MICROCREDENTIALS
COMBINING THEORY WITH REAL-WORLD APPLICATION

Many industry sectors are experiencing a shortage of skilled and qualified workers. While professional certifications are one way workers can demonstrate their qualifications, they are time and resource intensive coming to market. Also, some jobs require workers with specific skills, rather than the full range of knowledge and skills required to perform an entire job (traditional certification/traditional job).

The recent evolution of micro-credentials is providing "just-in-time" credentialing for workers in emerging and rapidly evolving job markets. The clean-energy sector is one such rapidly growing job sector, with many workers from professions performing many components of many jobs. Developing micro-credentials is one strategy one clean-energy organization is using to develop assessment-based credentials that are focused on specific skills.

Following accepted practices in measurement and assessment-development, and utilizing technology as the research and development platform, micro-credentials that save time and resources are providing a "real-time" solution to qualifying a work-force. The presentation will discuss one approach to developing a micro-credential from the exploratory phase through administration.

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MICROCREDENTIALS

Preparing a Skilled Workforce in "Real Time"

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Introduction

Many industry sectors are experiencing a shortage of skilled and qualified workers, individuals who need to be "job-ready." Not so coincidentally, many evolving forms of credentialing are clamoring for our attention to help workers document their skills, and employers to find job-ready personnel. Some of these evolving forms of credentialing include digital badges, alternative credentials ("alt creds"), verified certificates, nano-degrees and micro-credentials. For industries experiencing rapid growth, ***micro-credentials*** may be a solution to the challenge of qualifying individuals for jobs. Still largely undefined, but generally agreed to as a smaller, discrete, specialized opportunity for education and skills assessment, micro-credentials are useful for both learners wanting to achieve a level of proficiency in a skill, and workers seeking the same to remain current in and/or advance in their jobs, some of which may already require training or certification.

In the United States, the clean energy sector is one industry that is experiencing rapid growth and has a shortage of qualified workers who can work across a myriad of job functions. It is also an industry that has seen the consequences of unqualified workers, both from the poor quality of work produced, low energy savings, and risks to worker and consumer safety. As a result, professional certifications[1] were developed to enhance the quality of work, but only for core renewable and energy efficiency occupations. Meanwhile, the industry finds itself at the intersection of expanding jobs for individuals who work full time in clean energy fields and those working in allied industries that "touch" clean energy. Furthermore, as the industry has expanded, the need for a means of more quickly developing and documenting the skills and knowledge of workers has also grown. Developing micro-credentials is a strategy the Interstate Renewable Energy Council (IREC)[1] is using to respond to this challenge of efficiently qualifying a workforce, minimizing the resources (time, money and personnel) required to do so, all while producing a credible and quality credentialing option for the clean energy sector.

Developing a Micro-Credential

The clean energy sector, similar to many other industries and professions, has relied on professional certifications and training programs to qualify its workforce. While credible, these "traditional" models typically require a significant amount of time to develop and get to market, substantial costs to administer, and rely on the continuous input of subject-matter experts (SMEs) to maintain. Often program development and maintenance activities require resources for SMEs to meet face-to-face, and for qualified facilitators such as psychometricians and experts to develop a body of knowledge (BOK) and an assessment. IREC approached Professional Testing Inc.[1] to partner with them to develop an alternative approach to credentialing in the form of a ***micro-credential*** for the clean energy sector, one that is credible while saving time, money and human resources. The outcome is to build a prototype process organizations within the clean energy sector can use to bring a micro-credential to market. It is interesting to note that while the clean energy sector agreed that it needs an alternative approach to traditional credentialing programs, industry representatives did not agree on the type of alterative credential or how it would be developed.

There are several approaches organizations can take in developing micro-credentials. Finding the right approach will inform the methodology utilized to develop the credential. In an exploratory planning meeting of renewable energy experts from IREC and assessment experts from Professional Testing (exploratory panel), two methodologies were considered: 1) selection of a job-function that combines functional elements of two different jobs, each of which has been defined by a job-task analysis (JTA) resulting in training and/or certification; and 2) selection of a job-function for which no job-task analysis has been conducted, but which is being performed in the workplace. The exploratory panel selected Option 1 as a starting point, as JTAs have defined existing jobs and job-tasks, and are therefore, a good point from which to launch a micro-credential. As previously noted, the clean industry sector has several certifications and training programs from which micro-credentials can be developed.

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[1] Professional certifications are typically comprised of the components associated with awarding a certification, including a certification examination, eligibility for certification and qualifying for the exam, recertification, disciplinary procedures, governance structure and policies.

[2] The Interstate Renewable Energy Council (IREC) develops quality and competency standards, **accreditation and certification programs** for clean energy educators and training programs for a highly-trained, quality-prepared workforce www.irecusa.org. The initiative to develop micro-credentials to address the need to more quickly prepare a skilled workforce is spearheaded by Jane Weissman, IREC's President and CEO.

[3] Professional Testing, Inc. is a full-service provider of assessment, evaluation, certification and accreditation services www.proftesting.com.

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APPROACHES

Selecting an Approach

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Next, the exploratory panel set out to identify the broad parameters for the content, defined as job functions that could be supported by functional descriptions of the tasks associated with performing the job function. The job function needed to be conceptualized as a smaller, discrete, specialized opportunity for skills assessment. The exploratory panel then identified the steps to take to develop the BOK for the micro-credential, and the foundation upon which an assessment would be based. There were accepted practices in credentialing that the exploratory panel followed in the development of the micro-credential:

1. The micro-credential must be developed from a credible approach such as a job-task analysis or a modified JTA.
2. The micro-credential must include input from SMEs who represent the breadth and scope of the micro-credential.
3. An assessment must be a component of the micro-credential, and the development of the assessment must follow acceptable psychometric practices (reliability and validity).
4. Input on content must be provided from industry representatives and SMEs.

The exploratory panel also worked from the following principles:

1. Utilizing technology is essential and may reduce resources required of traditional face-to-face meetings; while this is a highly desirable outcome, it cannot restrict feedback or quality of input. For example, not every step of development may be able to be optimally conducted in a virtual environment.
2. Credibility is paramount, so minimizing resources in the development process cannot compromise the credibility associated with specific processes such as utilizing the appropriate number and type of SMEs.
3. Bringing a micro-credential to market faster does not mean the development process and program integrity can be compromised—best practices must be followed and adhered to.

The exploratory panel then reviewed the practices for conducting job-task analyses as a starting point for outlining the process to follow for developing the BOK for a micro-credential. The steps to conducting a JTA were discussed to determine which steps could be eliminated, compressed or managed by technology in the development of a micro-credential. The panel discussed the steps essential to developing a smaller, discrete, specialized BOK and foundation upon which to base an assessment.

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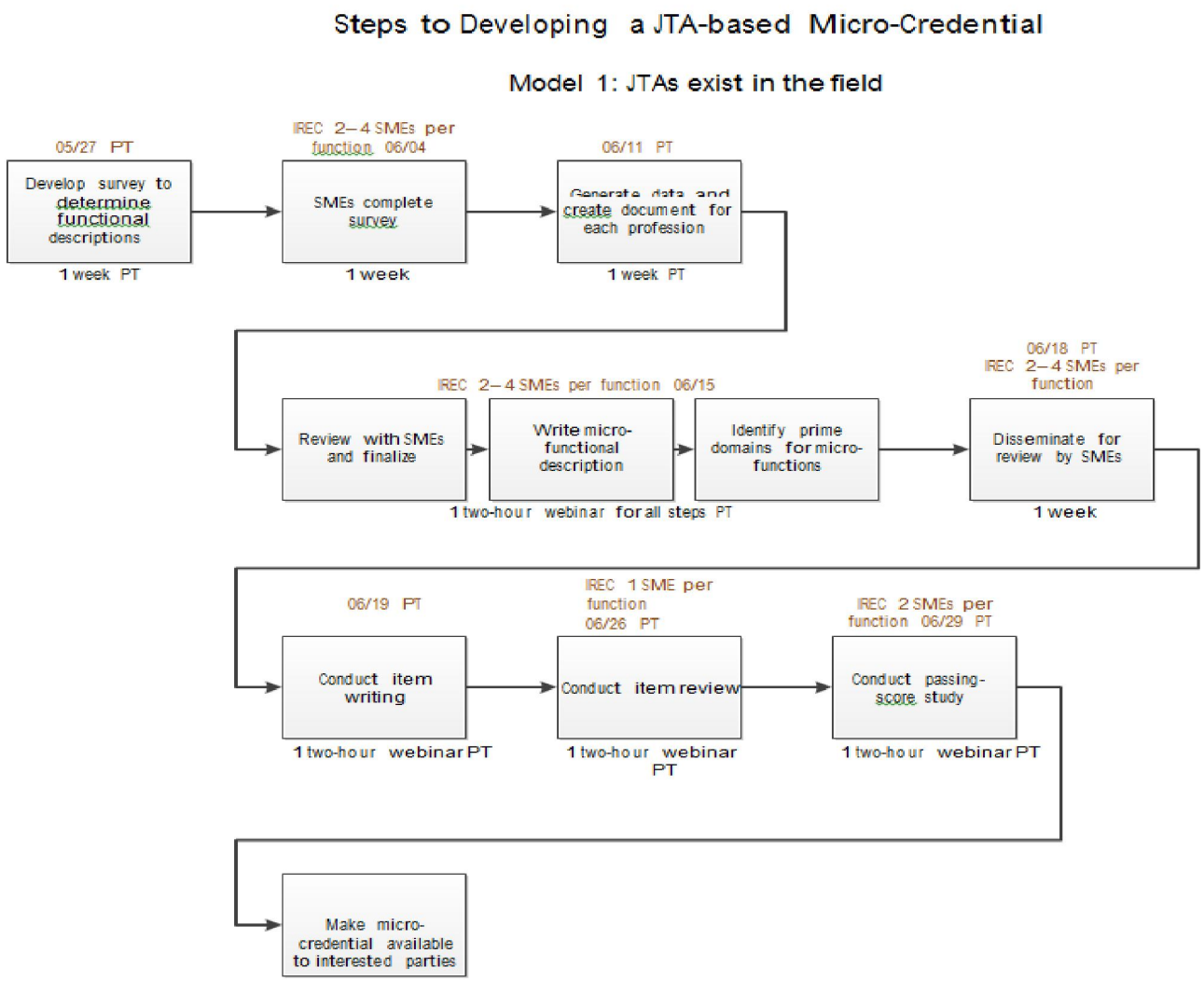
STEPS

The following chart depicts this process and approximates the time line. The chart also identifies the parties responsible for specific activities: IREC (the industry) and Professional Testing (expertise in developing credentialing programs.)



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CONSENSUS

Reaching Consensus

To begin this process and to identify the existing gap, subject matter experts (SMEs) representing home performance professionals (BA and EA) and those representing healthy housing professionals (those who currently complete full healthy-home assessments) were asked to respond to a function.

Working with industry leaders, IREC garnered support for the micro-credential content, and refined the job function as the "Healthy Home Evaluator" whose responsibility is to assess and characterize home-based environmental health and safety hazards and to communicate those risks and hazards to the occupant with the goal of improving health and quality of life. The Healthy Home Evaluator micro-credential was derived to build upon the foundation of two certifications—the Building Performance Institute (BPI) certified Building Analyst Professional (BA) and BPI Energy Auditor (EA), and content was developed to fill the existing gap of healthy-home assessment in those certifications.

Building upon the foundation of BAs and EAs, the competencies required to conduct an in-depth healthy home environmental risk assessment were determined by subject-matter-experts. To begin this process and to identify the existing gap, subject matter experts (SMEs) representing home performance professionals (BA and EA) and those representing healthy housing professionals (those who currently complete full healthy-home assessments) were asked to respond to a function definition survey. The purpose of this survey was to clarify the definition and scope of the healthy home evaluator by looking at those aspects of the healthy-home assessment that are performed by healthy housing professionals that are not typically performed by home performance professionals. The survey was divided into two primary parts. The first part looked at the various components of a healthy home assessment. The second part looked at the O*NET[4] generalized work activities. The difference in the responses of the home performance professionals and the healthy housing professionals were analyzed and used as input in the next phases of development.

In a facilitated day-and-a-half face-to-face meeting, SMEs reviewed the results of the function definition survey and identified the scope of the healthy home evaluator micro-credential. The SMEs were instructed to identify only the competency requirements not currently performed by BAs that are needed to assess and characterize home-based environmental health and safety hazards and to communicate those risks and hazards to the occupant with the goal of improving health and quality of life. A content outline identifying the duties, tasks and KSAs was developed as a distinct body of knowledge for BAs and EAs resulting in the Healthy Home Evaluator micro-credential, an "add-on" to the BA and EA credentials assessing additional competencies—the "micro-credential." Following the review and revision of the content outline, a validation survey was developed for issuance to a broader range of SMEs. Typically this survey provides data on the importance and criticality of specific tasks, and the percentage of content on an assessment—exam weighting.

[4] O*NET is a content model developed by the U.S. Department of Labor (1993) to provide a common language of occupational information and lists generalized work activities across jobs and organizations.

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ASSESSMENT

Assessment

An assessment is considered to be an important component of a micro-credential, and as such follows similar protocols for development as a certification examination, upholding the tenets of validity, reliability and legal-defensibility.

The next step in the development of the micro-credential is the assessment. An assessment is considered to be an important component of a micro-credential, and as such follows similar protocols for development as a certification examination, upholding the tenets of validity, reliability and legal-defensibility. The SMEs identified as item-writers and reviewers collectively represent the scope of the micro-credential and write and review items designed to assess the competency requirements of the Healthy Home Evaluator. Resources such as industry standards and protocols may be utilized during item writing and may assist SMEs in writing questions at the correct degree of difficulty. All items must be linked to the content outline, and assess only the competency requirements within the scope of the micro-credential. In keeping with acceptable industry practices in certification examination development, a criterion-referenced passing score study is required to determine the pass/fail point for candidates. In essence, the process requires: 1) a methodology to identify what content is appropriate for the exam, 2) leveraging of SMEs in the item and exam form development process, 3) a reasonable rationale for the identification of a passing point, and 4) a review of exam and item statistics. With that said, timeliness and expense are considerations in the development of the micro-credential exam.

For the exam development process, SMEs must be identified by the sponsoring organization with expertise in the micro-credential content. Because fewer SMEs are used given the narrowed scope of the job function and assessment content coverage, it is critical to identify those best suited for the role. SMEs are tasked with developing and reviewing the items. This process can be managed remotely and in a short period of time given the fact the exam has much fewer items than a traditional certification exam (we estimate 30 – 50 items for the micro-credential, while certification exams typically contain 100 – 120+ questions.) A management system must be in place where a given SME can draft items and have the capability to review item submission by other item writers. SMEs must be provided the opportunity to finalize any items requiring additional review, which can be conducted via webinar. Following this process a form of the exam is developed to match the test specifications, and should be reviewed and approved by the SMEs prior to administration.

The first administration of the micro-credential is very important as statistical and written feedback (examinee comments and possibly direct questions to examinees) can be used to make final content and scoring decisions. For example, if an item is not behaving well statistically, changes to the items are made. If comments are made about the content of an item, SMEs can make final decisions about the appropriateness of the item—for example, is the item poorly written, or does the item not meet test specifications. Once the statistical and comment reviews have taken place, the exam is ready to have a passing standard applied. A traditional modified Angoff procedure works well for this type of assessment process. This too can be accomplished remotely.

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LESSONS

Lessons Learned

There are many lessons learned in developing any credential, but *many* to be learned in tackling a new concept. First, the comfort level of participants and supporting organizations will vary, depending on how vested they are in traditional models of credentialing, and their support will change throughout the process—sometimes they are on board, and other times they will push back. Knowing the personalities of the participants and the culture of the participating organizations may help facilitators anticipate the comfort level of participants and plan around it. Transitioning mind-sets from what people know and what their organizations do is harder than you think. People tend to resort to what is familiar when they are unfamiliar with a new process. It's very important to remind participants about the purpose and focus of the micro-credential. In their minds and practices, "chunking" smaller units of knowledge and/or skill may be counter-intuitive—be prepared to overcome traditions and "how we do things here."

The concept of "micro" can be interpreted as "less-than" in the market-place, so it is important to be very descriptive about the purpose and function description of the micro-credential, in essence, it's "micro-ness." When two JTAs are referenced, and two credentials are used as a foundation for earning the micro-credential, BOTH sides want their content areas to be included, resulting in too much content and the evolution of a full-scope certification—it's easier for people to add to the content list, than to refine it to its essentials. Take care and time in drafting the function description—you should "know it when you see it" is a good rule of thumb. Also when using two JTAs, the trust factor the certification provides as an assurance or measurement of competence may go down and SMEs may feel the need to re-create existing competencies. In working with SMEs to develop content, helping them understand "how deep is too deep," and "how much is too much" for a micro-credential is a challenge. Frequent reviews of the content outline to determine redundancies with existing credentials, or within the BOK is useful. So is asking the question: "Is this really necessary?"

While reducing and/or eliminating face-to-face meetings is critical to refining the use of resources, there may be instances in which SMEs will want to work face-to-face. For example, if the concept of a micro-credential is abstract to an organization, a face-to-face meeting to develop the job functions may be required to establish the foundation for sponsoring organizations and SMEs. The benefits of this need to be weighed against the significant costs associated with these meetings. Perhaps this will change with time as the credentialing world becomes more familiar with micro-credentials. Finally, even with the support of industry, be prepared for push-back—once they are on board does not necessarily mean they will stay on board, so learn to "go with the flow."

Micro-Credential vs Traditional Certification

Areas of cost-reduction:

- Reducing the number of SMEs for JTA/Functional Analysis from 1—12 to 3 - 6
- Reducing costs of travel by conducting webinars for any "person-to-person" meeting
- Reducing development time from 3 – 6 months to 8 – 10 weeks
- Reducing the cost of facilitation—reducing 3 days of meetings for JTA plus additional days for item-writing and review and passing score study, to 4 – 6 hours of webinars
- Reducing the cost of psychometric expertise by reducing number of meeting days, plus the amount of measurement and analysis required
- Reducing the cost of producing an assessment—fewer questions, item writers self-train and write items; items are 3 response multiple-choice vs. typical 4 response; passing score study requires fewer resources
-

Typical savings in R & D is about two-thirds from traditional JTA studies and exam development. However, micro-credentials are less in scope, and should require fewer number of test questions than a traditional certification examination.

Note: Savings related to scheduling face-to-face meetings may require more attention to management and follow-up with SMEs.

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THE RIGHT CHOICE?

Are Micro-Credentials Right for Your Organization?

Certification bodies in emerging fields (energy efficiency), industries that rapidly change (IT or medical), professions that are facing job shortages, or those with certifications that cross-over several areas of expertise (coaching and safety), may find they are well-suited to developing micro-credentials. Certification bodies often develop full-scope certification programs first to define the BOK, build a foundation, establish industry standards, and define the job or role. As these fields continue to develop and additional specialized knowledge and skill areas surface, developing a micro-credential may be the next logical step to providing learning and assessment opportunities (before the next JTA study) for the certified persons to stay current, and/or for workers in a related field to supplement their skill-set. Micro-credentials can become options for recertification for certified persons, as well as "stand-alone" opportunities that may extend to and include related professions (a real-estate agent learns how to assess the value of a home with solar panels). Micro-credentials may also fill a training void in emerging fields, and in fields that rapidly evolve so credentialed workers can remain current. Micro-credentials may even help workers qualify for certification and/or meet changing job demands, especially in instances where educational opportunities and training have not caught up. For narrowly focused, in-depth, specialized knowledge and skill sets, micro-credentials may be a better option than the development of a full-scope certification program, and may not require the resources it takes to develop a certification program. And in a perfect world, micro-credentials should take less time to bring to market.

There are some advantages for established certification bodies to expand into the development of micro-credentials, so how do you know if this is right for your organization?

- Assess the need a micro-credential may fill—is it resource related, time-sensitive, is there a demand for the content? Currently, what need is not being filled that a micro-credential will fill?
- Assess the reputation of your certification—will micro-credentials dilute it, be perceived as a replacement, considered equal to certification? Will you create confusion in your industry?
- Assess if your certification organization can withstand the internal competition a micro-credential might pose with your other products and services.
- What is the likelihood that a competing organization will offer a similar micro-credential—how would that competition measure up?
- What is the market for the micro-credential and who will seek it—your certified persons, other certified persons, other related professionals? If the latter, is there an opportunity to "cross-pollinate or cross-populate" these credentials?
- Where can resources be maximized—can you work from an existing JTA, or more than one JTA for a field with multiple credentials?
- Where are efficiencies apparent? Can micro-credentials count toward recertification? Can they help people qualify for certification?
- What will it take to sustain micro-credentials—are they truly "one-and-done" or will they require continued maintenance, for example, administration of an assessment?
- How will your organization assure the development and administration of credible micro-credentials?
- What do you expect to gain as ROI? Will the value be long-term or short-term?

Determining if there is a role for micro-credentials in the credentialing landscape, and what they might look like is a conversation that is sure to continue. What it reflects is the need and desire for people to qualify for jobs, remain current and relevant with the jobs they have, build their portfolio of skills, and for organizations to meet this demand with flexibility, creativity and credibility.