A Case Study in
MICRO-CREDENTIALING

Anna Sullivan | Interstate Renewable Energy Council | March 2016

IREC Interstate Renewable Energy Council, Inc.

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INTRODUCTION

Rapid growth in the clean energy sector has placed exciting yet daunting challenges on employers, employees, and the workforce development infrastructure. The rise of full-scope certification schemes to support early growth has provided rigor and helped to structure job definitions and much-needed competency-based assessments of personnel. But with continued market expansion, full-scope certification schemes alone are not always meeting the needs of employers to recruit and promote personnel with the right blend of validated skills. In the face of this challenge, the Interstate Renewable Energy Council (IREC) began to pose the following question: "How do we balance cost and quality in credentialing – as part of a system to measure competencies across industries – that are, at once, rigorous and nimble, cost-effective, and responsive to rapidly evolving skills and industry demands?"

In January 2015, IREC convened a summit of credentialing and energy industry experts in Washington D.C. to examine the viability and potential anatomy of a nimbler framework to validate specialty skills and competencies that would co-exist alongside full-scope certification schemes. The term *micro-credential* was used to describe and define the product, and the need for and potential barriers to market uptake was explored in depth.

Following the summit, IREC identified possible candidates for piloting a custom micro-credential framework and partnered with Professional Testing, Inc. (PTI)[1] to design a prototype for a credible, valid, and high-quality micro-credential development process. This report details the work accomplished so far, the lessons learned, and future directions for expanding on the framework and adoption of micro-credentials within and potentially beyond the clean energy sector.

> *The goal is to have on-time, quality credentials responsive to changing market realities.*
>
> Jane Weissman, President/CEO
> Interstate Renewable Energy Council

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

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BACKGROUND

Full-scope certification schemes based on the accreditation requirements of ISO/IEC 17024: *Conformity Assessment—general requirements for bodies operating certification of persons* have provided a fundamental rigor and structure for the rapidly evolving clean energy sector, furnishing a broad range of job task analyses (JTA) and assessment tools that identify and validate the critical competencies and bodies of knowledge needed to ensure workers can perform their job tasks to high-quality standards. Without such schemes, the clean energy workforce infrastructure would not withstand market pressures for production scale and quality.

Alone, however, full-scope certification schemes sometimes do not fully meet market needs. In the kaleidoscope of rapidly changing job roles and workplace technologies, employers are increasingly looking for personnel with work portfolios encompassing cross-cutting and specialty skills that don't necessarily align with just one job. In this environment, additional competency validation options are needed to fill gaps in the credentialing landscape.

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Clean energy workers experiencing frequent job requirement changes and those based in "allied industries" with an ancillary or emerging clean energy component, may end up performing critical job tasks requiring competencies for which they have not yet been assessed. Examples of clean energy allied professions are code officials, inspectors, real estate appraisers, first responders, electrical engineers, project managers, and architects. Allied industry workers whose job tasks intersect with photovoltaic or other clean energy systems on certain projects could benefit from credentialing opportunities based on an analysis of specific subsets of clean energy-related skills and knowledge needed on the job.

Micro-credentials have the potential to supplement and provide an alternative to full-scope certification schemes between review periods by creating just-in-time credentialing for specialty skills that can be layered on top of existing certifications when market changes and technology updates outpace quality assurance infrastructures. Concurrently, clean energy training providers are seeing a rise in enrollment from students with diverse professional and educational backgrounds who are looking for more discrete, stackable, job-ready training and skills validation than that offered by full-scope JTA schemes alone.

In the face of these challenges, IREC began to pose the question: "How do we balance cost and quality in credentialing – as part of a system to measure competencies across industries – that

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> Adding micro-credentials to the mix must be a careful maneuver that instills value and quality in the process and product.

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At this time, the Building Performance Institute (BPI) had already formed a working group with the Green and Healthy Homes Initiative (GHHI) to assess the possibility of creating a certificate or certification at the intersection of residential energy auditing and healthy housing assessment. It was determined early in the process that this new credential would be an add-on for BPI-certified energy auditors and building analysts to enable them to offer more comprehensive healthy housing assessment services when performing energy audits. BPI and GHHI were interested in a process for developing a credential that would be less resource- and time-intensive than a full-scope certification scheme, while preserving the rigor and validity of credentialing best practices.

After exploratory discussions, BPI and GHHI agreed to partner with IREC and PTI to develop a custom micro-credential using the prototype framework. While the pilot has accomplished significant strides in a little over eight months and it is still underway, IREC has already gleaned insights and is honing in on key lessons learned during the pilot to inform future micro-credentialing initiatives.

TOWARD A DEFINITION OF A MICRO-CREDENTIAL

When pilot project stakeholders met, a discussion was spurred around what would be signaled by the term *micro-credential* and how that would impact perceived value in the market. Some participants expressed concern that it may be seen as "less than," while others saw it as creating a viable pathway for stackable credentials and career advancement. One of IREC's and PTI's core goals in this development process is to avoid creating more market confusion about

terminology, given that there is already a lack of clarity about the differences between certification, certificates, badges and other forms of alternative credentialing.

What does a micro-credential entail? At this stage of development, a micro-credential is viewed as an opportunity for individuals to demonstrate competency in a specialty area. Candidates for a micro-credential may or may not be in the core profession, but some portion of their job might call for a specific set of knowledge and skills associated with that core profession to be performed competently and safely. In other words, a micro-credential does not typically cover a full job description.

Micro-credentials can also apply to practitioners in a specific field who wish to add defined specialties to existing certifications or to reach a higher credentialed status through stackable credentials. Specialized clean energy micro-credentials could, for example, cover topics such as energy storage, operations and maintenance, and data acquisition.

In the first pilot, a function definition and task analysis served as the foundation for the micro-credential under development. If one or more applicable JTAs do not currently exist to aid in the process of narrowing the scope of the micro-credential, a function definition can be developed using a cost, time-effective and defensible methodology that results in an industry-driven delineation of needed specialty skills. If one or more JTAs exist and can inform the basis of the micro-credential, they may be utilized for a gap analysis to delineate the specific competencies that will underpin the new credential. Credentialing bodies can use the resulting function definition and task analysis as the blueprint to assess that relevant skills have been learned and understood.

Based on IREC's experience during the pilot, it is beneficial for prospective stakeholders in a micro-credentialing initiative to come to the process having already identified the need for a streamlined credential development process. In general, the process is anticipated to be best-suited for validating a subset of skills rather than skills encompassing a full job.

> *If developed in alignment with a valid process, a micro-credential is not a second-tier designation but one that announces the achievement of skills and competencies for a clearly defined specialty function of a job.*
>
> Laure-Jeanne Davignon,
> Director of Workforce & Credentialing
> Interstate Renewable Energy Council

While everyone on the project may want a process that reduces financial investment and development time without compromising quality and rigor, some stakeholders may still be wedded to the processes enshrined in a full-scope certification scheme and may be less receptive to embracing alternative methods to achieve specific project outcomes. If the value of the more extensive, traditional approach outweighs the perceived benefits of a streamlined approach, this may cause insuperable tensions in the credential development process and the project timeline.

> The scope of the micro-credential needs to be commonly defined and accepted by all stakeholders in advance of, or early in the development process.

The pilot indicated the value of project stakeholders commonly defining and agreeing on the scope of the micro-credential in advance of, or early in the development process. Refocusing and refining key stakeholders' understanding of the scope, audience and intended use for the micro-credential during later stages in the development process, emerged as a critical driver to keeping the process on track.

Communications must convey that this is not 'credentialing lite' but an equally stringent, nimbler process that co-exists with and supports traditional certification schemes, providing more responsive bridges to advancement and competence in fast-changing industries.

THE PROTOTYPE

During the development of the micro-credential prototype, IREC and PTI examined the possible tasks and activities in the credential development process that could be streamlined without compromising quality or rigor. For the first pilot, the project team designed a psychometrically-defensible blueprint for a faster-track approach to micro-credential development based on JTAs that already existed.

Core components of this process involved reducing the cost and time of travel by taking advantage of technology to facilitate a remotely-administered function definition survey and remote test item development and cut score study.

Other key economies of the approach included a reduction in the number of subject matter experts (SMEs) involved at any one time in content development, from a range of 1-12 for a full-scope credential to a range of 3-6 for a micro-credential. Using full-scope certification

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 workforce.

Christine Niero
Vice-President
Professional Testing, Inc.

models as a basis, PTI was able to recommend scaling down the number of SMEs based on the narrower scope of the job function.

Staggering SME involvement across the stages of function definition, content outline, knowledge list creation and test item writing helped somewhat to alleviate SME burnout during the first phases of the pilot, while ensuring broad input from industry. However, as the process progressed and SMEs extended their involvement into additional work phases of the pilot, SME time limitations became a driving factor in overall project time line delays.

Finally, additional reductions in the cost and time of assessment development were proposed by way of the following design elements: combining item review with item re-writing; a goal of a smaller yet defensible test item bank (30-50 questions for the micro-credential as opposed to 100+ questions for a full-scope certification); three-response multiple choice questions versus the more typical four-response question format; and concomitantly, a passing score study that requires fewer resources.

Professional Testing, Inc. created the flowchart below to illustrate how the sequence of tasks in the development of a micro-credential could take as few as 12 weeks to accomplish, depending on the scope of the proposed micro-credential.

Key economies of the approach included: increasing the use of technology to facilitate remote working group activities; staggering SME involvement; and streamlining elements of the assessment development process.

Figure 1. Streamlined Micro-Credential Development Process
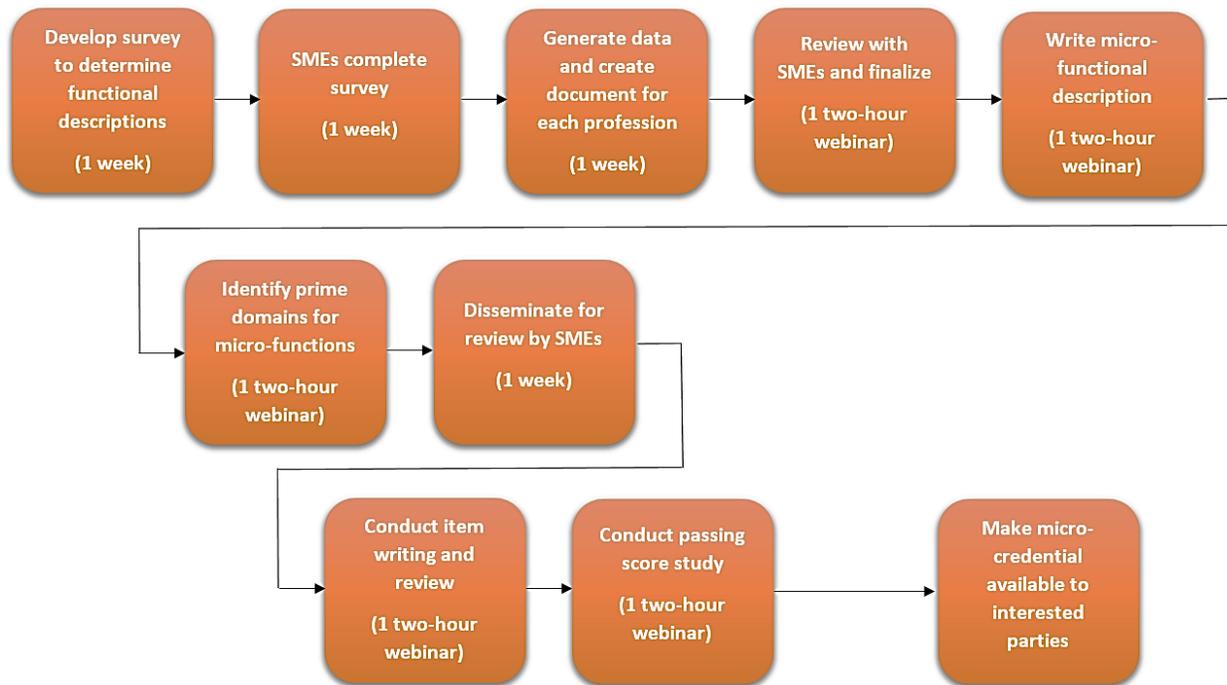
Printed with permission from Professional Testing, Inc.

Another key feature separating a full-scope certification from a micro-credential developed with this blueprint is the ability to validate psychomotor skills during the assessment process. In the early development stages of this process, it became clear that the requirement for a practicum would significantly impact a streamlined time frame, both for the development of the credential and also for the implementation phase of identifying and qualifying testing locations. In order to benefit from the economies of the micro-credential framework, essential practical skills may, therefore, be better addressed through a pre-requisite, which could be an existing certification or certificate.

Below is a summary of the key components of the design as they played out in the first pilot implementation.

A. FUNCTION DEFINITION SURVEY

The web-based survey administered by PTI to a select group of SMEs was the starting point to define job tasks and roles at the intersection of energy auditing and healthy home

assessments. The survey was based on the O*Net generalized work activities[2], but it also enabled participants to add and define technology-specific content to address how they perform specific work tasks. This survey yielded excellent data for the function definition discussion. During the review of the survey data with stakeholders and a select group of SMEs, prime domains were identified and a preliminary content outline generated.

This step in the process occurred at an in-person, facilitated meeting due to circumstances specific to the pilot project. This was not a requirement in the process under design. The design, in fact, allows for the review of the function definition survey and drafting of the prime domains to be conducted remotely over the course of three, two-hour webinars. This design element will be tested in a forthcoming pilot.

> The design allows for the review of the function definition survey and drafting of prime domains to be conducted over a sequence of webinars.

The in-person meeting that occurred during the first pilot, replacing the series of webinars, brought project stakeholders and a select group of SMEs together to narrow the scope and audience of the credential and draft a function definition, prime domains and a preliminary content outline.

The results of the remotely-administered function definition survey enabled the meeting participants to identify and cross-map roles and critical tasks for both sets of professionals, and to generate the function definition descriptor and a draft of the prime domains on the same day.

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[2] The O*NET program, administered by the Department of Labor, provides comprehensive occupational descriptions and data for use by job seekers, workforce development offices, human resources professionals, students, researchers, and others. www.onetcenter.org

FIGURE 2. Draft Function Definition Generated From Pilot Function Definition Survey Analysis

Functional Definition for [Healthy Home Evaluator]:

The [Healthy Home Evaluator] [Micro-Credential] builds upon the knowledge of the certified BPI Building Analyst Professional or BPI Energy Auditor by establishing the competencies required to conduct an in-depth healthy home environmental risk assessment. The [Healthy Home Evaluator] assesses and characterizes home-based environmental health and safety hazards by integrating qualitative observations with quantitative diagnostics to determine and prioritize recommendations that address existing and potential hazards.   The [Healthy Home Evaluator] communicates the identified risks and hazards to the occupant with the goal of improving health and quality of life.

 [Healthy Home Evaluator]

This is a working term that has not been finalized.

Prime Domains:

    I.   Principles of a Healthy Home
    II.   Data Collection
    III.   Analysis and interpretation
    IV.   Recommendations and/or Scope of Work
    V.   Communication and Client Education
    VI.   Personal Safety, Insurance and Liability

From the list of prime domains, a preliminary content outline was generated on the second and final day of the in-person meeting. Following the meeting, key project players determined that the content outline needed more depth before it could be used as a basis for test item development. This may indicate the need for broader SME participation in the survey or the function definition. Equally, the lack of comfort to proceed with a narrower scope at that point in the process may have been related to the different understanding among stakeholders around what the micro-credential should be able to do.

KNOWLEDGE LIST AND PRIME DOMAINS

Following the decision to further refine the content outline and knowledge list, project stakeholders began working remotely with SMEs to flesh out the knowledge list, conducting an importance and criticality study of the domains, and weighting content areas for the assessment. At this point in the process, two things occurred that affected the timeline of the credential development process:
a) the knowledge list began to grow exponentially and became more of an exhaustive list of everything that a worker would need to know to perform the job rather than a targeted list of

testable, add-on chunks of knowledge that a worker would need to know to "step up" to this new level of work;
b) SME availability declined as the process continued.

Both of these events pointed to the need for expert facilitation and time spent managing the expectations of SMEs throughout, from selection to on-going project management, particularly in a remote working environment, in order to get the best results from their involvement on the project.

B. SUBJECT MATTER EXPERT SELECTION AND FACILITATION

The subject-matter-experts' knowledge and expertise lie at the heart of this process, and for most projects, their involvement is conducted on a volunteer basis. These factors make it paramount that SME involvement be tightly facilitated, both to help SMEs stay focused on the specific tasks at hand and to minimize the amount of time they need to (and can) spend on assigned topic areas. Because of the depth of their expertise, SMEs may gravitate toward more expansive task definitions and resource lists. While this data can be invaluable for other processes such as curriculum development, much of the work involved in establishing a micro-credential entails narrowing down and pinpointing gaps from extensive data. Thorough orientation for SMEs on the goals and processes for micro-credential development is critical to the success of the process.

As previously raised, a micro-credentialing process that depends on fewer SMEs for shorter but intensive bursts of time must also address ways to handle the potential for SME fatigue and the competition for demands on the participating SME's work time. The tiered approach to SME involvement has promise, allowing the facilitators not to use everyone's expertise at once, but again, it must be expertly facilitated to ensure continuity of content.

One of the selection criteria for successful participation in the micro-credential development process should include the readiness and aptitude of key stakeholders and SMEs to accomplish the lion's share of the work remotely through web-based surveys, webinars, and conference calls. Not all technical experts vital to the successful development of the credential are accustomed to providing their input and expertise in these formats.

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C. EXAM BLUE PRINT, ITEM WRITING, TEST FINALIZATION AND ADMINISTRATION

At the time of writing, not all of the stages in the pilot had concluded. IREC planned to monitor the following design components both from the standpoint of how these steps were accomplished and in what time frame:

a) Remotely-conducted review with SMEs of prime domains, exam weighting, and depth of content covered in test items;

b) Remotely-conducted test item writing training and SME assignment by content area;

c) Remotely-conducted review of the test item bank;

d) Pilot test administration, test item analysis and passing score study.

Professional Testing Inc. brought extensive experience to the pilot with the facilitation of test item writing training webinars and remote test item writing technology and assignments. Their team has established that this process works very well with SMEs who already possess some experience with item writing, and when technology such as item writing software is used to support the process.

From past project experience as well as from the pilot, a critical factor for success is the ability of SMEs selected for this phase of work to be able to keep their commitment to an accelerated process and to be motivated, independent workers. Some SMEs may be better motivated and suited than others to participate in a live, group setting, so outlining the requirements and responsibilities of remote test item writers is critical to maintaining the schedule for item bank creation.

NEXT STEPS

In under a year, IREC and PTI have established both the market need for and blueprints of a micro-credential development process that is nimbler than a traditional full-scope JTA development process, yet also valid, credible, assessment-based, and able to get to market faster.

IREC is now in discussions with other key players in the clean energy sector to identify prospective partners who might also benefit from a micro-credentialing solution. The first pilot conducted with the prototype process was based on JTAs and certifications existing in the field. This has provided good data to support the strengths and possible drawbacks of the new process design. However, it is not the only viable foundation upon which to build a

> Next steps in building a micro-credentialing framework include an analysis of the potential set of rules governing a micro-credential.

micro-credential. Future pilot opportunities based on job functions that are not yet described or described fully, or, job functions not currently based on full-scope certifications, will also be considered. These configurations raise the potential for a micro-credential that could stand alone for a job function that is still smaller in scope than a typical full-scope JTA and that could potentially cut across jobs, or even professions.

Other considerations on the radar for our next steps in building a micro-credentialing framework include an analysis of the range of possible rules governing a micro-credential. As with full-scope certification, a micro-credential must be time-limited, may require re-certification, and the function may need to be updated on a periodic basis. In some industries, technology changes so fast that the credential is simply designed to expire, providing just-in-time credentialing for immediate workforce needs.

Whatever else is learned, IREC firmly sees the value and potential of micro-credentialing in clean energy to echo the country's successful development of other career pathway models that offer integrated, progressive steps to advance in jobs and training, with different on-ramps for workers at different points in their careers. This year's pilot initiative shows that there are viable ways to "chunk" existing or new certifications into stackable micro-credentials and that this goal can be achieved without diluting the value and rigor of full professional certification scheme processes.

CONTACT INFORMATION

If you would like to learn more about this initiative or about IREC's work more broadly, please visit our website at www.irecusa.org. To reach a team member directly, please contact us via email at credentialing@irecusa.org or by phone at (518) 621-7379.

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