Competency-Based Occupational Frameworks: What They Are and How to Use Them

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Urban Institute: Apprenticeship and More

Urban Institute:

- Based in Washington DC
- Celebrating our 50th Anniversary
- Brings evidence to inform policy; "Elevate the Debate"

Apprenticeship:

- Deep expertise at Urban, including evaluating apprenticeship programs, work-based learning, youth apprenticeship
- National experts on competency-based apprenticeships

What is a Competency-Based Apprenticeship?

Competency-Based

Apprentice applies knowledge, skills, and abilities to real life execution of job functions

Employers' expectations for job performance are met

Goes beyond process and theory toward action on the job; pace tailored to the apprentice and employer needs

Time-Based

Apprentice has to satisfy time requirements for different learning objectives; curriculum-based

Employers may not see on-the-job performance to their specifications

More rooted in theory and memorization than application; pace is set by curriculum, not aptitude

Competency-Based Apprenticeship: A Boon for Employers

Helps fill openings quickly with local talent

May help diversify workforce

May reduce recruitment costs and improve retention and loyalty

Consistent with some hiring practices and performance-based evaluation

Enables faster paced training suited to skills of apprentices and needs of employer; apprentices trained to needs of employer

Many resources exist to make it easy (like CBOFs)

What are Competency-Based Occupational Frameworks (CBOFs)?
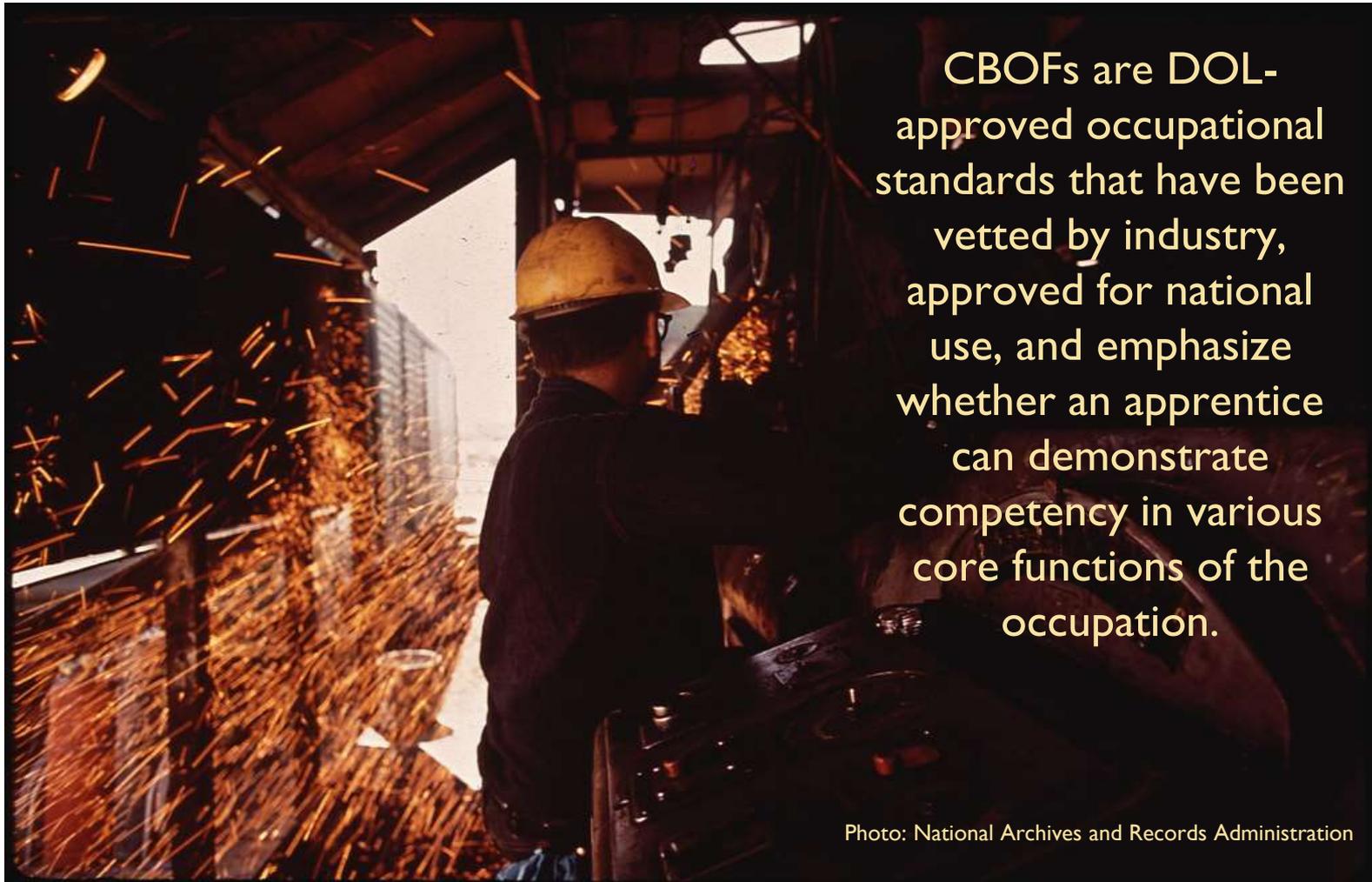
CBOFs are DOL-approved occupational standards that have been vetted by industry, approved for national use, and emphasize whether an apprentice can demonstrate competency in various core functions of the occupation.

Photo: National Archives and Records Administration

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Why were CBOFs created?

Urban Institute—in partnership with DOL Office of Apprenticeship staff, employers, trade associations, credentialing organizations, expert workers, employers and labor organizations—developed Competency-Based Occupational Frameworks (CBOFs) to:

- Improve the **quality** of registered apprenticeship programs

- Improve **consistency** of content and assessment across employers and programs

- Facilitate the **expansion** of apprenticeships by reducing barriers and fast-tracking start-up and approvals process

The US differs from other countries

- No nationally based system for standard-setting;
- Flexible, but inconsistent quality;
- Impedes growth of apprenticeships

- Adopt standards developed by expert bodies;
- Long review process;
- Consistent pathways unify apprenticeship experience for employers/employees

General Advantages of CBOFs

- Non-proprietary
- High quality
- Competency-Based and Industry Driven

CBOFs available and in development

Sector	Released by OA – June 2018	Released by OA – April 2019	In development
Advanced manufacturing		• CNC Set-up Programmer • Industrial Maintenance Tech. • Industrial Manufacturing Tech. • Mechatronics Installer • Mechatronics Technician	• General CNC • Industrial Machinist • Stamping Press Operator • Tool and Die Maker • Additive Manufacturing Tech
Energy	• Transmission Line Worker		• Wind Turbine Technician • Solar Panel Installer
Finance/Insurance			• General Insurance Associate
Healthcare	• Community Health Worker • Medical Assistant • Medical Records/Health IT and Medical Coder • Sterile Supply Technician	• Surgical Technologist • Phlebotomist	• Certified Nursing Asst. • EMT/Paramedic • Home Health Aide
Hospitality			• Chef • Housekeeping
IT	• Cybersecurity Support Technician • IT Generalist	• Database and Cloud Administrator • Developer	• Dev Ops • UX Designer
Transportation	• Heavy and Tractor Trailer Truck Driver • Transit Bus Technician • Transit Coach Operator		• Avionics Technician • Crane Operator • Logistics Technician • Aircraft and Power Technician

CBOFs in a snapshot

Work Process Schedule[1]

- Created for an occupation (ex: "cyber security support technician")

- Identifies major job functions and competencies that emphasize performance on the job

- Give employers a free, non-proprietary "off the shelf" template

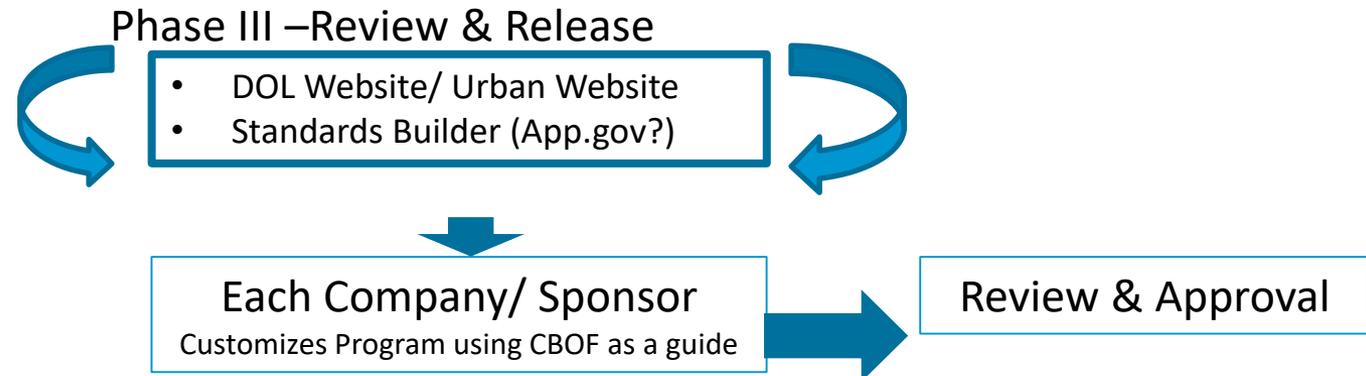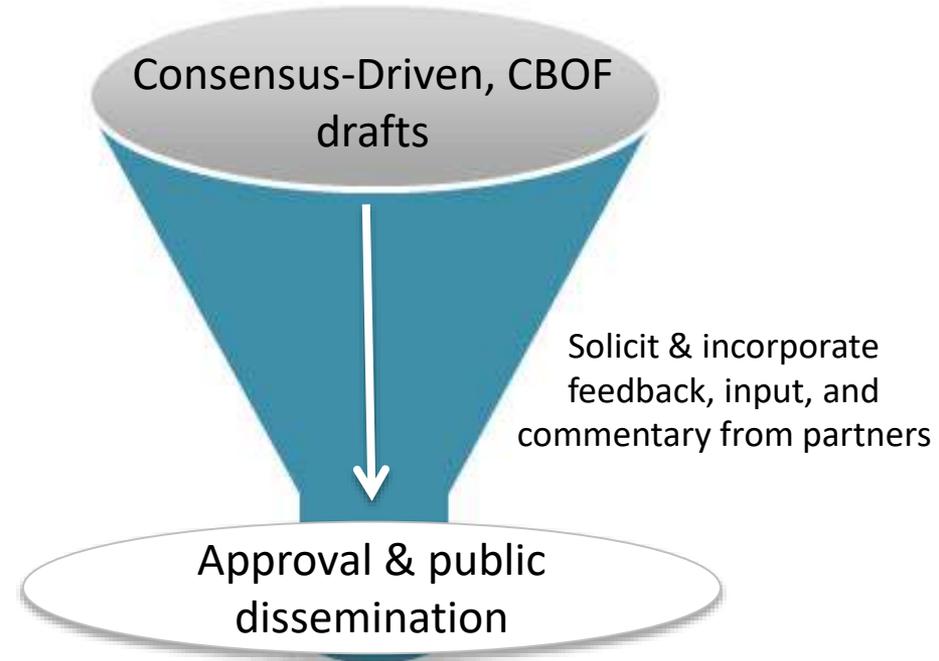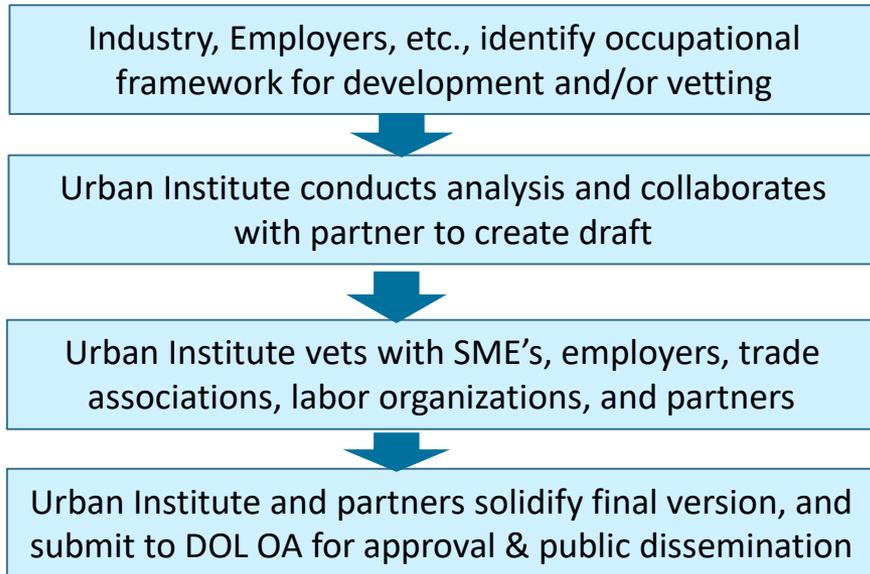- High quality: researched and vetted

How is a competency-based apprenticeship different and what are its advantages?

Example: Transit Bus Technician

Topic List	Learning Objectives	Competencies
Electrical and Electronic systems	• Understand electricity fundamentals • Explain mathematical relationship between voltage, current and resistance in an electrical circuit • Describe role of relays and switches in electrical circuits	Perform battery diagnosis and repair; diagnose and repair related electrical/electronic systems; maintain, diagnose, and repair multiplex systems
Brake and Air systems	• Identify basic brake system components • Understand the shoe lining to include the scribe line and friction codes of the lining • Describe road test procedures	Maintain, diagnose, and repair air supply and service systems; Maintain, diagnose, and repair mechanical/foundation disc and drum brakes

Process for creating CBOFs

CBOF Creation & Vetting (Phases I & II)

Industry, Employers, etc., identify occupational framework for development and/or vetting

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Urban Institute conducts analysis and collaborates with partner to create draft

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Urban Institute vets with SME's, employers, trade associations, labor organizations, and partners

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Urban Institute and partners solidify final version, and submit to DOL OA for approval & public dissemination

Consensus-Driven, CBOF drafts

Solicit & incorporate feedback, input, and commentary from partners

Approval & public dissemination

Phase III –Review & Release

• DOL Website/ Urban Website
• Standards Builder (App.gov?)

↓

Each Company/ Sponsor Customizes Program using CBOF as a guide	→ Review & Approval

Main Components of CBOFs

Occupational Overview

Work Process Schedule

Detailed Job Functions

- Background, Job Titles, Pathways, Credentials, etc. (pages 8-11)

- Job Functions, Competencies, Related Technical Instruction, Cross Cutting Competencies (pages 12-23)

- Job Functions, Competencies, Knowledge, Skills, Tools and Technologies, Performance Criteria (pages 24-80)

Main Components of CBOFs: Occupational Overview

Occupational Overview → Occupational Overview Includes:

Transit Bus Technician Occupational Overview

Occupational Purpose and Context

Diagnose, adjust, repair, maintain, and overhaul buses and bus equipment. Typically works in municipal transit repair shops as an employee. Other occupations include working for a vendor/supplier, a private bus company, or as an independent contractor.

Potential Job Titles

Service Technician, Bus Technician, Transit Technician, Bus Mechanic, or Transit Mechanic.

Attitudes and Behaviors

Technicians must have an aptitude for understanding mechanical, electrical/electronic, pneumatic and hydraulic systems, maintaining those systems through preventive and predictive actions, diagnosing faults within those systems, and repairing those faults. Technicians must also have manual and finger dexterity, hearing sensitivity, auditory attention, and physical strength and flexibility. Technicians must also be detail oriented and precise, have strong inductive and deductive reasoning and problem solving skills, exhibit strong perceptual skills and problem sensitivity and the ability to communicate technical information orally and in writing. Must have good attendance record and experience working with others.

Apprenticeship Prerequisites

May be required to pass drug testing or other tests administered by the transit agency.

Occupational Pathways

Career pathways include transitioning to positions within a transit agency such as maintenance superintendent, maintenance manager, instructor, parts manager, warranty manager, or other transportation management positions within the organization. Other pathways include working outside the agency for private bus companies in maintenance/management positions, or for suppliers/vendors as service representatives, technicians, and product/sales representatives.

- Purpose & Context
- Alternative Job Titles
- Attitudes & Behaviors
- Apprenticeship Prerequisites (if applicable)
- Occupational Pathways
- Certifications, Licensure, and other Credential Requirements
- Job Functions
- Options & Specializations
- Levels
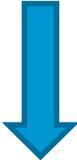
Work Process Schedule
(next slide)

# Main Components of CBOFs: Work Process Schedule

Work Process Schedule

Work Process Schedule Includes:

WORK PROCESS SCHEDULE

ONET Code: 49-3031
RAPIDS Code:

Transit Bus Technician

JOB TITLE:

LEVEL: SPECIALIZATION:

STACKABLE PROGRAM ___yes   _____no

BASE OCCUPATION NAME:

Company Contact: Name

Address: Phone   Email

Apprenticeship Type: Prerequisites

_____Competency-Based

_____Time-Based   _____Hybrid

JOB FUNCTION 1: Demonstrates mastery of fundamental skills	Core or Optional		Level
Competencies	Core or Optional	RTI	OJT
A. Follows safe procedures	Core		
B. Correctly applies hand tools, power tools, and fasteners	Core		
C. Demonstrates basic rigging and hoisting ability	Core		
D. Demonstrates ability to apply basic industrial mathematics	Core		
E. Demonstrates basic mechanical ability	Core		
F. Demonstrates basic hydraulic and pneumatic ability	Core		
G. Demonstrates basic electrical and electronic ability	Core		

- Job Functions (Core and Optional)
- Job Function Competencies
- Cross Cutting Competencies

The Work Process Schedule outlines the job functions and competencies the apprentice must demonstrate to complete the program.

It can be used by itself for a condensed snapshot into the full occupational requirements.
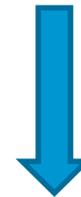
Detailed Job Functions
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Main Components of CBOFs: Detailed Job Functions

JOB FUNCTION 1: Demonstrates mastery of fundamental skills

Related Technical Instruction		
KNOWLEDGE	**SKILLS**	**TOOLS & TECHNOLOGIES**
• Basic work safety protocols, habits and procedures • Basic mechanical, hydraulic and pneumatic principals • Basic electrical and electronic principals	• Effectively communicate in English both verbally and written at a minimum 8th grade level; perform at 8th grade math level; have basic mechanical aptitude	• Basic hand tools including screw driver sets, wrench sets, ratchet/socket sets, torque wrench, punches and awls, hammers, plier sets, riveters and rivets, bolt cutters, wire

	Core or Optional	Level
Competency A: Follows safe procedures	Core	
PERFORMANCE CRITERIA		
1. Properly lifts heavy objects		
2. Properly handles chemicals, hazards, and bloodborne pathogens		
3. Wears proper attire and personal protective equipment (PPE)		
4. Utilizes Safety Data Sheet (SDS) when handling chemicals		

Creating Detailed Job Functions

The Detailed Job functions include all of the necessary details per each job function. This section makes up the rest of the framework.
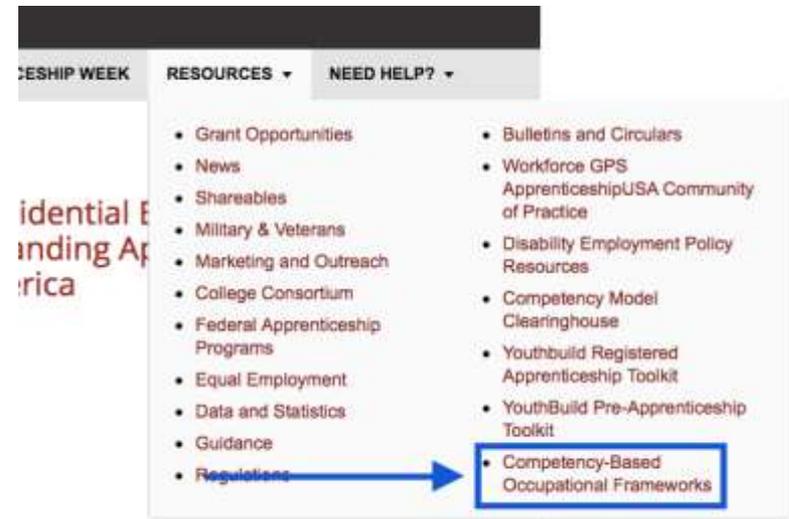
What are the benefits?

- **Quality over completion:** focus is on the apprentice's demonstrated ability to competently execute the functions of an occupation

- **Faster completion time:** On-the-job training (OJT) and related technical instruction (RTI) with flexibility of learning sequence tailored for each apprentice

- **Industry vetted:** coordinated involvement of employers, industry and trade groups, educators, labor unions, and other key stakeholders created an approved product

- **Facilitate registration:** competency-based requirements of "apprenticeability" are baked into the CBOFs

Where do I find CBOFs?

Go to the DOL.gov/apprenticeship homepage
→ "resources" tab → "Competency-Based Occupational Frameworks" – and you will be re-directed to an Urban Institute page containing the CBOFs

Interactive Q & A: Is it a Competency? (Y/N)

1: Prepares instruments and treatment rooms for patient use

2: Understands potential sources of contamination

3: Disinfects and sterilizes tools and equipment in the medical room

4: Lists anatomical terms

5: Describes key systems of the human body

6: Explains physiological processes for maintaining homeostasis

7: Interviews patient to determine the nature of the visit or concern

8: Records patient's medical and pharmacological history

Questions about CBOFs?

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