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Commercial Workforce Credentialing Council

Better Buildings Workforce Guidelines Certificate Program Development Guide

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Background

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. 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. To accomplish the goal of improving commercial building workforce credentials, the BBWG established the job requirements based on an industry-validated Job Task Analysis (JTA) for four job titles: Building Energy Auditor, Building Commissioning Professional, Energy Manager and Building Operations Professional. The outcome of the initiative resulted in two types of credentialing options credentialing entities may pursue: the development of professional certifications and the development of curricula for certificate-issuing programs.

The Institute established the Commercial Workforce Credentialing Council (CWCC) to lead in the development of guidelines. 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 options for certification and certificate-issuing entities. The *Guidelines* are available for download. Entities that meet the requirements of the BBWG are eligible for recognition by the DOE, and many credentialing organizations have achieved BBWG recognition to date. In the development of their credentialing programs—both certification and certificate-issuing—the key requirement for achieving BBWG recognition is attaining accreditation from the following accreditation bodies. For professional certification bodies, accreditation to ISO/IEC 17024: *Conformity assessment—General*

Better Buildings U.S. DEPARTMENT OF ENERGY
RECOGNIZED PROGRAM
MEETS U.S. DEPARTMENT OF ENERGY GUIDELINES

The purpose of awarding BBWG recognition is to identify that credentialing entities meet a pre-determined standard and in doing so, reduce the confusion and uncertainty around workforce credentialing; assure greater consistency and comparability within the workforce; lower costs; and support better credentials, better workers and better buildings. The goal of the BBWG Guidelines is to enhance and benefit training and certification programs; provide employers and building owners/managers with greater consistency and outcomes from the workforce; and establish job pathways and industry-accepted credentials for workers in these energy-related fields.

requirements for bodies operating certification of persons is the required accreditation standard[1]. For certificate-issuing entities, accreditation to ANSI/ASTM E2659 *Standard Practice for Certificate Programs* or ANSI/IREC Standard 14732:2014 *General Requirements for the Accreditation of Clean Energy Certificate Programs* are the required accreditation standards.[2]

What is Accreditation

Accreditation is an independent third-party review and attestation of an entity's conformance with an established standard. Accreditation is awarded for a fixed period of time and requires renewal. ISO/IEC 17000[3] defines **third party** as a "conformity assessment activity that is performed by a person or body that is independent of the person or organization that provides the object and of the user interests in that object" (clause 2.4). Accreditation standard ISO/IEC 17024 (certification bodies) and ANSI/ASTM E2659 and IREC 14732:2014 (for certificate-issuing entities) are the accreditation standards for independent third party review that DOE selected as requirements for BBWG recognition. These accreditation standards were selected based on several factors, including their development by industry stakeholders, applicability to credentialing entities, scope, thoroughness, and commitment to continuous improvement of the credentialing entities they accredit. Accreditation is a means by which a credentialing entity can demonstrate its accountability by opening its operations and practices to the scrutiny of an independent third-party. Employers, regulators, consumers, workers and industry increasingly are recognizing the value and assurances accreditation brings to credentialing entities.

Credentialing Options

Certification Entities

According to ISO/IEC 17000, certification is defined as:

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[1] ISO/IEC 17024 *Conformity assessment—General requirements for bodies operating certification of persons* is the standard for personnel certification programs and is administered in the United States by the American National Standards Institute (ANSI) and International Accreditation Services (IAS.)

[2] ANSI/ASTM E2659 *Standard Practice for Certificate Programs* (originally developed in 2009). This standard provides guidance to certificate issuers for developing and administering quality certificate programs and to stakeholders for determining the quality of certificate programs. ANSI/IREC Standard 14732-2014 *General Requirements for the Accreditation of Clean Energy Certificate Programs*. This standard applies to the accreditation of certificate programs that develop and administer credit or non-credit clean energy training/education offered in formal educational institutions and other legal entities.

[3] ISO/IEC 17000 *Conformity assessment – Vocabulary and general principles, 2004*

Third-party attestation related to products, processes, systems or persons.

ASTM E 2659 describes certification as

> "… a process through which a nongovernmental entity grants a time-limited recognition to an individual after verifying that he or she has met established criteria for proficiency or competency, usually through an eligibility application and assessment. While certification eligibility criteria may specify a certain type or amount of education or training, the learning event(s) are not typically provided by the certifying body. Instead, the certifying body verifies education or training and experience obtained elsewhere through an application process and administers a standardized assessment of current proficiency or competency…. Also, certifications have ongoing requirements for maintaining proficiency/competency and can be revoked for not meeting these ongoing requirements."[4]

While each certification body applying for accreditation must meet all of the requirements of ISO/IEC 17024, the certification scheme—Clause 8—for each of the four energy-related jobs has been developed and can be licensed through the Institute. The CWCC followed national and international best practices for developing certification scheme requirements, including the scope of the certification; job-task analysis; job and task description; required competence; abilities (when applicable); prerequisites (when applicable) and code of conduct (when applicable). These scheme components were developed by experienced industry subject-matter-experts through a deliberative process.

Together, the JTA Reports and the certification schemes comprise the content of the voluntary, industry-developed, industry and government-recognized Better Buildings Workforce Guidelines. The advantage to certification bodies utilizing the resulting schemes is that the schemes meet the requirements of ISO/IEC 17024. Industry certification bodies can choose to use one or more of the certification schemes to revise their existing certification programs, or to develop, administer and confer new certification programs under their current brand, just as they do now. The difference is that the revised or new certifications they confer will be built on national, industry and government-recognized guidelines for workforce competency, developed jointly by a broad range of industry stakeholders and subject-matter-experts. Whether a certification body elects to revise an existing program or develop a new one utilizing the BBWG schemes, the certification body must follow and meet all scheme requirements as set forth in ISO/IEC 17024:2012.

[4] ASTM E2659 *Standard Practice for Certificate Programs,* Sections 4.3 and 4.5, 2016

Certificate-issuing Entities

According to ANSI/ASTM E2659 *Standard Practice for Certificate Programs*, a "**certificate program**" is a non-degree-granting education or training program consisting of:

1. a learning event or series of events designed to educate or train individuals to achieve specified learning outcomes within a defined scope, and
2. a system designed to ensure individuals receive a certificate only after verification of successful completion of all program requisites including but not limited to an assessment of learner attainment of intended learning outcomes.

In a certificate program the learning event(s) and the assessment(s) are both developed and administered by the certificate issuer, and there is an essential link between them. Certificates do not have ongoing maintenance or renewal requirements and therefore, cannot be revoked.[5]

ANSI/IREC Standard 14732:2014 *General Requirements for the Accreditation of Clean energy Certificate Programs*, defines a **certificate-issuing entity** as "a legal entity that offers education or training culminating in the award of a market-valued certificate."[6]

Certificates for the BBWG job descriptions are an important part of the landscape of workforce credentialing. Certificates differ from certifications in that they focus on the education/training requirements needed to perform in a given job, and assess the learner's attainment of the learning objectives rather than the competencies required to perform in a job, role or occupation as do certification programs. It is expected that the type of certificate-issuing entities that would apply for BBWG recognition at the certificate level would include: community, technical and vocational colleges, universities, government agencies, independent for-profit training organizations, proprietary institutions, company sponsored training, professional and trade associations.

While certificate-issuing entities may select from two accreditation standards, the starting point is the identification of the required skills and knowledge that a certificate holder should have. For the IREC 14732 accreditation standard, this is derived from an IREC-accepted Job Task Analysis and applies to clean energy programs. The basis for the curriculum can be either a full or partial JTA.

The ASTM E2659 accreditation standard applies to any industry, and does not specifically require a full or partial JTA, but requires a certificate program plan with an aligned system of analysis, program

[5] ASTM E2659, 3. Terminology, 3.1.7.
[6] ANSI/IREC 14732:2014. 3. Terminology, page 6.

design, development, implementation and evaluation be in place, and that the certificate program plan be developed, monitored and approved by an oversight committee (Requirement 6.1.2). Both accreditation standards require the learning objectives to be linked to the JTA (IREC 14732) or the certificate program plan (ASTM E2659), and the assessments must also link to the learning objectives. Both accreditation standards require that the candidate pass a knowledge-based, criterion-referenced assessment.

Certification or Certificate-issuing Entity

One credentialing type is not necessarily more or less rigorous than another. They simply serve different purposes and may require different business approaches, governance structures, development processes, etc. The critical factor in both is the basis on an industry recognized consensus standard against which compliance can be accredited by an independent third-party accreditation body not affiliated with the provider.

Assessment-based Certificate-issuing Program	Professional or Personnel Certification Program
Provides instruction and training (non-degree granting or may be part of degree granting program)	Assesses knowledge, skills, and/or competencies previously acquired; training is provided by another entity
Goal is for participants to acquire specific knowledge, skills, and/or competencies; maintenance requirements are not mandatory	Goal is to validate the participant's competency through a conformity assessment system, and to assure maintenance of competency requirements
Assessment is used to evaluate mastery of intended learning outcomes; linked directly to learning event; Assessment may be administered by the trainer or course instructor	Assessment is best used to assure minimum competencies and to differentiate professionals; Assessment is independent of a specific learning event; Assessments are administered by someone independent of the candidate, not a trainer, employer or body otherwise familiar with the candidate
Assessment content may be narrower in scope	Assessment content is usually broad in scope and based on a full job, role or occupation

Assessment-based Certificate-issuing Program	Professional or Personnel Certification Program
Awards a certificate to recognize mastery of the specific learning outcomes; it is NOT a certificate of attendance or participation, which is awarded to individuals who have attended or participated in a course or training program but did not have to demonstrate mastery of the intended learning outcomes; Individual awarded the certificate owns the certificate.	Awards designations to recognize achievement; Certificate is owned by the issuing entity and awarded on condition of continued maintenance of competence requirements (recertification); Certificate may be revoked for cause.

CWCC/BBWG Certificate-level JTAs

While the fundamental requirements for BBWG recognition for certificate-issuing entities are in place, approaches to utilizing the BBWG JTAs has necessitated further interpretation and guidance for prospective applicant organizations. Considerations from prospective applicant organizations include the following:

- the job scopes of the BBWG JTAs are at a “master” or “advanced” level and beyond the extent typically taught at the certificate level
- the body of knowledge in the BBWG JTAs is at a higher level than typically awarded by certificate-issuing entities
- the body of knowledge is too extensive to capture and implement in programs of study typically offered by certificate-issuing entities
- basing a certificate program on the full BBWG JTA could create confusion between the certification programs and certificate programs.

Based on input from the industry following the development of the Building Operations Professional scheme, it was determined that a reduced scope of work for a mid-level position was needed to fit a job commonly held by many energy efficiency workers. As it was a less extensive scope of duties and tasks, it was also felt that it would support the development of certificate level programs to prepare a JTA for the position to provide guidance to certificate program developers. The Institute, with funding from DOE, requested a follow up study be conducted to identify a reduced scope for the Building Operations Journey-worker. A validation study was conducted to identify the components of the domains, tasks and associated knowledge for the mid-level journey-worker. The reduced scope/mid-level JTA contains the duties, tasks, and steps; knowledge, skills, and abilities; and tools, equipment,

and resources of the Building Operations Professional Journey-worker. The final report for the Building Operations Journey-Worker is available from the CWCC website Resources page.

The Institute and DOE hope that the development process and resulting BOJ JTA provide guidance to organizations wishing to develop reduced scope JTA from any of the BBWG JTA as the basis for certificate programs that can achieve BBWG recognition. The Institute and DOE currently have no plans to develop reduced scope JTA for the other positions, leaving those to industry to develop as needed.

Basing the Certificate Program on the BBWG JTA

While use of a specific JTA is not a requirement under either standard, use of a BBWG JTA as the basis for developing a certificate program is a requirement for recognition by DOE / BBWG, regardless of the accreditation option certificate-issuing entities select (ASTM E-2659 or IREC 14732:2014). Use of the full JTA may result in the development of a certificate program of significant length, perhaps in accordance with multiple semester and/or quarter requirements if offered within a degree-granting institution, or sequenced into a series of courses that culminate in the delivery of content that covers the entire JTA. Whatever the approach, the goals and objectives of the course(s) must be defined and directly relate to the JTA.

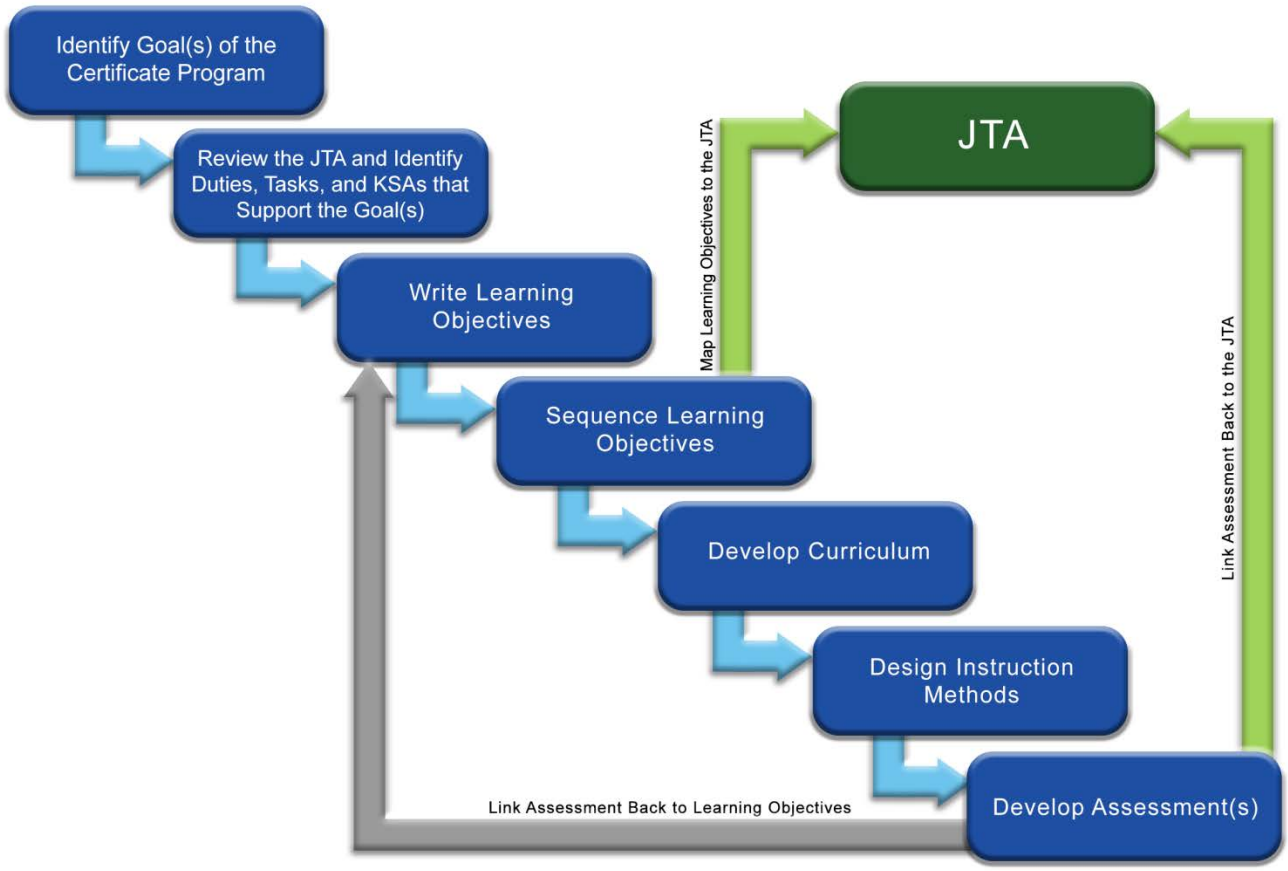
For example, if a training institution were to develop a certificate program for the Building Operations Journey-worker, the goal of the certificate program would be to "prepare an individual to work as a building operations journey-worker." The next step would be to identify the body of knowledge upon which to base the training for the building operations journey-worker. In this case, the body of knowledge has already been identified for training institutions through the job/task analysis developed for DOE / BBWG recognition. This body of knowledge was then sequenced and ordered to facilitate instruction of the content by delineating the duty and task areas, and specifying the required knowledge, skills and abilities (KSAs) associated with performing the duties and tasks. This critical step in curriculum development has been completed for training institutions, and represents a significant savings of the resources required to build the certificate program in conformity with the ANSI/IREC: 14732 and ASTM E-2659 accreditation standards. Once training institutions obtain the JTA, they continue the development of the certificate program by writing the learning objectives, which should be directly linked to the JTA duty and task areas, knowledge and skill competencies. Prerequisites should be identified and included in the syllabus by the training institution. Instructional design and delivery methods would then follow, as would the assessment instruments intended to

determine the learner's attainment of the learning objectives. The Building Operations Journey-worker Job Task Analysis Report, provides an example of how to utilize the JTA in developing a certificate program.

If a part of the JTA "partial JTA" is selected as the basis of the certificate program, the selected portion of the JTA must relate to the goals and objectives of the certificate program. For example, using the Building Operations Journey-worker JTA, a training institution would select a goal, or goals, for the course: "provide foundational knowledge of building systems and sciences." The program goal(s) would be supported by learning objectives that come from the JTA duties, tasks and KSA statements. The training institution would design the sequencing of the course, learning objectives and delivery methods from this foundation. Prerequisites would be identified in alignment with the stated goals and objectives, and assessments would be designed to measure the learner's attainment of the learning objectives.

The following graphic illustrates an approach to utilizing the JTA, or partial-JTA, in the development of certificate-issuing programs seeking recognition from DOE / BBWG.

Figure 1 JTA Utilization for Certificate Development



The Building Operations Journey-worker Job Task Analysis Report, Appendix C, illustrates another approach to portioning JTA content into smaller, related units of content. Certificate-issuing entities wishing to utilize part of the JTA for the Building Operations Journey-worker may select one or more portions (duties) to develop certificate programs from, depending on course goals and objectives, the length of the course, the requirements of the certificate (degree, stackable credentials, etc.). The same approach can be applied to the remaining JTAs— Building Energy Auditor, Building Commissioning Professional, and Energy Manager, depending on the content/job/skill the certificate-issuing entity wishes to develop courses for

In determining the content of the certificate program, certificate-issuing entities with programs related to the BBWG job titles, should review course materials they have already developed, and match the program goals and learning objectives against those of the BBWG JTAs in order to determine if portions of a program have already been developed. The same applies to the instructional design and

delivery methods already in place—content and delivery may be able to be repurposed to meet the requirements of the BBWG and accreditation standards. For certificate-issuing entities starting anew, a thorough review of the JTAs will help to determine the type of program offered; length of program; number of courses; needs of learners; and certificate awarded. This decision may be linked to the mission and purposes of the certificate-issuing entity. To assist community colleges, the Institute in cooperation with the National Renewable Energy Laboratory (NREL), developed *Embedding Advanced Commercial Building Skills into Existing Community College Programs of Study.* The Guide is available for download from the CWCC website Resource page.

For certificate awarding entities considering applying for accreditation to ASTM E2659, Section 6, Certificate Program 6.1 and 6.2, sets forth the requirements certificate-issuing entities must demonstrate compliance with related to the development of the certificate program. Entities wishing to seek BBWG recognition must reference their use of the DOE / BBWG job-task analysis primarily in this section of the application for accreditation.

For certificate-issuing entities considering applying for accreditation to ANSI/IREC 14732:2014,Section 10, Requirements for Certificate Program, 10.2, sets forth the requirements certificate-issuing entities must demonstrate compliance with related to the development of the certificate program. Entities wishing to seek DOE / BBWG recognition would reference their use of the job-task analysis primarily in this section of the application for accreditation.

Planning for Accreditation

Both ANSI and IREC provide several resources to assist certificate-issuing entities seeking accreditation. ANSI offers a two-day training course designed to introduce interested stakeholders to the American National Standard ANSI/ASTM E2659 and the requirements for developing a quality education/training course that has an assessment at the end. IREC offers a 16-week email-based application prep program to help applicants break up the planning activities into manageable chunks, as well as an online FAQ bank, tip videos, and email and phone support.

Certificate-issuing entities should review the requirements of each accreditation standard thoroughly, in addition to the submission requirements, prior to selecting the standard they wish to apply under. Certificate-issuing entities may have several policies, procedures, administrative and operational practices in place that may be revised to meet accreditation standards, or may already meet the standard. This may be an important consideration when determining the resources required to achieve

accreditation. Certificate-issuing entities should also become familiar with accreditation requirements outside of the direct purview of training and program delivery, for example, organizational structure; administrative practices; faculty qualifications; employment considerations; contracts; program-related policies and procedures; management system and review requirements; program planning and implementation requirements; assessment of learners; program evaluation; information available to learner; and requirements for certificate issuance. The accreditation standards are much more comprehensive in scope than just the development and delivery of the certificate program itself.

Benefits of Accreditation

Through the BBWG, the DOE has acknowledged the value of accreditation by making it a mandatory requirement of earning and maintaining BBWG recognition. While achieving accreditation takes considerable planning and resources, many credentialing entities find the value worth the effort and resources expended. Accreditation entities identify increases in prestige and the market value of certificate programs; the achievement of measurable learning outcomes; and educational and legal defensibility from a program with conforming content validity, assessment validity and reliability. Defensibility is achieved through content based on industry-accepted best practices approved and monitored by an expert oversight group with scoring of the learner assessment based on a passing standard established through a criterion-referenced method. Credentialing entities attest to competitive advantages in the market-place; improved operations and efficiencies in program administration; higher quality programs; continuous improvement; increased accountability to stakeholders, consumers, applicants and the public through third-party review; program distinction; and use of logos and marks of the sponsoring accreditation organizations to strengthen their brand. Businesses and a number of industries also look to accreditation in making hiring decisions of workers trained at accredited entities with an eye to qualifications, skills and safety. Governmental agencies also recognize the value of accreditation by requiring new hires to achieve certification and training from accredited credentialing entities. Both ANSI and IREC provide FAQs and statements of benefits that applicant certificate-issuing entities should review.

