better Buildings Workforce Guidelines: [Download Job Task Analyses and Certification Schemes at the NIBS resources site](#)

BETTER BUILDINGS BULLETIN

Enter email address

[VIEW PREVIOUS EDITIONS](#)

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

ABOUT COUNCILS & PROJECTS MEMBERSHIP RESOURCES NEWS EVENTS CONTACT

Commercial Workforce Credentialing Council

a council of the National Institute of Building Sciences

COMMUNITY SEARCH Enter search criteria...

About Councils Boards Membership Resources

About the Council

The National Institute of Building Sciences (Institute) and the U.S. Department of Energy (DOE) have developed voluntary national guidelines, known as the *Better Buildings Workforce Guidelines (BBWG)*, to improve the quality and consistency of commercial building workforce credentials. The Institute established the Commercial Workforce Credentialing Council (CWCC) to lead development of those guidelines.

Improving the operational performance of commercial buildings requires highly skilled and qualified workers, particularly as building technologies become more advanced. Yet the lack of national guidelines for energy-related professional credentials represents a major barrier to the quality, consistency and scalability of this workforce. The BBWG will initially address commercial building workforce training and certification programs for four key energy-related jobs: building energy auditor, building commissioning professional, energy manager and building operations professional.

The purpose of the BBWG is to reduce the confusion and uncertainty around workforce credentialing; lower costs; and support better credentials, better workers and better buildings. The BBWG set an industry-validated Job Task Analysis (JTA) for each job title, as well as certification schemes (blueprints) and learning objectives for training programs. The BBWG are intended to benefit training and certification programs; employers and building owners/managers; governments and utility programs; and workers.

After a thorough and extensive process working with practitioners and stakeholder organizations, the Institute and DOE through the CWCC have completed the JTAs and credentialing scheme. The Guidelines are available for download and use under the Resources tab above.

Contact

Should you have any additional questions about the Commercial Workforce Credentialing Council, please contact:

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Program Director
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For more information on the BBWG program, visit DOE Better Buildings Workforce Guidelines.

Better Buildings Workforce Guidelines (BBWG)

The Better Buildings Workforce Guidelines (BBWG) including Job Task Analyses and credentialing schemes are now available. See the CWCC Resources section for more information.

CALENDAR more

4/16/2016
SBIC Webinar: Look at History of Solar Energy

4/10/2016
National BIM Standards-United States® Version 3 Release Postponed

3/31/2016
National BIM Standards-United States® Version 3 to Roll out April 15

4/28/2016
Introduction to Cybersecuring Building Control Systems Workshop (April)

4/28/2016
SBIC Webinar: Solar Energy from 6,000 Years Ago Until Today

4/30/2016
Advanced Cybersecuring Building Control Systems Workshop (April)

6/28/2016
Introduction to Cybersecuring Building Control Systems Workshop (May)

6/29/2016
Advanced Cybersecuring Building Control Systems Workshop (May)

www.nibs.org/cwcc

National Institute of BUILDING SCIENCES Commercial Workforce Credentialing Council

Job Task Analysis
Building Energy Auditor
November 2013 - December 2014



As indicated by the source of resources submitted to the BBI Instrument

National Institute of BUILDING SCIENCES Commercial Workforce Credentialing Council

Job Task Analysis
Building Commissioning Professional
November 2013 - December 2014



As indicated by the source of resources submitted to the BBI Instrument

National Institute of BUILDING SCIENCES Commercial Workforce Credentialing Council

Job Task Analysis
Building Energy Manager
November 2013 - December 2014



As indicated by the source of resources submitted to the BBI Instrument

National Institute of BUILDING SCIENCES Commercial Workforce Credentialing Council

Job Task Analysis
Building Operations Professional
November 2013 - December 2014



As indicated by the source of resources submitted to the BBI Instrument

National Institute of BUILDING SCIENCES Commercial Workforce Credentialing Council

Better Building Workforce Guidelines (BBWG) Scheme

January 12, 2015



U.S. DEPARTMENT OF ENERGY



Embedding Advanced Commercial Building Skills into Existing Community College Programs of Study

www.eere.energy.gov/buildings

ENERGY

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

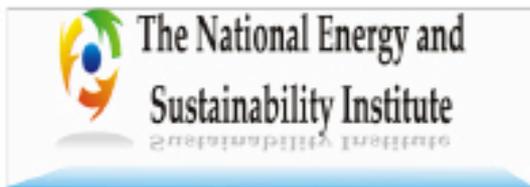
RESULTS ACROSS ALL EVALUATION REPORTS	kWh	kW	Therms
Average Annual Savings Per Certified Operator	100,500	14.5	1,400
	Range 28,600 – 181,000	Range 9 – 37	Range 36 – 3,104
Average Savings Per Square Foot	0.30	*	–
	Range 0.02 – .50	Range –	Range –
Average % Energy Savings Per Certified Operator	2.5%	–	–

- 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

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

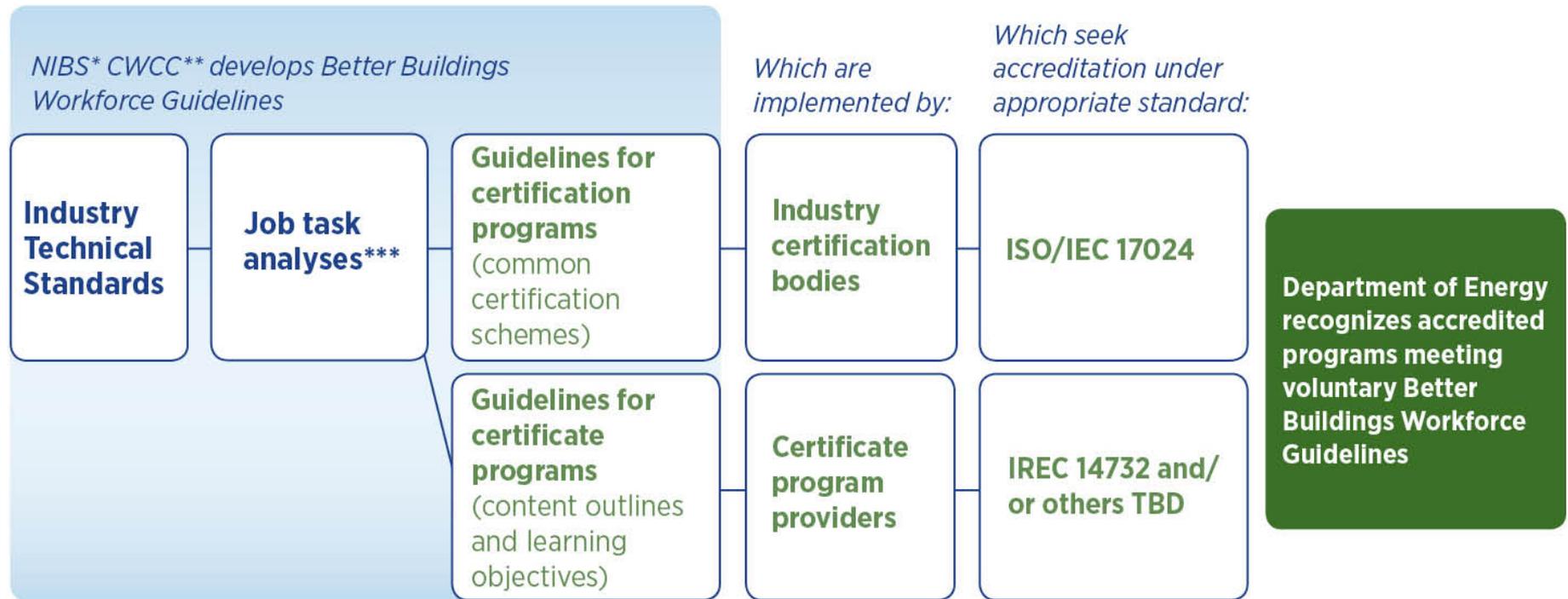
Recognize

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



*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



RECOGNIZED PROGRAM

MEETS U.S. DEPARTMENT
OF ENERGY GUIDELINES

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



Better Buildings Workforce

Workforce Guidelines

Building Re-Tuning Training

2017 Better Buildings Summit

[Home](#) > [Workforce Guidelines](#) > DOE 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://betterbuildingsolutioncenter.energy.gov/workforce/participating-certifying-organizations>



RECOGNIZED PROGRAM

MEETS U.S. DEPARTMENT
OF ENERGY GUIDELINES

Certificate Program Guidelines

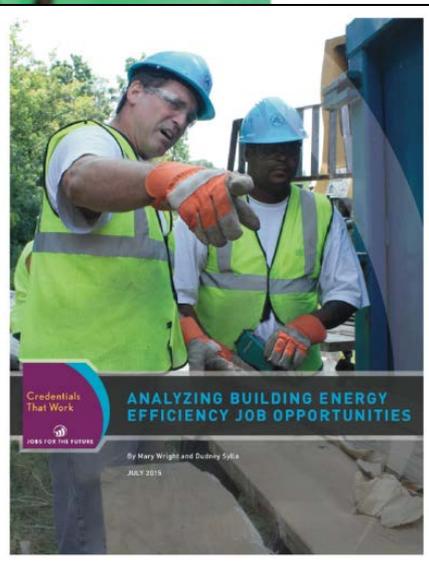
- Recognized 3rd party standards
 - ANSI/ASTM E-2659
 - IREC 14732
- Certificates vs. Certifications
- Accreditation Requirements
- Planning for Accreditation
- Achieving DOE Recognition

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

CITY ENERGY
A JOINT PROJECT OF NRDC • IMT

SEARCH

About Cities FAQ Team Recognition Media Contact

A groundbreaking national initiative to improve the energy efficiency of buildings in 10 major American cities

THE CITY ENERGY PROJECT THEORY OF CHANGE

Engage America's Focus on large existing Make it easier to invest Overcome barriers

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. Dec. 14, 2010
[S. 3250]

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

SECTION 1. SHORT TITLE.

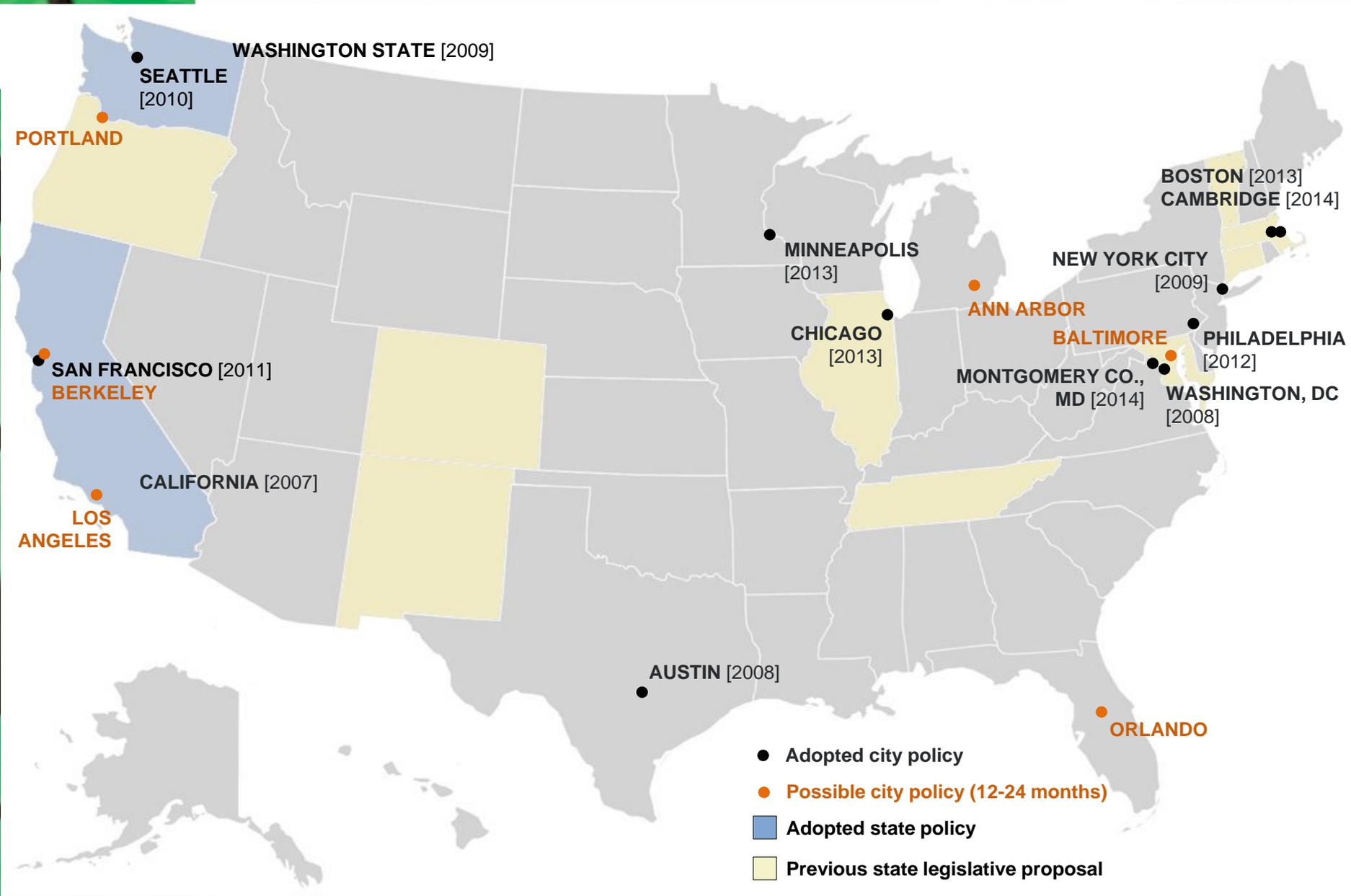
This Act may be cited as the "Federal Buildings Personnel Training Act of 2010". Federal Buildings Personnel Training Act of 2010.
40 USC 581 note.

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 Deadlines.
Notice.
Comment period.



Employers, Building Owners,
Certification Programs and more



Federal Government Adoption

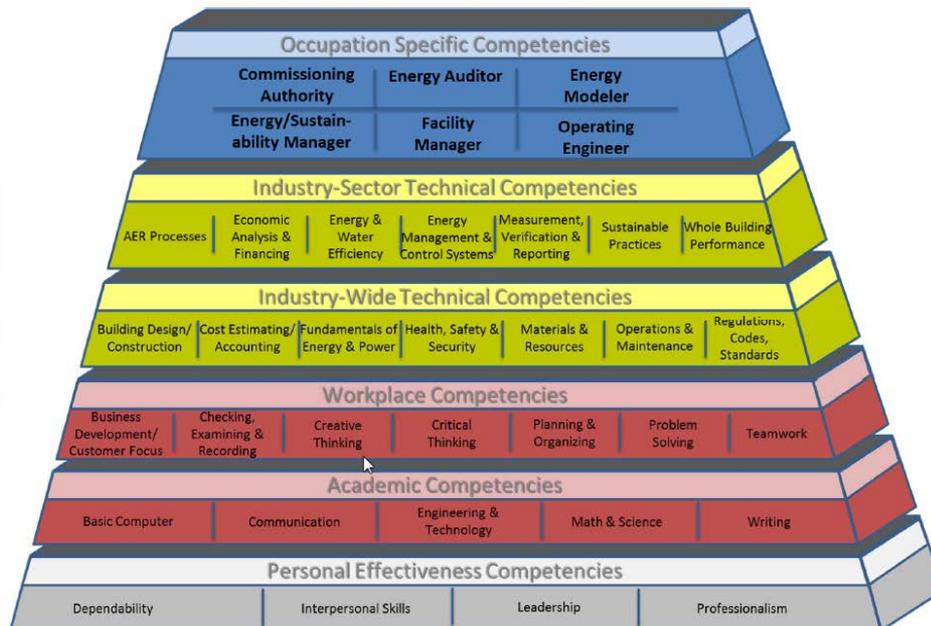
- The U.S. General Services Administration is **committed to adopting the BBWG** and incorporating these qualifications as contributing to compliance by federal and contractor personnel who operate and maintain federal buildings.
- GSA recognizes these **standards as contributing to compliance** by federal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

Integration of BBWG in Existing Curriculum: Process Steps



Advanced Energy Retrofit Competency Model



Embedding Advanced Commercial Building Skills into Existing Community College Programs of Study

Learn more at energy.gov/betterbuildings



BBWG/CWCC

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Liz Fischer

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

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

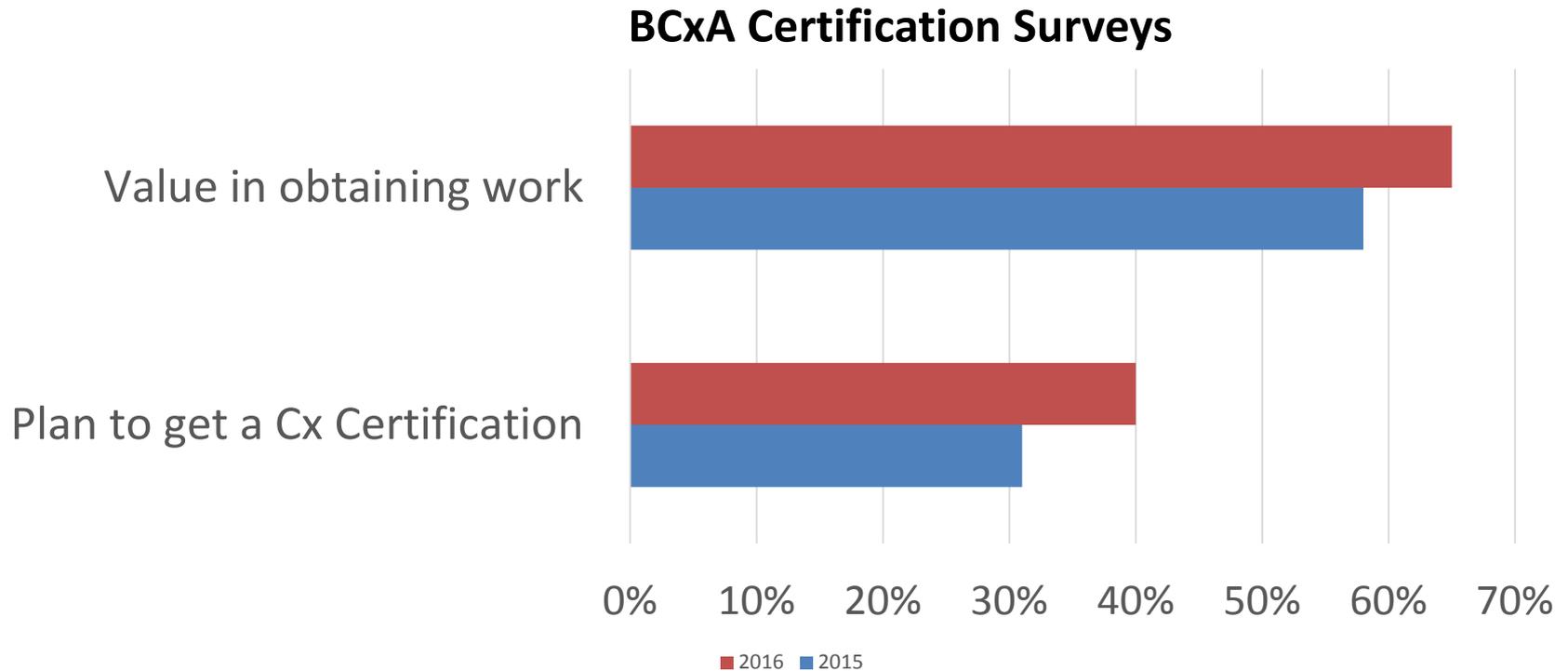
- No business case for commissioning providers (CxP) to get certified
- CCP perceived as too difficult to obtain
- Plenty of inexpensive and easy-to-get certifications

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



BCxA 2014 Survey of Portfolio Owners

- 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

Liz Fischer, Certification Director

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Matthew Nelson

ASHRAE



Building a Better Clean Energy Workforce

Matthew J. Nelson, PE, CPMP, BEAP

Tuesday, May 16, 2017

Better Buildings Summit 2017

Building a Better Clean Energy Workforce

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)



ANSI Accredited Program
PERSONNEL CERTIFICATION
#1139



Building a Better Clean Energy Workforce

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%).



Building a Better Clean Energy Workforce

Better Building Workforce Guidelines

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



Building a Better Clean Energy Workforce

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



Building a Better Clean Energy Workforce

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



Building a Better Clean Energy Workforce

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

Provide feedback on this session in the new Summit App!

Download the app to your mobile device or go to bbsummit.pathable.com

