



**BUILDING
INNOVATION** 2018

National Institute of
BUILDING SCIENCES

CONFERENCE & EXPO

Can the Workforce Deliver?

Meeting Today's Challenges of Climate Change Risk and Operational Performance

How the FBPTA Tools Can Strengthen Your Workforce and Achieve Organizational Goals



**BUILDING
INNOVATION** 2018

National Institute of
BUILDING SCIENCES

CONFERENCE & EXPO

Meet Our Presenters



**Brian Gilligan, PE, LEED AP,
Sustainability National Program Manager,
Office of Federal High Performance Buildings
U.S. General Services Administration**



**Maureen K. Roskoski, CFM, SFP, LEED AP O+M,
Senior Professional, Corporate Sustainability Officer,
Facility Engineering Associates**



**BUILDING
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National Institute of
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Learning Objectives

- Discover how the BBWG program addresses energy efficiency of buildings through workforce development and credentialing.
- Identify updates to the FBPTA tools and competency model.
- Explore free tools that direct you to the right training and career path.
- Learn to develop a finance-based argument for training requests using real-world examples showing improved performance.
- Gain experience on how to use FBPTA tools to find your gaps with the most critical FBPTA competencies and training to fill them.



Better Buildings Workforce Guidelines

Building Innovation
2018-01-11





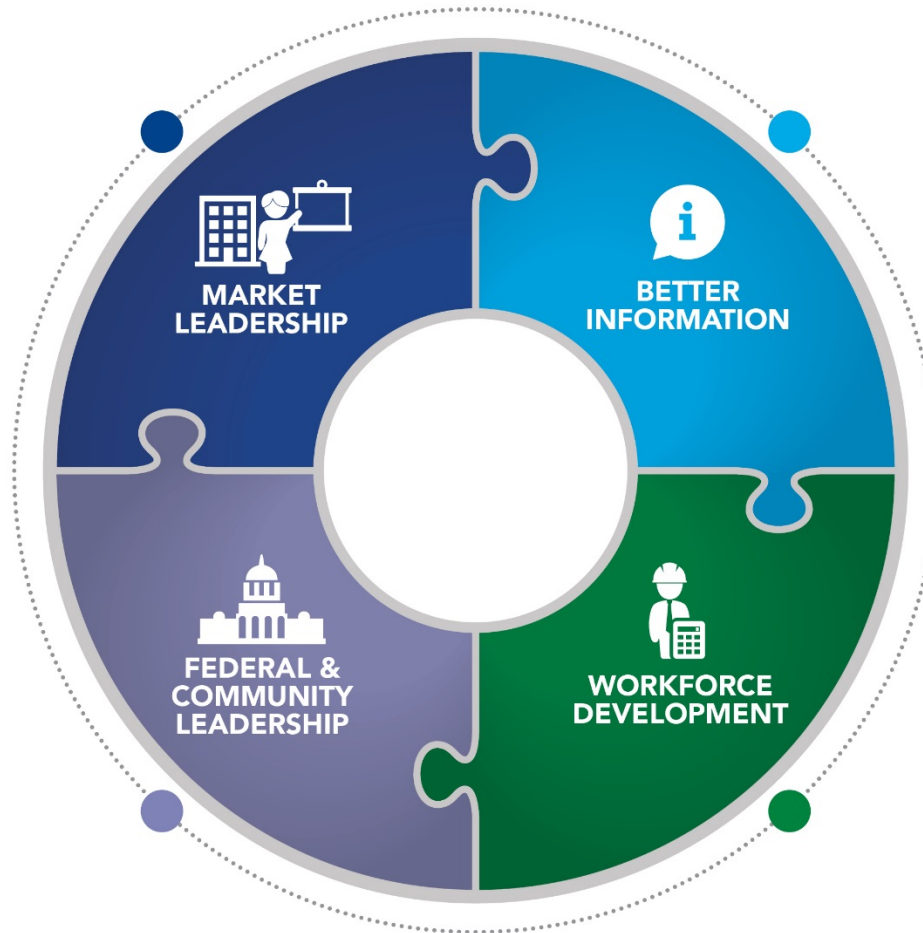
Developing Innovative, Replicable Solutions with Market Leaders

- ▶ Better Buildings Challenge
- ▶ Better Buildings Alliance
- ▶ Better Buildings, Better Plants
- ▶ Better Buildings Accelerators
- ▶ Better Buildings Residential
- ▶ Strategic Energy Management



State, Local, and Federal Governments Leading by Example

- ▶ Better Communities Alliance
- ▶ Performance Contracting



Making Energy Efficiency Investment Easier

- ▶ Better Buildings Solution Center
- ▶ Financing Navigator
- ▶ Improved Data Consistency and Access
- ▶ Tools to Assess the Efficiency of Buildings/Homes
- ▶ Tools for Energy Management



Expanding the Workforce

- ▶ Better Buildings Workforce Guidelines
- ▶ Industrial Energy Management Workforce

Better Buildings Program

\$1.9 Billion saved

\$7 Billion in financing committed

240 Trillion BTUs of energy saved

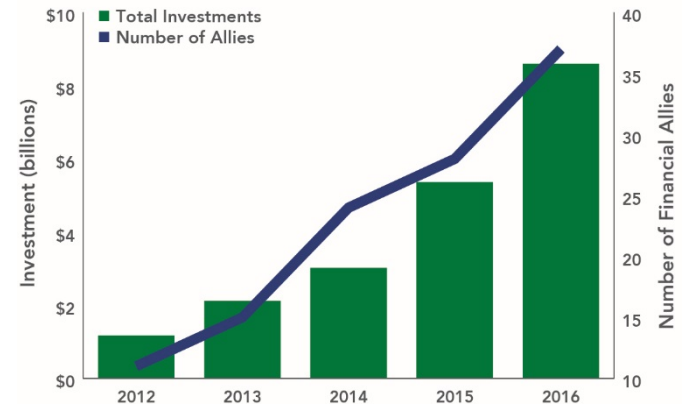
4.4 Billion square footage covered

4 Billion gallons in water saved

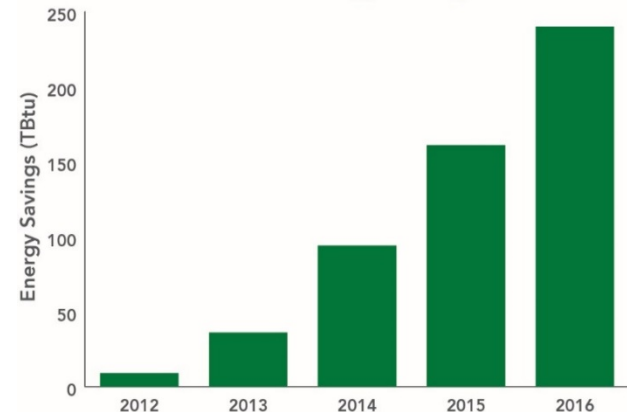
900+ Better Buildings Partners

1000+ solutions published

Total Investment and Ally Growth by Year



Cumulative Energy Savings



Better Buildings Program



Workforce Barriers

1) The Market has Trouble Understanding What Credentials Mean

- Many certificate and certification programs exist, but customers have difficulty identifying quality workers and comparing credentials

2) Lack of Consistency in Skill Sets for EE Workers

- Identifying and organizing knowledge and calibrating training programs will better prepare the EE workforce

3) Lack of Consistency in Credentialing Processes

- Better processes should lead to higher quality credentials and give more confidence to the market

Creating BBWG

Define Skills

Voluntary, national
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



RECOGNIZED PROGRAM

MEETS U.S. DEPARTMENT
OF ENERGY GUIDELINES

Creating BBWG



Commercial Workforce Credentialing Council

a council of the National Institute of Building Sciences



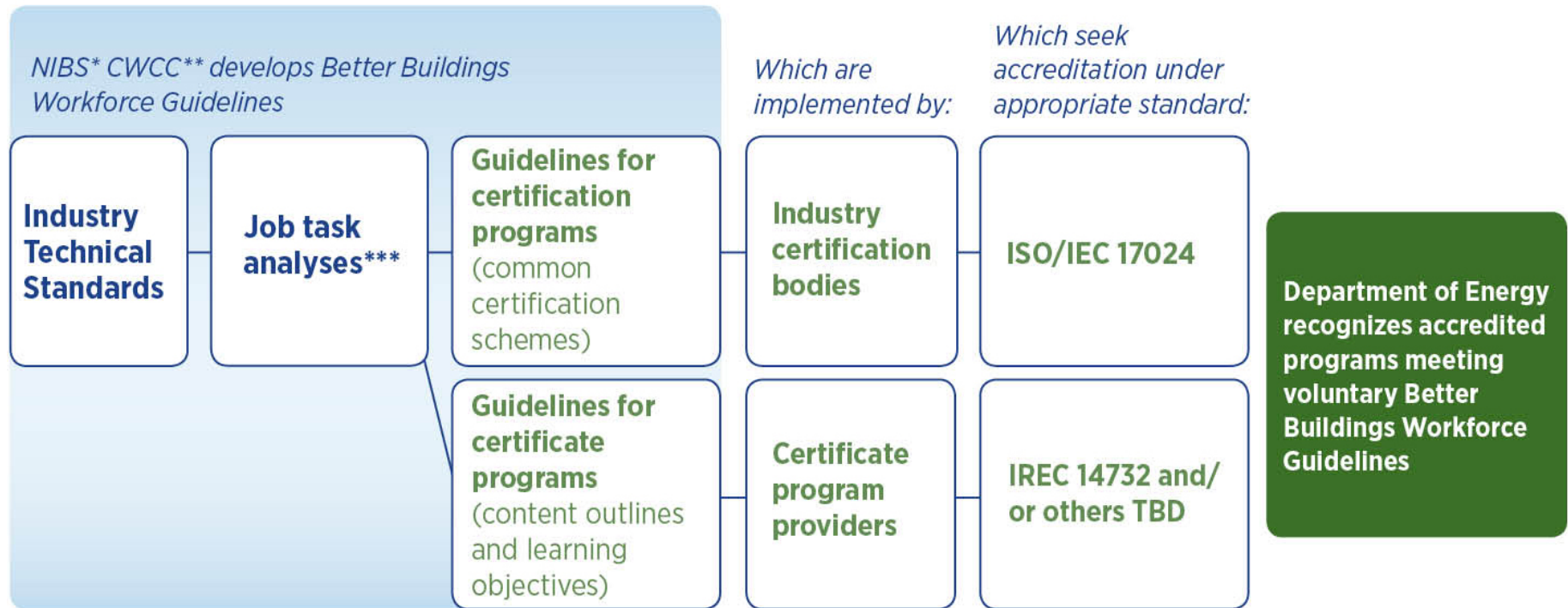
BOARD OF DIRECTION

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Creating BBWG - Process

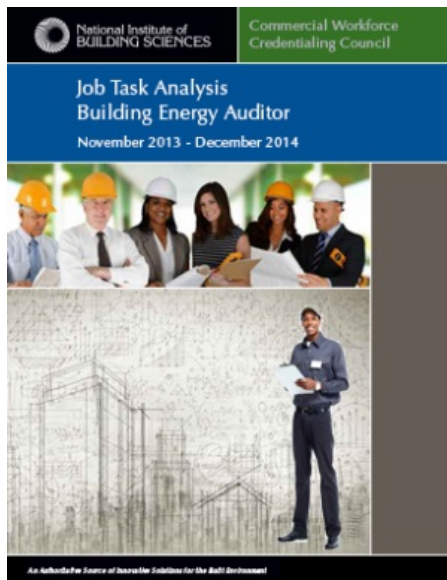


*National Institute of Building Sciences

**Commercial Workforce Credentialing Council

*** Building Energy Auditor; Building Commissioning Professional; Energy Manager; Building Operations Professional; Facility Manager (Government and FBPTA focus)

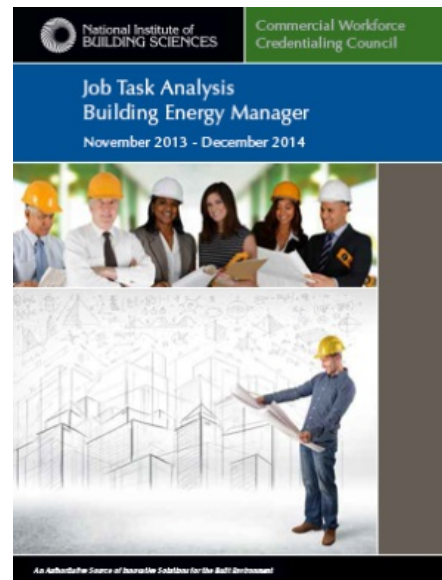
Creating BBWG – JTAs and Consistency



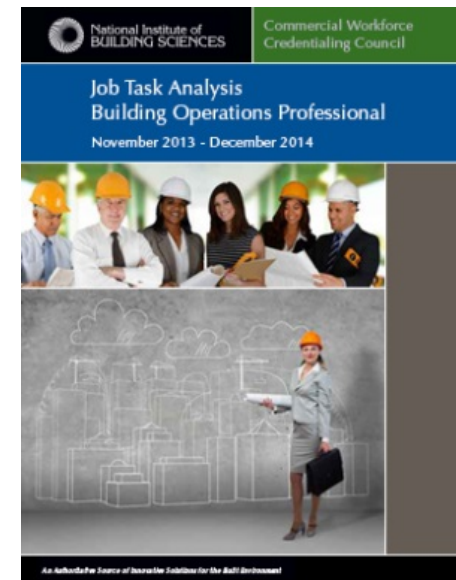
Building
Energy Auditor



Building
Commissioning
Professional

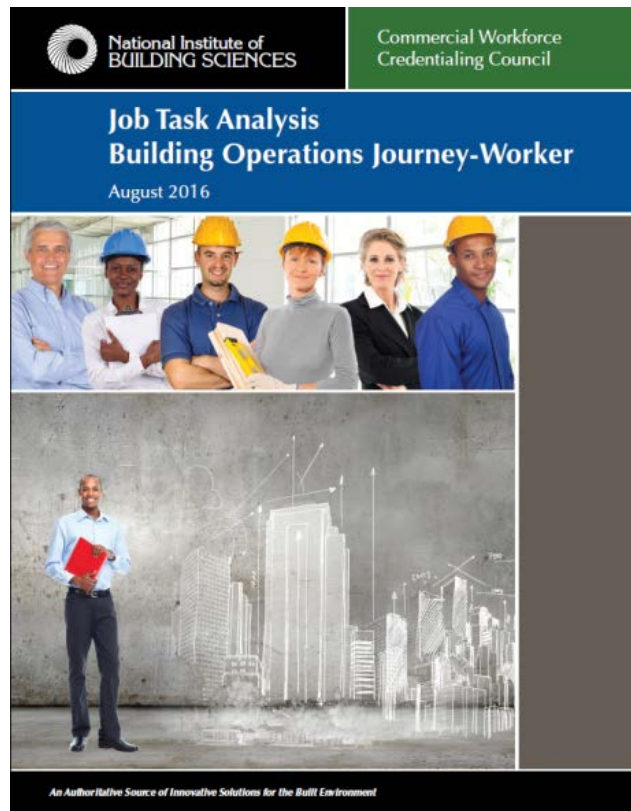


Building
Energy Manager



Building
Operations
Professional

Creating BBWG – JTAs and Consistency







Building
Operations
Journey-Worker

The cover of the guide features the National Institute of Building Sciences logo and the Commercial Workforce Credentialing Council. The title is "Better Buildings Workforce Guidelines Certificate Program Development Guide".

Table of Contents	
Background.....	2
What is Accreditation.....	3
Credentialing Options.....	3
Certification Entities.....	3
Certificate-Issuing Entities.....	5
Certification or Certificate-Issuing Entity.....	6
CWCC/BBWG Certificate-level JTAs.....	7
Basing the Certificate Program on the BBWG JTA.....	8
Planning for Accreditation.....	11
Benefits of Accreditation.....	12

BBWG Recognized Programs

	Building Energy Auditor	Building Cx Professional	Building Energy Manager	Building Operations Professional
	Certified Building Energy Assessment Professional (BEAP)	Certified Building Commissioning Professional (BCxP)		
	Certified Energy Auditor (CEA)		Certified Energy Manager (CEM)	
		Certified Commissioning Authority (CxA)		
		Certified Commissioning Professional (CCP)		

Promoting BBWG

1) Federal Government Adoption

- Working with GSA to incorporate BBWG into Federal Buildings Personnel Training Act for federal and contractor energy managers, building operators, and commissioning agents

2) Community College Training Programs

- Working with community colleges to develop training curriculum using BBWG course outlines and learning objectives that lead to accredited certificates

3) Local Government Adoption in EE Policy

- Working with city governments to incorporate DOE-recognized credentials in audit, retro commissioning, and other EE policies

4) Leadership Campaign

- Developing campaign to recognize real estate companies, state and local governments, financial institutions, and utilities that reference BBWG

Workforce Development Pages on WBDG



The screenshot shows the WBDG (Whole Building Design Guide) website. The header includes the WBDG logo, navigation links (ABOUT, SITE MAP, CONTACT, CREATE ACCOUNT, LOGIN), and a search bar. A dark blue navigation bar contains links to DESIGN RECOMMENDATIONS, PROJECT MANAGEMENT - O & M, FEDERAL FACILITY CRITERIA, CONTINUING EDUCATION, and ADDITIONAL RESOURCES. The main banner features a large image of a modern building with a green roof, with the text "Welcome to the Whole Building Design Guide" overlaid. Below the banner, there are three main sections: "THE GATEWAY TO UP-TO-DATE INFORMATION ON INTEGRATED 'WHOLE BUILDING' DESIGN TECHNIQUES AND TECHNOLOGIES", "WBDG UPDATES", and "ACCESSIBLE DESIGN OBJECTIVE". The "PARTICIPATING AGENCIES" section displays a grid of logos for various U.S. government departments and agencies.

WBDG
a program of the
National Institute of Building Sciences
WHOLE BUILDING DESIGN GUIDE

ABOUT SITE MAP CONTACT CREATE ACCOUNT LOGIN

SEARCH WBDG

DESIGN RECOMMENDATIONS PROJECT MANAGEMENT - O & M FEDERAL FACILITY CRITERIA CONTINUING EDUCATION ADDITIONAL RESOURCES

Welcome to the Whole Building Design Guide

Center for Sustainable Landscapes
Pittsburgh, Pennsylvania
The Design Alliance
Brian Cohen - Photographer

THE GATEWAY TO UP-TO-DATE INFORMATION ON INTEGRATED 'WHOLE BUILDING' DESIGN TECHNIQUES AND TECHNOLOGIES

The goal of 'Whole Building' Design is to create a successful high-performance building by applying an integrated design and team approach to the project during the planning and programming phases.

WBDG UPDATES

ACCESSIBLE DESIGN OBJECTIVE

This design objective pertains to building elements, heights and clearances implemented to address the specific needs of disabled people.

Related topics:

- Provide Equal Access and Flexibility

PARTICIPATING AGENCIES

Select an agency below for more information on its building programs and criteria.



What Training Do You Need?

- To Do Your Job Most Effectively
- To Meet Challenges of Climate Change Risk
- To Meet Challenges of Operational Performance

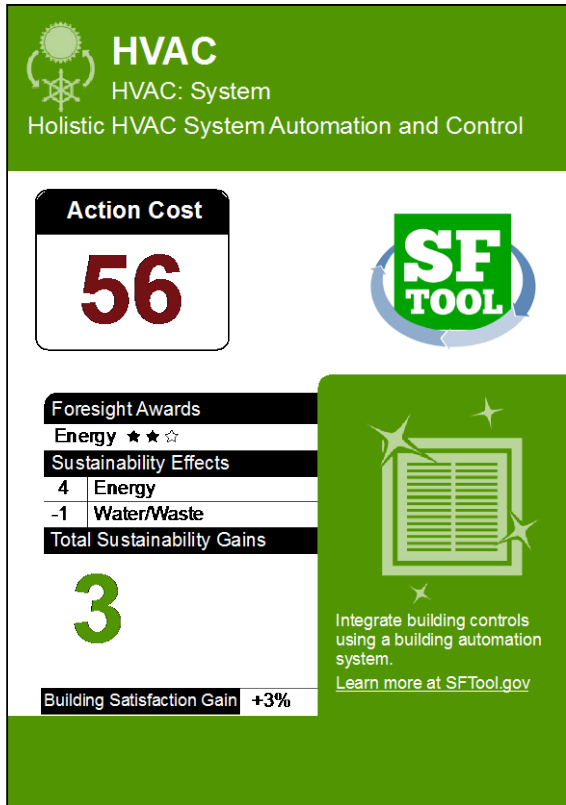
Match The Tasks To Competencies & Skills

Turn To Your Neighbor

- Review the task listed on your **Green The Building Task Cards**
- Turn the card over and review the **Competencies** that highlight what you would need to know to successfully complete the task.

Discuss With Your Neighbor

- How does this competency relate to the task?
- Have you taken any of the courses listed and did they teach you that knowledge?
- How do these competencies address dealing with building issues related to climate change?



HVAC
HVAC: System
Holistic HVAC System Automation and Control

Action Cost
56

SF TOOL

Foresight Awards
Energy ★★☆☆

Sustainability Effects	
4	Energy
-1	Water/Waste

Total Sustainability Gains
3

Building Satisfaction Gain +3%

Integrate building controls using a building automation system.
[Learn more at SFTool.gov](http://SFTool.gov)

**5 Minute
Discussion**

Building & Growing Your Team



The Facility Manager



Integrate Building
Automation Controls
Using A Building
Automation System

Hold Sustainability
Occupant Education
Engagement Events



Install Advanced
Electrical Metering



The Energy Manager



The Building Operator

Training achieves organizational goals

Risk Management

Adaptation Planning

Implement Agency climate risk management plans

3%
Year

Water Efficiency

Water reduction each year from 2007 levels

2.5%
Year

Optimize Energy Efficiency

Reduce Energy Use Intensity each year from 2015 levels

Savings
Persistence

Protect Efficiency Investments

PNNL – Savings don't persist without trained operators

Training achieves cost savings



Facility Managers

Ongoing Commissioning
cut energy costs ~15%



Building Operators

BOC Certified Operators
save \$11K / Year

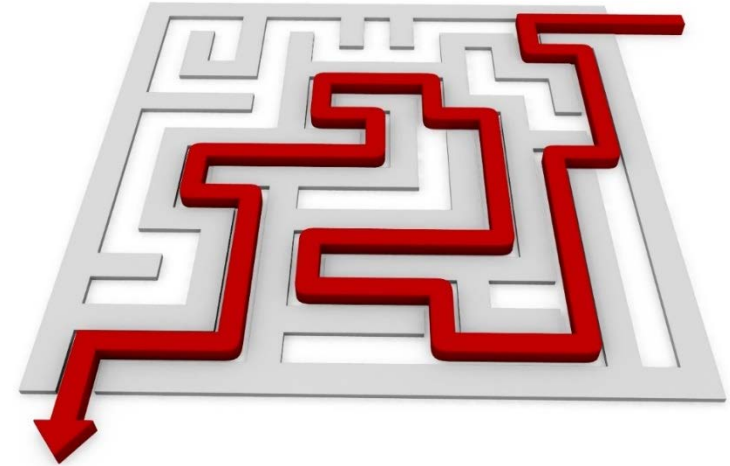
Energy Managers

50% of CEM energy
programs save >\$250K



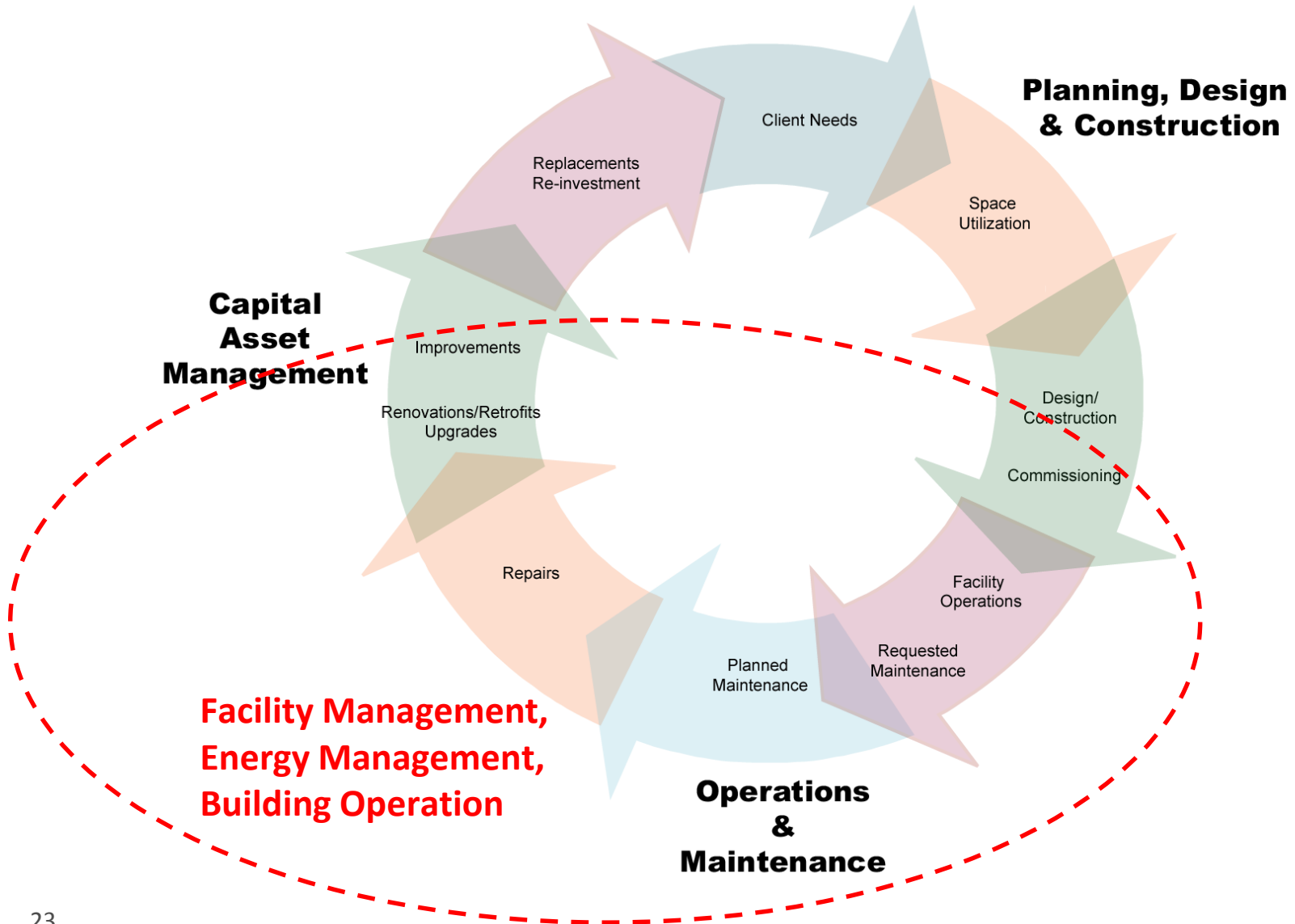
The FBPTA – What is required?

- Core Competencies for Federal buildings Personnel
- Recommended Curriculum and Continuing Education
- Annual updates to Competencies and Curriculum
- Compliance by all Federal buildings personnel
- Method for contractor compliance




“...core competencies ...relating to building operations and maintenance, energy management, sustainability, water efficiency, safety (including electrical safety) and building performance measures.”

Who?




Build a team approach


Manage O&M	Perform O&M	Technology	Energy Management	Safety	Design	Sustainability	Water Efficiency	Performance Measures



Facility Manager

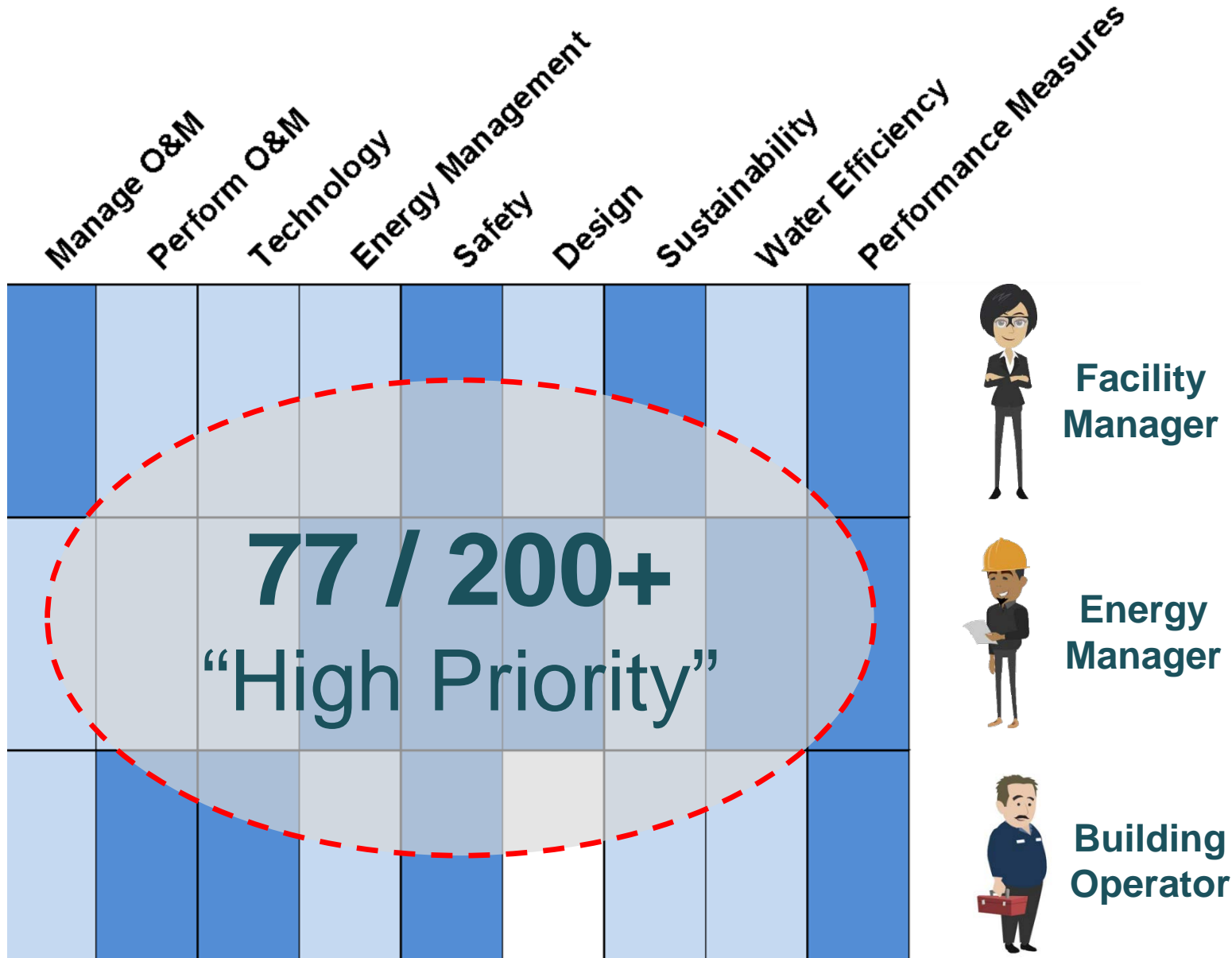


Energy Manager



Building Operator


Build a team approach




2017 Updates & Additions

<https://www.fmi.gov>


Manage O&M	Perform O&M	Technology	Energy Management	Safety	Design	Sustainability	Water Efficiency	Performance Measures
			✓					✓
		✓	✓	✓				
✓			✓					



Facility Manager

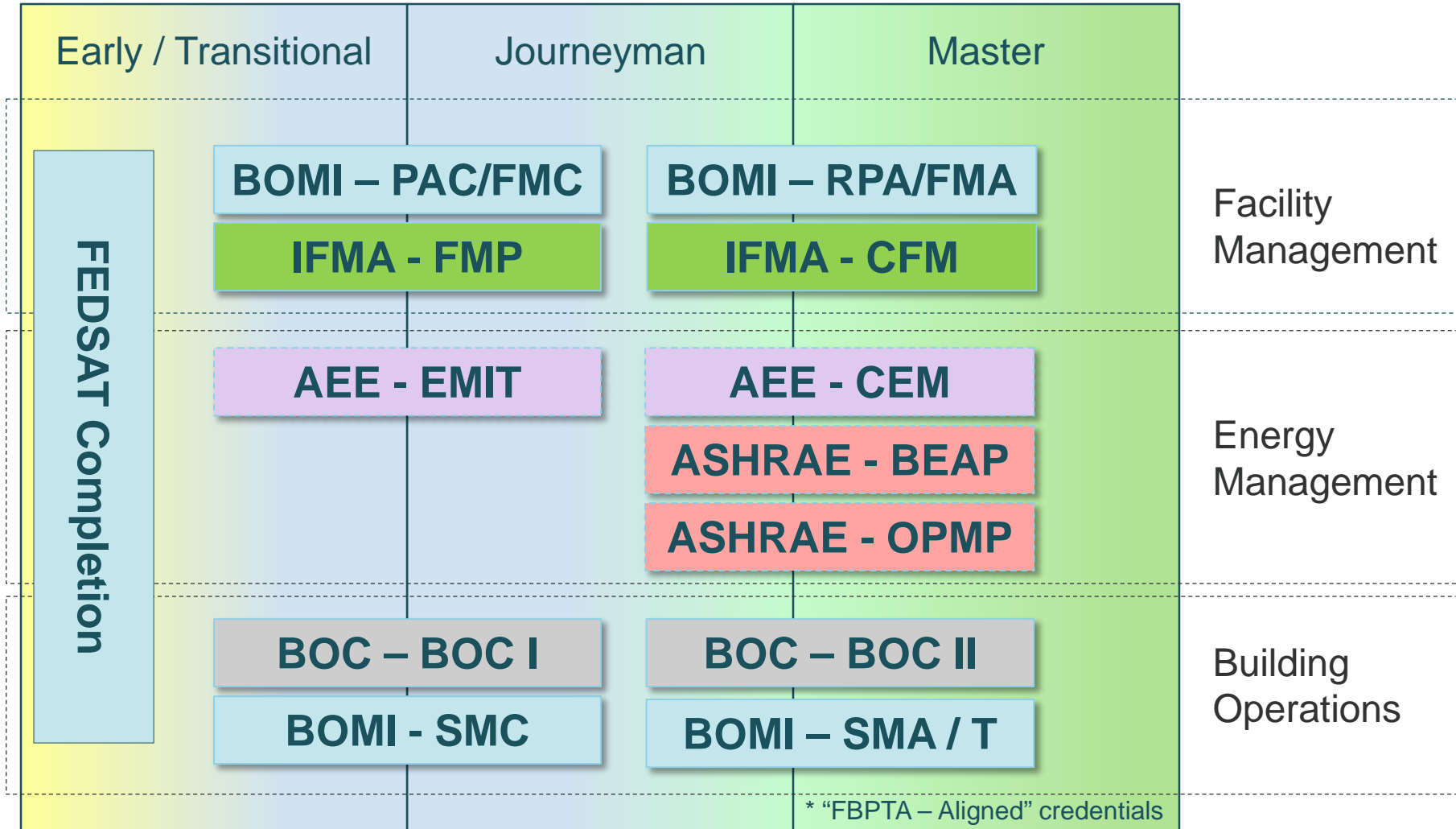


Energy Manager



Building Operator

Compliance and general career paths



FBPTA: 2018 Program Priorities

Expand offerings
for high-priority
competencies

Promote
implementation
services

Support reform for
career and
technical education

Increase online
“FBPTA-Aligned”
resources

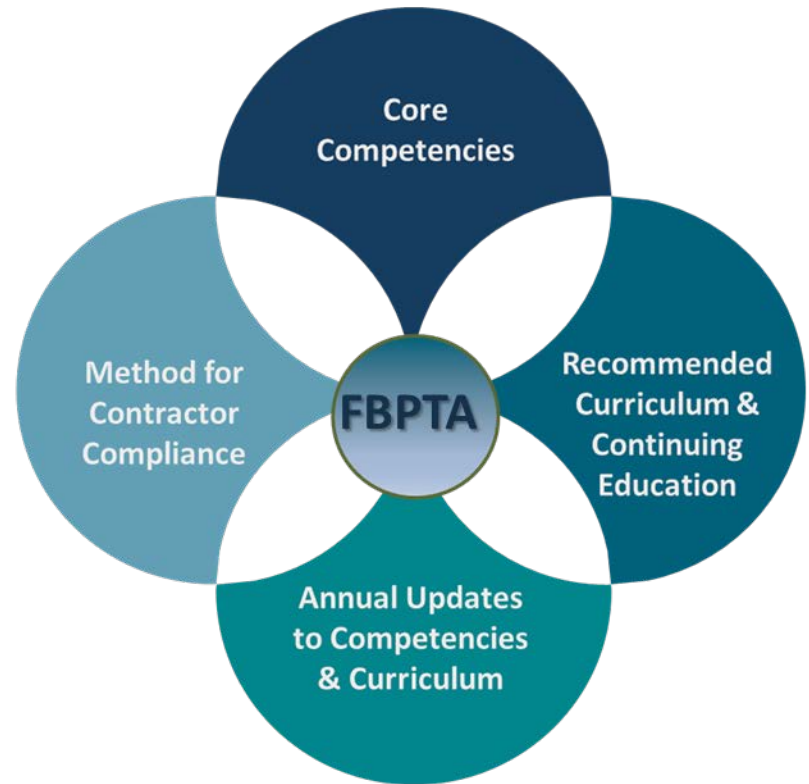
Promote critical
development
activities



FBPTA Implementation Support Services

FBPTA Implementation Results

- Competency and Proficiency Assessment of Personnel
- Finding the Right Training to Meet Individual and Agency Needs
- Plan for Continual Monitoring and Reporting



Resources for the FBPTA

AccelerateFM

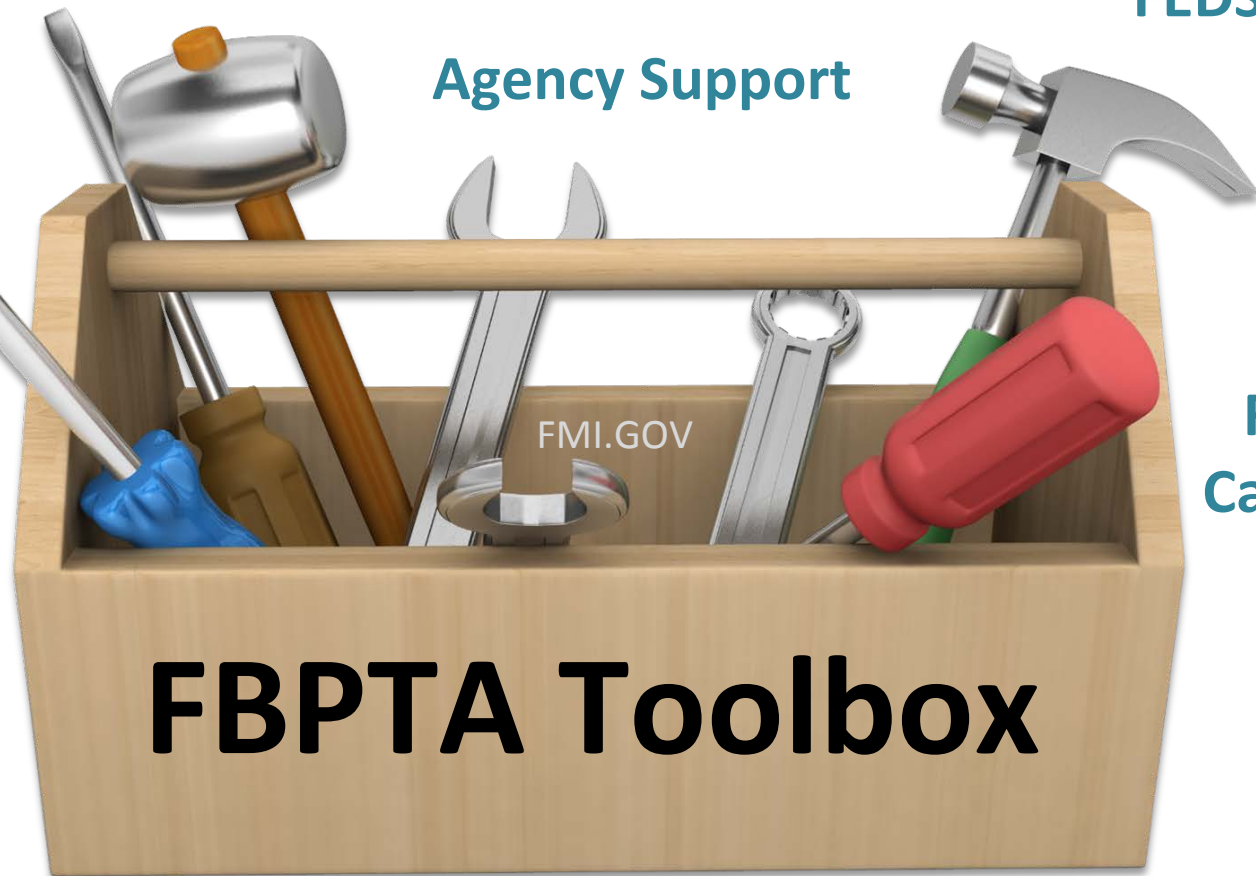
FEDSAT

Whole Building
Design Guide

Agency Support

Facility
Management
Institute

Facilities
Career Map



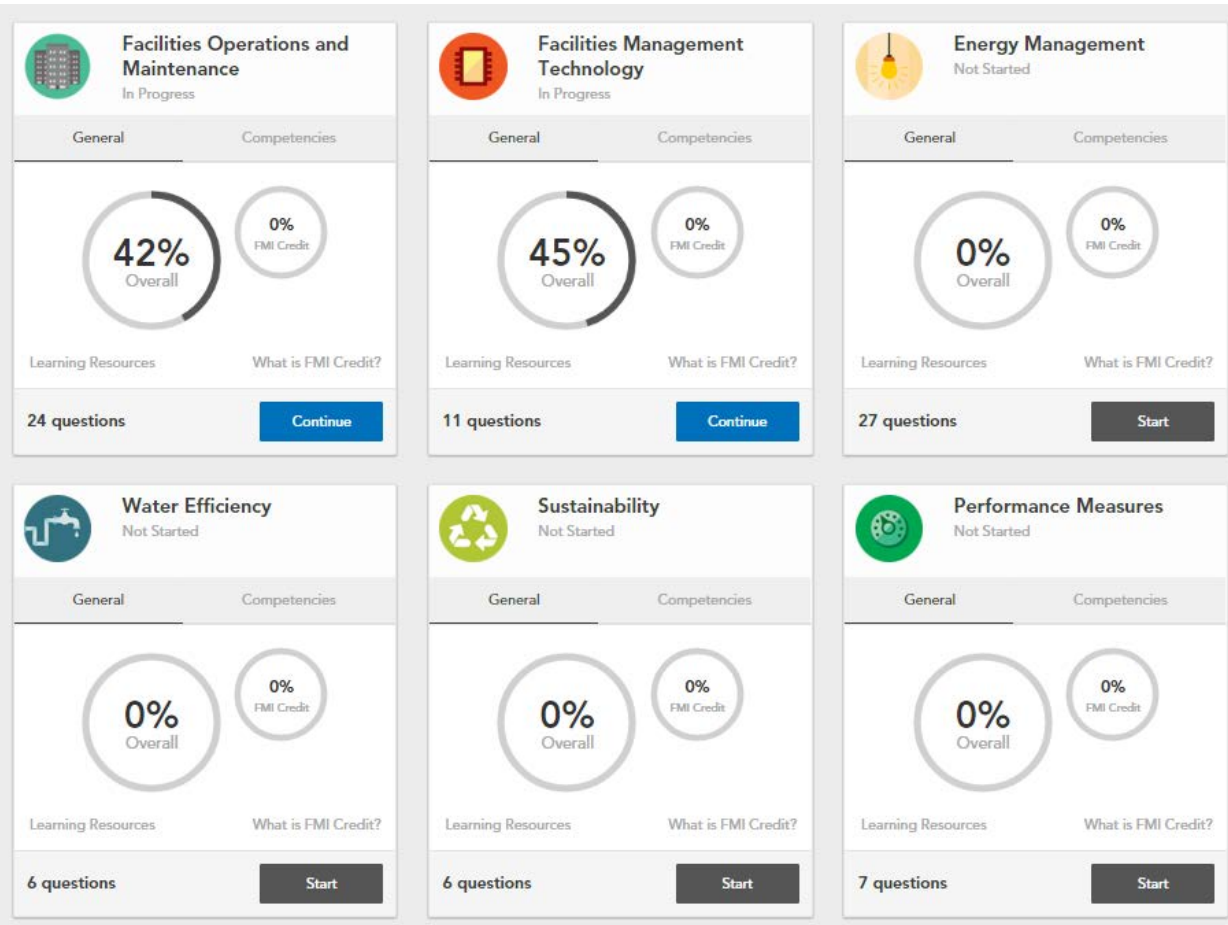
FBPTA Toolbox

FEDSAT Completion

<https://sftool.gov/fedsat>

== Credit for 77 performances

== Free resources to increase knowledge



WBDG
WHOLE BUILDING DESIGN GUIDE
a program of the
National Institute of Building Sciences

3 aligned
courses

FEMP
Federal Energy Management Program

26 aligned
courses

Whole Building Design Guide

Professional Development Page



Whole Building Design Guide

[DESIGN RECOMMENDATIONS](#)[PROJECT MANAGEMENT - O & M](#)[FEDERAL FACILITY CRITERIA](#)[CONTINUING EDUCATION](#)[ADDITIONAL RESOURCES](#)[CONTINUING EDUCATION](#) / [WORKFORCE DEVELOPMENT](#)<https://www.wbdg.org/continuing-education/workforce-development>


WORKFORCE DEVELOPMENT

by Brian Gilligan, [GSA](#); Roger Grant, [NIBS](#); and Stephanie Vierra, Vierra Design & Education Services, LLC

Updated: 11-20-2017



INTRODUCTION

Investing in a well-trained workforce is absolutely critical to achieving and maintaining high-performance buildings and efficient operations. Recent studies  indicate that most any building can cut 5–30% off its operating costs through improved operations and maintenance. Even relatively well-run buildings or buildings that have been upgraded recently may have significant savings. Key to realizing this is ensuring that employers and employees alike understand the knowledge, skills, and abilities necessary to achieve these goals and make an investment in education and training to achieve them.

WITHIN THIS PAGE

- [Introduction](#)
- [Description](#)
- [Additional Resources](#)





Donald West



Building Services Specialist

10 years in FM field
2 years with GSA

BOC level I, some FEMP courses
and part of IFMA FMP

Looking To Increase FM
Competencies

FACILITIES MANAGEMENT INSTITUTE ACCELERATE FM



My Dashboard

Show Instructions

My Dashboard

What is my job or role?
Property Manager (GS11-12)



Change Position Profile

How proficient do I feel in my job or role right now?



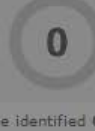
Self



Supervisor

Assess My Proficiency

Where do I want to focus my training this year?



You have identified 0 priorities

Set My Priorities

What training will help me meet my development goals?

Find qualifications to meet:

All Gaps

"High-Priority" Gaps

What training have I completed?



Report Completion

Do you want to test your knowledge and find free training on key concepts relevant to your job?

FEDSAT

FACILITIES MANAGEMENT INSTITUTE ACCELERATE FM



▸ 1 Management of Facilities Operations and Maintenance

12

2

[Find Qualifications](#)

▸ 2 Performance of Facilities Operations and Maintenance

5

2

[Find Qualifications](#)

▸ 3 Technology

11

2

[Find Qualifications](#)

▸ 4 Energy Management

11

19

[Find Qualifications](#)

▸ 5 Safety

6

6

[Find Qualifications](#)

▸ 6 Design

1

4

[Find Qualifications](#)

▸ 7 Sustainability

7

[Find Qualifications](#)

▸ 8 Water Efficiency

4

2

[Find Qualifications](#)

▸ 9 Project Management

7

[Find Qualifications](#)

▸ 10 Business, Budget and Contracting

22

[Find Qualifications](#)

▸ 11 Leadership and Innovation

1

16

[Find Qualifications](#)

▸ 12 Performance Measures

2

11

[Find Qualifications](#)

▸ 13 GSA-PBS General Competencies [?](#)

8

[Find Qualifications](#)

▸ 14 OPM Leadership Abilities [?](#)

28

[Find Qualifications](#)

**BOC Level I
FEMP Courses
IFMA FMP – 2 of 4**

FACILITIES MANAGEMENT INSTITUTE ACCELERATE FM



▸ 1 Management of Facilities Operations and Maintenance

13

1



Find Qualifications

▸ 2 Performance of Facilities Operations and Maintenance

5

2



Find Qualifications

▸ 3 Technology

12

1



Find Qualifications

▸ 4 Energy Management

11

19



Find Qualifications

▸ 5 Safety

6

6



Find Qualifications

▸ 6 Design

1

4



Find Qualifications

▸ 7 Sustainability

7



Find Qualifications

▸ 8 Water Efficiency

4

2



Find Qualifications

▸ 9 Project Management

6

1



Find Qualifications

▸ 10 Business, Budget and Contracting

16

6



Find Qualifications

▸ 11 Leadership and Innovation

11

6



Find Qualifications

▸ 12 Performance Measures

6

7



Find Qualifications

▸ 13 GSA-PBS General Competencies ?

8



Find Qualifications

▸ 14 OPM Leadership Abilities ?

28




Find Qualifications

FACILITIES MANAGEMENT INSTITUTE ACCELERATE FM



My Dashboard

 Show Instructions

My Dashboard

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How proficient do I feel in my job or
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FEDSAT

FACILITIES MANAGEMENT INSTITUTE ACCELERATE FM



Search by All Gaps



Search Results

Showing **104** Qualifications, sorted by the number of proficiency gaps they close in the searched Performances.

Compare	Performance Gaps	Title	Qualification Type	Provider	Hours	Contact Length
<input checked="" type="checkbox"/>	24.00	Certified Facility Manager (CFM)	Certification / Accreditation	IFMA	0.00	<input type="button" value="Add to Plan"/>
<input checked="" type="checkbox"/>	23.00	Certified Energy Manager (CEM)	Certification / Accreditation	AEE - Association of Energy Engineers	0.00	<input type="button" value="Add to Plan"/>
<input checked="" type="checkbox"/>	23.00	Operations And Performance Management Professional (OPMP) Certification	Certification / Accreditation	ASHRAE	0.00	<input type="button" value="Add to Plan"/>
<input checked="" type="checkbox"/>	18.00	Sustainable Facilities Professional (SFP)	Certificates	IFMA	0.00	Self study <input type="button" value="Add to Plan"/>
<input checked="" type="checkbox"/>	14.00	Facilities Management Administrator (FMA)	Certification / Accreditation	BOMI - International	0.00	<input type="button" value="Add to Plan"/>
<input checked="" type="checkbox"/>	14.00	High-Performance Sustainable Building Practices	Certification / Accreditation	BOMI - International	0.00	<input type="button" value="Add"/>

Compare Selected

[Cancel](#)

FACILITIES MANAGEMENT INSTITUTE ACCELERATE FM



Do you want to test your knowledge and find free training on key concepts relevant to your job?

FED SAT

Filter By: My Position Profile

COMPETENCY AREA	ASSESSMENT STATUS			QUALIFICATION PROGRESS
	SELF	TARGET	SUPERVISOR	
1 Management of Facilities Operations and Maintenance				14
2 Performance of Facilities Operations and Maintenance				7
3 Technology				12
4 Energy Management				20
5 Safety				6
6 Design				3
7 Sustainability				4
8 Water Efficiency				6
9 Project Management				6
10 Business, Budget and Contracting				17
11 Leadership and Innovation				11
12 Performance Measures				8

Searching for Qualifications



What training will help me meet my development goals?

Find qualifications to meet:

All Gaps

"High-Priority" Gaps

=

**No qualifications
align to this
performance**

Other Ways To Show Proficiency

Critical Development Activities

FBPTA Performance 7.2.3.

Demonstrate knowledge of agency resiliency and adaption goals, metrics, and initiatives, such as those found in the Dept/Agency Resiliency and Adaptation Plan.

Steps to take to show proficiency:

1. Navigate to the three online references for general information on federal resilience policy and direction.
2. Find and review your Dept/Agency Resiliency and Adaptation Plan.
3. Identify the agency's resiliency goals, metrics and initiatives that apply to facilities or your role.
4. Discuss with your supervisor to demonstrate your knowledge.

Presidential Policy
Directive #21 - Critical
Infrastructure Security
and Resilience

Presidential Policy
Directive #8 - National
Preparedness

Federal Continuity
Directive 2 (FCD 2)

FBPTA Implementation Support Services





Overview

Office of Building Management, Division of Buildings Operations

- 65 employees - headquarters facility
- 100 employees at the regional buildings
- New profiles for trades



Highlights

- Importance of program setup
- Exploring role of trades positions
- 100 employees at the regional buildings



Results

- Broad coverage with 18 position profiles
- Increase building optimization competencies with trades positions
- Good position for gap analysis

Social Security Administration



Overview

Office of Facilities Management, Overseas Buildings Operations

- ~240 facility employees
- 3 levels of Federal Facility Managers
- Foreign Services Institute courses



Highlights

- Alignment of FSI courses
- AFM Training provided to all Facility Managers
- Existing comprehensive training program



Results

- FBPTA woven in to OBO training program
- Goal of 80% of affected facility managers will have an FBPTA IDP by Spring of 2018
- Working on plan for long-term monitoring and compliance

Department of State

Department
Of
State

23rd Street E

The Department of State is the
cabinet agency. It was established
to conduct America's diplomatic relations.

The State Department represents
the United States to other
governments, promotes peace, and
pursues economic opportunity and
protects the American people from
drug trafficking, weapons proliferation,
environment, and assists Americans
overseas.



Overview

Facilities Services Directorate, Leased Facilities Division

- Pilot Program
- Three groups
- 25 employees



Highlights

- High level of participation
- Existing comprehensive training program
- Customized user training on FBPTA Tools



Results

- 80% Staff with professional development plan in AFM
- Guided professional development planning
- Plan for long-term monitoring and compliance

Washington Headquarters Service



GSA Returning Training Case Study



Building Operator
100,000 SF Building

FACILITIES MANAGEMENT INSTITUTE
ACCELERATE FM

Recommends PNNL Building Retuning
Training

\$6,000

Cost of the Class

\$96,000

Savings From Class

< 0.1

Simple Payback

Build Your Own Business Case



Building Operator
100,000 SF Building

FACILITIES MANAGEMENT INSTITUTE
ACCELERATE FM

Recommends Building Operator
Certification Level I to fill competency
gaps

\$2,500

Cost of the Class

\$11,180

Savings From Class

347%

ROI

BOC Third-Party Validation Studies Show Savings Persist Year After Year

Resources

Resource	Website
Facilities Management Institute – Houses Accelerate FM, contains FBPTA information, and other workforce resources	www.fmi.gov
Accelerate FM – Professional development planning and FBPTA compliance documentation tool	https://acceleratefm.us
FEDSAT – Skills assessment tool to assess competency related to high priority FBPTA performances	www.sftool.gov/fedsat
Building Retuning - Set of courses and resources on tuning buildings developed by PNNL	http://retuningtraining.labworks.org/training/lms/
Career Map Tool – Career mapping tool that shows entry points and career progression within energy and facilities industry	www.facilitiescareermap.feapc.com



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Questions?

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Maureen Roskoski | Facility Engineering Associates

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Roger Grant | National Institute of Building Sciences

rgrant@nibs.org, www.nibs.org