

Skill Standards for Weatherization Crew Leaders

September 2011



Department of Commerce
Innovation is in our nature.

WASHINGTON STATE UNIVERSITY
EXTENSION ENERGY PROGRAM



Skill Standards for Weatherization Crew Leaders

September 2011



Department of Commerce
Innovation is in our nature.

WASHINGTON STATE UNIVERSITY
 EXTENSION ENERGY PROGRAM

COPYRIGHT © 2011 STATE OF WASHINGTON

through the Department of Commerce.

Unless otherwise provided, data that originates from this agreement, shall be “works for hire” as defined by the U.S. Copyright Act of 1976, and shall be owned by the State of Washington. Data shall include, but not be limited to, reports, documents, pamphlets, advertisements, books, magazines, surveys, studies, computer programs, films, tapes, and/or sound reproductions. Ownership includes the right to copyright, patent, register, and the ability to transfer these rights.

WSUEEP11-038 (September 2011) Rev 1 (March 2012)

COPIES OF DOCUMENT

Additional copies of this document as a PDF can be downloaded at no cost at www.commerce.wa.gov or www.energy.wsu.edu.

Skill Standards for Weatherization Crew Leaders

Publication Information

Contact: Karen Dunn, Washington State Department of Commerce, (360) 725-2822, karen.dunn@commerce.wa.gov

DOCUMENT CREDITS

- Project Director, Alan Hardcastle Ph.D., Washington State University (WSU) Extension Energy Program, (360) 956-2167, hardcast@wsu.edu
- Research, facilitation and technical writing by Terryll Bailey, The Allison Group (206) 525-7175, tbailey@theallisongroup.com
- Project Coordinator, Karen Dunn, Washington State Department of Commerce, (360) 725-2822, karen.dunn@commerce.wa.gov

SCENARIOS

Thanks to Jakob Nuckolls, Opportunity Council-Bellingham, and Samuel Dougherty, Community Action Council of Lewis, Mason and Thurston Counties, for providing the work scenarios included in the document.



Project Funding

Financial support for this project was provided by the Washington State Department of Commerce through funding from the American Recovery and Reinvestment Act of 2009 through the U.S. Department of Energy.

DISCLAIMER

This project was supported by a U.S. Department of Energy grant with funding made available through the American Recovery and Reinvestment Act and administered by the Low Income Weatherization Assistance Program, Washington State Department of Commerce. The project document was created by the grantee and does not necessarily reflect the official position or policies of the U.S. Department of Energy. The Department of Energy makes no guarantees, warranties, or assurances of any kind, express or implied, with respect to such information, including any information on linked sites and including, but not limited to, accuracy of the information or its completeness, timeliness, usefulness, adequacy, continued availability, or ownership. This document is copyrighted by the institution that created it. Internal use by an organization and/or personal use by an individual for non-commercial purposes is permissible. All other uses require the prior authorization of the copyright owner.

Permission to Cite

General permission is granted for educators to photocopy and quote limited material from this document for noncommercial instructional or scholarly use. Permission must be sought from the Washington State Department of Commerce in order to charge for photocopies, to quote material in advertising, or to reprint substantial portions of the document in other publications. Credit should always be given to the source of the photocopies or quotes by citing a complete reference.

Acknowledgements

This document is the result of the collaborative efforts of industry, labor, education, government, workforce and economic boards successfully working together through the Washington State Department of Commerce. A special thanks to all who contributed, and especially to the employers and employees who participated in the focus groups. Their countless hours of work to help produce the skill standards are greatly appreciated. Many thanks to Mike Warren and the Northwest Laborers-Employers Training Trust in Kingston, Washington, for providing meeting facilities, meals and lodging for focus group participants and project staff.

Project Development and Coordination

- Alan Hardcastle, WSU Extension Energy Program
- Terryll Bailey, The Allison Group
- Steve Payne, Washington State Department of Commerce, Housing Improvements & Preservation
- Karen Dunn, Washington State Department of Commerce, Workforce Development & Labor Standards, Community Services & Housing Division
- Sally Zeiger Hanson, Melinda T. Spencer and Vicki Zarrell, WSU Extension Energy Program (editors)
- Gerry Rasmussen, WSU Extension Energy Program (graphics)



Steering Committee

Members of the project steering committee met several times in 2010 to design, oversee and review the project from startup through completion of the final document. Many thanks to the following committee members for contributing their expertise and resources, and for providing leadership in support of this project:

- Julia Cordero, Renton Technical College
- Shana Peschek, Renton Technical College
- Mike Richart, Richart Family Builders and Remodelers
- Rod Williams, Energy Savers
- Steve Marquardt, Laborers' International Union of North America
- Bob Abbot, Laborers' International Union
- Tina Bloomer, Washington State Board for Community and Technical Colleges
- John Davies, Building Performance Center
- Howard Greenwich, Puget Sound Sage
- Steve Payne, Washington State Department of Commerce
- Karen Dunn, Washington State Department of Commerce



Focus Group Participants

The focus group participants consisted of front-line workers, first-line supervisors and subject matter experts in weatherization in the Pacific Northwest region. They met over a two-day period at the Northwest Laborers-Employers Training Trust Fund training center in Kingston, Washington, and determined the critical work functions and key activities performed by Weatherization Crew Leaders. They then identified the performance indicators, technical knowledge, skills and abilities, and employability skills required to succeed in this field. Their insights were an invaluable contribution and formed the foundation of this work.

Participants included:

- Jacob Nuckolls, Opportunity Council-Bellingham
- Dan Ceasar, Opportunity Council-Oak Harbor
- Adam Wilson, Energy Savers
- John Ricci, Home Performance, Inc.
- Samuel Dougherty, Community Action Council of Lewis, Mason and Thurston Counties
- Frank Bourn, Richart Family Builders and Remodelers
- Jason Henderson, Richart Family Builders and Remodelers

Special Thanks

The Weatherization Crew Leader Skill Standards project was conceived and initiated during a meeting at the Washington State Department of Commerce, where a steering group of weatherization company owners, managers, education and economic development specialists, and labor representatives determined the scope of the project. The results of this project provide a knowledge capture of the work of Weatherization Crew Leaders that will serve industry, labor and educational needs as a benchmark standard for the weatherization workforce. We sincerely thank our industry and labor partners for supporting this work.

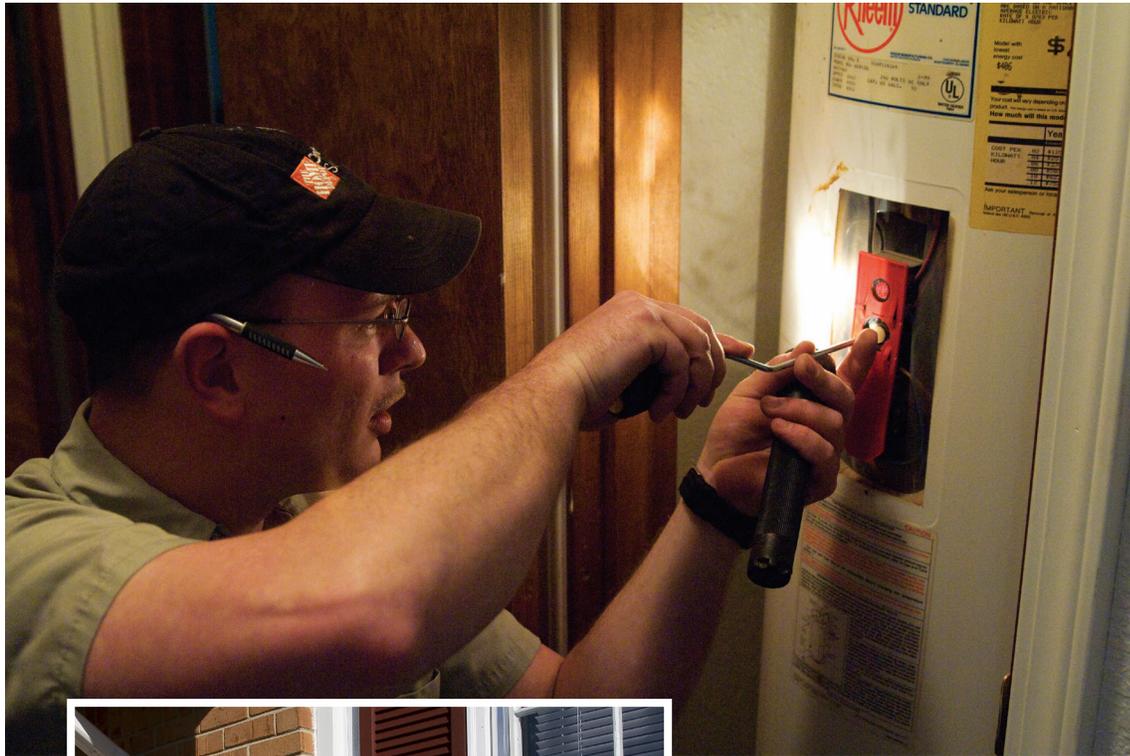
Thanks also to the many additional Washington state weatherization employers and employees for completing surveys verifying that the standards reflect the requirements of the weatherization industry across the state.



Acronyms Used in this Publication

CPR	Cardiopulmonary Resuscitation
DOE	U.S. Department of Energy
EEO	Equal Employment Opportunity
EPA	U.S. Environmental Protection Agency
GVWR.....	Gross Vehicle Weight Rating
HEPA.....	High-Efficiency Particulate Air filter
HFWP	Harassment Free Workplace
HUD	U.S. Department of Housing and Urban Development
HVAC.....	Heating, Ventilation, and Air Conditioning
MSDS	Material Safety Data Sheets
NSSB	National Skill Standards Board
OJT.....	On-the-Job Training
OSHA	Occupational Safety and Health Administration, U.S. Department of Labor
PPE	Personal Protective Equipment
R-value	Measure of thermal resistance used in construction industry
SCANS.....	Secretary's Commission on Achieving Necessary Skills, U.S. Department of Labor
SBCTC	Washington State Board for Community and Technical Colleges
U-values....	Measure of flow of heat through an insulating or building material
WSHA.....	Washington State Safety and Health Administration
XRF.....	X-Ray Fluorescent Gun

Executive Summary





The Weatherization Crew Leader Skill Standards Project

This Weatherization Crew Leader Skill Standards project is part of a broader initiative to establish standards for the energy industry. The overall goal is to identify the industry-defined knowledge, skills and abilities required of industry professionals in specific fields. This data can then be used to develop performance-based standards that can be applied by industry, labor, education and government to provide workforce education and training services that are responsive to the needs of industry, and that support the career development of employees and students.

The following outcomes were the focus of the Weatherization Crew Leader Skill Standards project:

- Skill standards needed for weatherization careers consistent with the current and future needs of the public and weatherization industry.
- Verification of worker input by written survey and reviews by subject matter experts.
- A report for weatherization crew employers, labor unions and educators showing the standards and the data that support those standards.





Contents

Publication Information	i
Project Funding	i
Permission to Cite.....	i
Acknowledgements	ii
Project Development and Coordination	ii
Steering Committee	ii
Focus Group Participants	iii
Special Thanks	iv
Acronyms Used in this Publication	iv
Executive Summary	v
The Weatherization Crew Leader Skill Standards Project.....	vii
Perspectives	1
State Agency Perspective	3
Industry Perspective.....	4
Labor Perspective.....	5
National Context	7
National Context for Skill Standards.....	9
What are Skill Standards?.....	9
Why are Skill Standards Important?.....	9
The Benefits and Uses of Skill Standards.....	9
Skill Standards to Curriculum: A Continuous Development Process.....	12
A Model of Continuous Improvement for Economic Development: Using Skill Standards	12
A Continuous Updating Process	13
Pyramid of Competencies	14
Weatherization Skill Standards Project	15
Project Goals, Guiding Principles and Methodology	17
Employability Skills: SCANS Profile	20
Definition of Terms	21
Results: Skill Standards for Weatherization Crew Leaders	23
Typical Job Description	25
Essential Knowledge, Materials and Equipment.....	27
Scenarios: Routine, Crisis and Long Term	35
Routine Scenario.....	37
Crisis Scenario.....	41
Long-Term Scenario.....	45
Verification Survey Results.....	48



Continued

Contents – Continued

Integration	87
Assessment and Certification: A Vital Connection.....	89
Assessment Strategies	90
Appendices	93
References	95
For More Information	95
Notes.....	97
Figures	
Figure 1: Pyramid of Competencies	14
Figure 2: Process for Building Skill Standards.....	20
Figure 3: Sample Survey Questions from the Advance Workplace Standards Skill Inventory	21
Figure 4: Weatherization Crew Leader – Importance of Critical Work Functions.....	48
Figure 5: Integrating Skill Standards.....	90
Tables	
Table 1: SCANS Skills	20
Table 2: SCANS Survey Results – Weatherization Crew Leader.....	29
Table 3: Weatherization Crew Leader – Critical Work Functions and Key Activities	33
Table 4: Primary Tasks and Functions Involved in Routine Scenario.....	38
Table 5: Primary Tasks and Functions Involved in Crisis Scenario	42
Table 6: Primary Tasks and Functions Involved in Long-Term Scenario.....	46
Table 7: Critical Work Function A – Ensure a Safe Work Environment and Meet Safety Standards	49
Table 8: Critical Work Function B – Manage the Crew	54
Table 9: Critical Work Function C – Continue Training and Participate in Continuous Learning	57
Table 10: Critical Work Function D – Prepare for the Job	61
Table 11: Critical Work Function E – Interact and Communicate with Co-Workers, Suppliers, Inspectors, Customers & Contractors.....	67
Table 12: Critical Work Function F – Adhere to Policies ad Standards.....	72
Table 13: Critical Work Function G – Inspect Weatherization Installation	76
Table 14: Critical Work Function H – Supervise Installation Work or Perform Installation as Needed	81
Table 15: Assessment Design	92



Perspectives





State Agency Perspective



STATE OF WASHINGTON

DEPARTMENT OF COMMERCE

1011 Plum Street SE • PO Box 42525 • Olympia, Washington 98504-2525 • (360) 725-4000

September 6, 2011

As part of an overall strategy to create jobs, reduce energy consumption, and serve the most vulnerable people in our state, the Department of Commerce is proud to have initiated the development of Skill Standards for Weatherization Crew Chiefs. Weatherizing residential and commercial buildings across the state will increase our state's energy efficiency and create jobs.

Industry-defined competencies provide the foundation for quality training that will result in career opportunities and energy efficiencies across the state. College and industry training based on these standards will provide education and prepare individuals for the specialized skills required to perform the duties of a Weatherization Crew Chief.

The development of these Skill Standards for Weatherization Crew Chiefs demonstrates our state's commitment to promoting high-quality weatherization services for the public and robust job opportunities for Washington's workforce.

While there are many individuals and organizations directly attributed to the development of these skill standards, the Department of Commerce would like to acknowledge the significant academic and technical contributions of Dr. Alan Hardcastle, Washington State University Energy Program.

A handwritten signature in blue ink that reads "Dan McConnon".

Dan McConnon, Deputy Director
Community Services and Housing Division



Industry Perspective



August 16, 2011

Weatherization work is challenging and top quality training programs are needed for those interested in working and building their skills for advancement in the industry. These Skill Standards provide an important foundation that will help the BPC and our education partners deliver the specific training needed. Good fundamentals, knowledge and skills are important to ensure an individual is prepared to do the job well, progress in the workforce and avoid injury. The Opportunity Council's Building Performance Center has chosen to be actively involved in developing and supporting these Skill Standards and is looking forward to contributing further as a partner with educators and industry as we use these standards to develop high quality training programs and deliver high quality weatherization projects.

Sincerely,



John Davies
Director
Building Performance Center



Labor Perspective



NORTHWEST LABORERS-EMPLOYERS TRAINING TRUST FUND



WASHINGTON

Apprenticeship
(800) 554-4457
(360) 297-4150 FAX

KINGSTON

Main Office
27055 Ohio Ave.
Kingston, WA 98346
(360) 297-3035
(360) 297-7366 FAX
(800) 240-9112

PASCO

424 Lewis Pl.
Pasco, WA 99302
(509) 547-8649
(509) 547-2988 FAX

SPOKANE

3921 E. Francis
Spokane, WA 99217
(509) 467-5239
(509) 467-5240 FAX

UTAH

WEST JORDAN

5667 W. Dannon Way
West Jordan, UT 84088
(801) 280-7195
(801) 280-7198 FAX

August 16, 2011

The Northwest Laborers-Employers Training Trust Fund is proud to support and have participated in the "Weatherization Standards Workgroup" and the development of Weatherization Crew Leader Skill Standards. As an industry begins to grow, the need to develop consistent, standardized methods for measuring the quality of work completed and the development of the growing workforce becomes a necessity for the future of sustaining that new and emerging industry.

Developing partnerships between Labor, Employers, Government and Educational Institutions to identify common challenges and to develop solutions or pathways that focus on overcoming those challenges or obtaining those goals should always be embraced as we move to the future.

Sincerely,

Michael B. Warren
Training Director





National Context





National Context for Skill Standards

The National Skill Standards Board (NSSB) was established by Congress in 1994 to encourage the creation and adoption of a national system of voluntary skill standards that would enhance the ability of the U.S. to compete effectively in a global economy. By the time the NSSB sunset in 2003, several national voluntary skill standards projects were developed by various industries in full partnership with education, labor and community-based organizations. The intent was to have voluntary skill standards that are flexible, portable, and continuously updated and improved.

Washington State was an early leader in the development and use of industry-defined skill standards, contributing to the development of a national model and creating skill standards to align the needs of industry with the provision of workforce education and training.

What Are Skill Standards?

Skill standards are performance specifications that identify the knowledge, skills and abilities an individual needs to succeed in the workplace. They are critical to improving workforce skills, raising living standards and improving the competitiveness of the U.S. economy. To be effective, skill standards must reflect the consensus of weatherization professionals.

Skill standards provide measurable benchmarks of skill and performance achievement. They answer two critical questions: What do workers need to know and be able to do to succeed in today's workplace? And how do we know when workers are performing well? Without this fundamental information, employers do not know whom to hire or where to focus their limited training dollars; employees

and new entrants to the workforce do not know what they need to do to improve their performance; and educators do not know how to prepare students for the challenge of the workplace.

Why Are Skill Standards Important?

In today's workplaces, the only constant is change. Jobs that once were relatively simple now require high-performance work processes and enhanced skills. Because skill standards reflect changing workplace realities, they are a tool that can be used by applicants and employees to access greater career opportunities.

National recognition of skill standards in career fields provides a common basis for certifying achievement against those standards, thereby allowing for the portability of skills across geographic areas, companies and careers.

Updating skills and knowledge is now a lifelong endeavor, causing many employers and employees to spend more effort, time and money on education and training. Skill standards provide benchmarks for making education and training decisions, shaping curricula and directing funds toward highest value education and training investments.

The Benefits and Uses of Skill Standards

Skill standards benefit all the stakeholders – business, labor, educators, government, and the community. The success of a skill standards development project and its usefulness to the community is dependent on the full participation and commitment of all stakeholders. These benefits can be used as a benchmark for evaluating the effectiveness of collaborative efforts.



How Skill Standards Benefit Employers

Employers can use skill standards to establish personnel qualification requirements. Interviews, performance reviews and productivity can be evaluated and assessed to a higher degree of accuracy and efficacy. Employers are also able to identify core competencies and workers' abilities to demonstrate competencies. By matching competencies to critical work functions and key activities, employers can significantly improve efficiencies and productivity. Performance-based skill standards also provide a vehicle for varying degrees of job certainty and the structure for establishing competency-based pay scales. In addition, employers use skill standards to:

- Align personnel qualification requirements with nationally adopted certificates of competence.
- Modify employee training.
- Simplify measurement of employee training effectiveness.
- Assess employee skill levels based on industry standards.
- Match employee skills to the work needed.
- More easily document employee skills, training needs and performance criteria.
- Improve consumer satisfaction and confidence through better developed evaluation skills for customer contact personnel.
- Improve employee satisfaction and morale by clarifying expectations.
- Improve quality, productivity, time-to-market and competitiveness.
- Achieve business goals.

- Partner with education and labor in developing school-to-work initiatives.

How Skill Standards Benefit Educators

Educators can identify core competencies and assessments based on the skill standards and implement them in their curricula. Students can then be required to demonstrate competency throughout their coursework. Academia and industry can build a cohesive relationship through a like-minded expectation of student competencies and work readiness. This enhances an instructor's ability to teach information consistent with industry's entry level expectations and needs. In addition, educators use skill standards to:

- Partner with business and labor in developing school-to-work initiatives.
- Provide effective, targeted instruction.
- Develop benchmarks for certificates of competence earned by students.
- Communicate what companies expect of employees.
- Develop new and evaluate existing curriculum and programs based on industry needs.
- Develop assessments to evaluate skills, knowledge, and abilities in classrooms and internships.
- Develop a common language on workforce preparation with business and labor.
- Improve relationships with local businesses, labor unions, other educators and agencies.
- Provide students with relevant career education and counseling.



How Skill Standards Benefit Labor Unions

Labor unions can use skill standards to gain support for company-sponsored worker training programs and to identify career paths for workers within companies and industries. Unions can provide this information to union members and develop strategies to improve career mobility and stability. Skill standards help unions to:

- Improve member value to the company.
- Provide a greater worker voice in the company.
- Link skill standards to increased training and upward career mobility for union members.
- Assist employers to match employee skills to the work needed.
- Develop skills-based training and certification initiatives that complement union apprenticeship programs.
- Communicate effectively with employers about worker training and retraining needs.
- Cooperate with education and industry in developing school-to-work initiatives.

How Skill Standards Benefit Students and Workers

Skill standards assist students in making career choices by providing industry expectations for success in the workplace. In addition, standards-based curriculum and assessments provide students with credentials that certify work-readiness. Work-ready students can anticipate being hired at higher rates of pay and can experience faster advancement in their chosen fields. Workers can accurately

assess their skills against those required for career advancement and plan effectively for their career pathways. They can determine the skills and abilities needed for advancement or transfer within industries, and determine the continuous learning and training they need to upgrade their skills. In addition, students and workers can use skill standards to:

- Achieve clarity regarding what they are expected to learn and how to prepare for work.
- Enter and re-enter the workforce with better control of their choices of high-paying jobs requiring high skills.
- Accurately assess business expectations of the skills needed for positions and careers of their choice.
- Improve mobility and portability of their credentials.
- Obtain certification of competence in the skills they gain through experience, school, training or self-study.
- Enhance their performance and achievement by self-evaluation against known standards.
- Be active contributors to the activities that make their organizations successful.

How Skill Standards Benefit Government

Government can provide information that will ensure a better skill match between workers and employers and initiate education reform to better educate future members of the workforce. Skill standards better enable agencies to provide options for career and job mobility and link learning to the needs of the workplace. In addition, government can use skill standards to:



- Assist in the development of a highly skilled and competitive workforce.
- Evaluate the effectiveness of publicly funded education and training.
- Increase opportunities for under-represented populations by making public the information that defines the skills required for success and by facilitating the national adoption of those definitions and their use.
- Support the creation of high performance organizations where they improve living standards for all members of the population.
- Facilitate collaboration between educators and industry.
- Communicate the need and basis for education reform to business, education, labor, and the community-at-large on both local and national levels.

each step. New technological developments impact the ways that workers organize and apply their skills, including time management and interpersonal relationships. Increased technological complexity may simplify some of the job tasks but make others more intricate. Today's successful weatherization workers are challenged to acquire a broader range of decision-making and customer service skills as well as keep current with emerging technologies. On-going changes like these must be reflected in curriculum in order to meet the needs of industry, where expectations for workers are evolving.

A Model of Continuous Improvement for Economic Development: Using Skill Standards

Step 1: Skill Standards Identification

- Compile and research existing standards in related jobs and careers.
- Conduct focus groups to identify critical work functions and key activities, define key activity performance indicators and identify technical knowledge, foundation skills and personal qualities.
- Conduct a survey of current workers to determine level of SCANS* skills required for each job.
- Develop work-related scenarios to place the skill standards in the context of the work environment.
- Verify the data gathered from focus groups.

Skill Standards to Curriculum: A Continuous Development Process

The skill standards generated in this project are designed to be used by participating education partners to develop or modify curriculum at the high school and community college levels. By providing the necessary input from industry, this skill standards document is a first step in curriculum development to serve the weatherization industry in particular, and to demonstrate what can be done across industries.

In order to keep current with a rapidly changing workplace, standards need to be re-evaluated and updated on a regular basis, with full partner participation at

* SCANS skills are defined by the U.S. Secretary of Labor's Commission on Achieving Necessary Skills.



- Disseminate skill standards information to involved parties from industry, education and labor for their review and editing.

Step 2: Assessment

- Develop assessments through the collaboration of industry and education to reflect competent performance as defined by the skill standards.
- Collect evidence of a person's ability to perform at the levels determined by the skill standards.
- Determine present skill level through direct and indirect evidence by assessing a student, trainee, apprentice, prospective worker or worker seeking additional training.
- Use products and items produced by the person being assessed as direct evidence.
- Gather supporting information to use as indirect evidence.
- Assess results using the criteria of validity, currency, authenticity and sufficiency.
- Demonstrate validity using tangible items or records of action.
- Demonstrate authenticity by having the individual being assessed produce the item or specific piece of a team effort.
- Demonstrate sufficiency by providing enough evidence to match key tasks and performance criteria of the skill standards.

Step 3: Curriculum Development

- Identify necessary competencies based on the skill standards information and assessments.

- Develop program outcomes for specific academic and training programs, including Tech Prep, two-year, and apprenticeship programs.

- Perform gap analysis to determine changes or additions to be made to curriculum.
- Revise existing curriculum to better meet the current and future needs of the industry.
- Develop new curriculum and establish new programs based on these competencies.

Step 4: Articulation

- Develop models to support the articulation of program outcomes and competencies between academic and training systems.
- Establish articulation agreements between existing programs to ensure portability of skills.
- Connect competencies and Certificates of Competence with benchmark documentation to build national portability systems.



A Continuous Updating Process

A continuous exercise is necessary: all partners must revise and verify skill standards on a regular basis. For national economic development success, curriculum and current training methods must be updated to meet workplace standards.

Individual workers must have access to clearly stated competency goals and direct access to skill development assistance. With cooperative effort on local and national levels, we can begin to resolve the workforce shortages in the weatherization industry that face us today.

Pyramid of Competencies

The Pyramid of Competencies (see Figure 1) is a depiction of skill standards in three broad skill categories.

Tier I

Tier I represents the broadest level of competencies, and is the set of employability (SCANS) skills, knowledge, abilities and personal qualities required of all workers to be successful in today's workplace. These are the universal skills that are needed to apply technical knowledge and tools effectively.

Tier II

Tier II represents technical skills, knowledge and abilities common to a

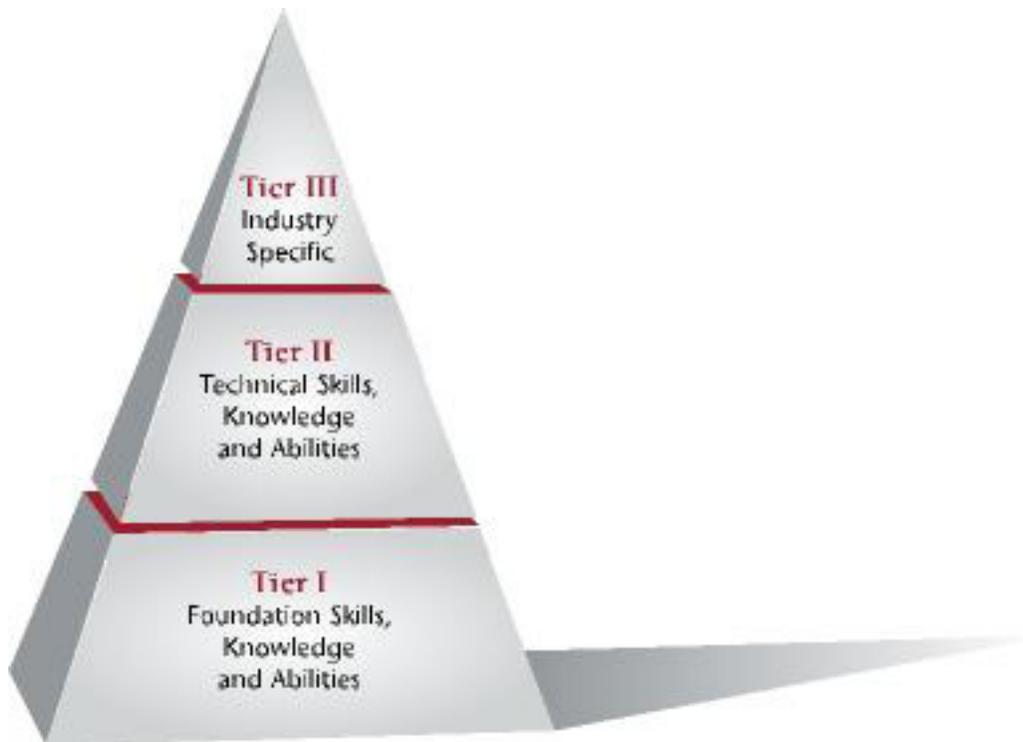
cluster of jobs within a cluster across all industries or industry sectors. For workers in weatherization, for example, knowledge of applicable federal, state and local laws would be applicable across all sectors.

Tier III

Tier III represents industry-specific technical skills, knowledge and abilities that are unique to individual jobs or clusters and are the most prone to rapid change. For example, many workers need to upgrade their skills based on sudden market shifts.



*Figure 1.
Pyramid of Competencies*



Weatherization Skill Standards Project





Project Goals, Guiding Principles and Methodology

Goals

- Identify voluntary skill standards for the weatherization industry. The standards will serve as benchmarks for entry into weatherization careers at the technical level.
- Disseminate the results and support the use of skill standards by educators, businesses, unions, students, workers and government agencies.
- The experience of the partners involved in this project holds that the success of any skill standards project is critically linked to the full participation and commitment of all partners.

Guiding Principles

- Experienced workers are the experts in their career field and are best able to identify the work performed and the skills, knowledge and abilities required to be successful.
- Business, labor and education must work as partners to ensure the creation of a link between the work expectations and the curriculum.
- The standards must be consistent with existing civil rights laws and practices.
- Standards must be flexible and portable, and should be updated continuously.
- Skill standards describe the major functions and key activities, as well as the performance indicators, technical knowledge and skills, employability skills and personal attributes needed to succeed in the workplace.
- Integrated skill standards define work duties and the skills required to perform them in the context of work settings.

Identification of Skill Standards: Methodology

Background

These industry-defined skill standards were developed using specific research-based processes. The project followed the process required by the Washington State Board for Community and Technical Colleges (SBCTC) as described in *Skill Standards Guidebook I*, Washington State Board for Community and Technical Colleges, 1996 and the process developed by the National Skill Standards Board (NSSB).

Dr. Alan Hardcastle of the WSU Extension Energy Program and Terryll Bailey of The Allison Group conducted extensive secondary research to identify trends, current jobs and existing skill standards in the weatherization industry, including data from the SBCTC Skill Standards Web site and existing competencies identified during the research. Researchers met with industry representatives to determine the goals and research design of the skill standards project, to obtain their input on the research to date and to finalize the study design.

A facilitated meeting was conducted with senior experts from industry, labor, education and economic development to review the preliminary research and advise the research process. This steering group



established the project direction and timeline, and identified an initial list of critical work functions and key activities. This initial list was subsequently reviewed and enhanced during a two-day focus group of subject matter experts, primarily current workers who perform those jobs.

Focus Groups

In the focus group, a structured process was used to guide the panel through the development of the critical work functions and key activities. The process included the following elements:

- Panelists were facilitated by a professional skill standards focus group leader.
- Panelists received an orientation to skill standards. Examples were provided.
- Panelists from several different companies and sites arrived at consensus regarding the components of the skill standards.
- Panelists clarified the organization and structure of the critical work functions and key activities, filled in gaps, and confirmed the accuracy of the critical work functions and key activities.
- Panelists identified Performance Indicators for each key activity.
- Panelists identified occupational technical knowledge and skills for each key activity.
- Panelists brainstormed the topics that need to be covered in training and education programs to prepare people to enter the workforce.
- Panelists completed survey to level SCANS (employability skills).

After a thorough orientation to skill standards, panelists were asked to brainstorm critical work functions for their cluster. After composing their own critical work functions, they were then provided with the draft critical work functions identified by the Senior Experts and through research. Panelists were asked to compare the critical work functions from the Senior Experts with those they brainstormed as a group and to consider the following criteria:

- Is the function a broad responsibility?
- Does it take a significant amount of time to achieve?
- Are there groupings of Key Activities associated with it?

Panelists were asked to review the key activities for each critical work function and to suggest appropriate changes wherever necessary. The criteria used for this purpose were:

- Does the activity describe what you have to do to achieve this function?
- Is it a major area of task responsibility?
- Is it concrete and specific?
- Does it have relatively equal importance to the other Key Activities?
- Does each Key Activity require distinct, definable skills?

Once the critical work functions and key activities were finalized, performance indicators were developed for each key activity. Panelists were asked how they know when a task is performed well and



what elements need to be in place so they would be ensured that this key activity is performed competently. The following criteria were provided regarding performance indicators:

Performance Indicators should...

- Describe competent performances.
- Be directly observable, concrete and measurable.
- Capture the essential aspects of performance.
- Be as precise and explicit as possible but still apply across the industry cluster.
- Reflect what the individual can control.

Panelists brainstormed performance indicators and then arrived at consensus with respect to the final list. The focus group was assisted in putting the content into appropriate language format.

Panelists next identified the occupational technical knowledge and skills for each key activity. They brainstormed occupational technical knowledge and skills, and then arrived at the final list through consensus. Panelists were asked what a person needs to know and be able to do to accomplish the key activities at the level defined by the performance indicators.

In each focus group, an informal discussion was held to identify the subjects and topics most important for new entrants to the industry.

Surveys

A workplace competencies survey was conducted to level SCANS skills and personal qualities for the cluster. SCANS (Secretary's Commission on Achieving Necessary Skills) are foundation abilities

required of workers in all occupations at varying levels specific to their jobs, ranging from basic academic skills to problem solving, working in teams and using technology. Surveys were distributed to panelists in the focus groups and to workers across the State of Washington. Complete survey data from 25 Weatherization Crew Leaders was collected and analyzed. The SCANS survey results are presented in a separate section of this document.

Senior Expert Review

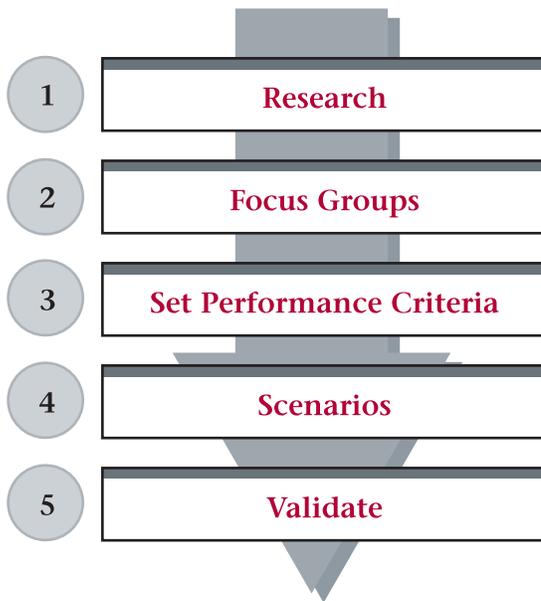
Senior experts from the weatherization sector (who also participated on the project steering group) reviewed the critical work functions, key activities and performance indicators produced by the focus group panels. The senior experts provided a few minor edits and answered some follow-up questions from the research team. All of the senior experts confirmed the content of the skill standards.

Industry-Wide Review

The preliminary skill standards were reviewed and verified in early 2010 by a survey of weatherization industry employers. Survey respondents were asked to comment on the standards, and to rank the relative importance of the functions and tasks identified by the focus groups. Complete survey data from 51 Weatherization Crew Leaders and subject matter experts was collected and analyzed. The Verification Survey Results are presented in a separate section of this document.



Figure 2.
Process for Building Skill Standards



Employability Skills: SCANS Profile

During the data-gathering process of this project, employability skills for Weatherization Crew Leaders were identified. Employability, or workplace skills, are basic academic and foundation skills needed to build more advanced competencies. The foundation skills are based on broad workplace categories, known as SCANS (Secretary’s Commission on Achieving Necessary Skills, U.S. Department of Labor). This federal report issued in 1991 identifies 37 foundation and workplace competencies required for work readiness.

SCANS are comprised of a three-part foundation of skills and personal qualities and five workplace competencies needed for successful job performance in today’s workforce, as listed in Table 1. Professionals currently working in the field were asked to identify the level of difficulty for each of the 37 SCANS skills most often required for successful workplace performance in each cluster. The information was compiled by taking a

Table 1:
SCANS Skills

Basic Skills	Thinking Skills	Personal Qualities	Worksite Competencies
Reading	Creative Thinking	Responsibility	Utilizing Resources
Writing	Decision Making	Self-worth	Interpersonal Skills
Arithmetic	Problem Solving	Sociability	Utilizing Information
Listening	Visualization	Self-Management	Using Systems
Speaking	Knows/Learns	Integrity/Honesty	Using Technology
		Reasoning	



weighted average of the responses across the cluster. This summary information provides a general view of the key work-place skills deemed relevant and necessary for the front-line worker in weatherization and defines the foundation for the employability skills within the skill standards.

The ADVANCE™ *Workplace Standards Skill Inventory* from Advanced Educational Spectrums, Inc. was used to capture industry views on foundation skills for weatherization workers. Industry professionals ranked the relative importance of each SCANS skill using a five-point scale, from 'Not Important' to 'Critical' (see Figure 3). The SCANS bar chart (see Table 2) shows the average survey scores for each skill area. This summary information provides a general view of the key foundation skills deemed relevant and necessary for weatherization crew leaders.

Figure 3.
Sample Survey Questions from the
Advance™ Workplace Standards
Skill Inventory

Exhibiting Leadership	
1	Understands standards Adheres to standards
<input type="checkbox"/>	
2	Encourages others to adopt new concepts Demonstrates commitment to excellence Leads by example Interprets positions on issues
<input type="checkbox"/>	
3	Motivates others to extend their capabilities Displays enthusiasm/positive attitudes Develops minority/majority views
<input type="checkbox"/>	
4	Persuades others to reverse negative attitudes/behaviors Maximizes strengths/minimizes limitations Consolidates varied viewpoints/positions
<input type="checkbox"/>	
5	Empowers individuals/teams to achieve excellence Judges leadership styles Justifies positions/policies
<input type="checkbox"/>	

Definition of Terms

Each chart in the following skill standards templates contains the following components:

Clusters

Clusters describe the major areas of work carried out across an industry. They apply across specific industry segments (e.g. automobile manufacturing, furniture manufacturing, airplane manufacturing, etc.) and often cover families of related job titles. Weatherization is an example of a cluster within the energy efficiency sector, which comprises portions of entire industries and labor markets ranging from construction and manufacturing to engineering and professional services.

Critical Work Functions

Critical work functions represent the general areas of responsibility for the Weatherization Crew Leader. The functions tell us what must be done to achieve the key purpose of an occupation or cluster.

Employability Skills

Employability skills are basic academic and personal skills that are needed to build more advance competencies. They are competencies required by all workers in order to obtain meaningful work and participate in the modern workforce.

Key Activities

Key activities are the tasks related to the functional area of the career cluster and performed by workers in a given occupation. They are made up of work activities that are measurable and observable, and which result in a decision, product or service.



Level of Importance

Professionals who are actively working in this occupation rated the level of importance for each critical work function and key activity, ranging from not important to critical. All critical work functions were rated and verified as being important, very important or critical.

Performance Indicators

Performance indicators are specific behavioral evidence of a worker's achievement of skills, knowledge and task completion. The question answered is: "How do we know when this key activity is performed

well?" Performance indicators provide the standard of performance required to produce the necessary outcomes of key activities.

Technical Skills, Knowledge, Abilities and Tools

Technical skills, knowledge and abilities are those areas of expertise that workers must have in order to perform a given occupational task with excellence. A collection of skills, knowledge, abilities and tools make up competencies.



Results: Skill Standards for Weatherization Crew Leaders





Typical Job Description

Primary Purpose

The Crew Leader is responsible for setting the work pace and determining, with input from the Project Coordinator, how best to accomplish and complete the work scope (assessment) as specified. The Crew Leader determines the best sequence for completing measures and assigns tasks to technicians on the crew. The Crew Leader makes projections of project completion dates and costs if appropriate for that project; completes and submits daily inventory, purchase orders, material and tool requests and completed project files; and maintains contact with the client during the installation and pick-up work portion of the weatherization project.

Responsibilities/Accountabilities

1. Organizes and plans the physical and logistical installation of weatherization and rehabilitation measures according to the work orders (assessment) of the Project Coordinator. Works with the Project Coordinator to determine the appropriate installation methods and proper materials needed to complete the job.
2. Assigns and delegates necessary tasks to other technicians.
3. Provides on-the-job training to crew technicians as needed.
4. Completes and submits daily inventory, purchase orders, material and tool requests and completed project files.
5. Installs weatherization measures and performs home repairs as needed to complete assigned projects.

6. Participates in safety, crew, production, service center and agency meetings that enhance the organization's ability to provide services.
7. Attends and participates in training to improve personal skills, which include time management, diagnostic testing, project coordination, safety, production and management/supervisory skill enhancement.
8. Participates in performance evaluation review of crew technicians.

Other Responsibilities:

1. Attends regularly scheduled staff meetings and trainings.
2. Other duties as assigned.

General Qualifications

Skills/Competencies:

1. Excellent innovation skills; ability to think creatively and independently to develop and/or modify established procedures.
2. Excellent leadership skills; ability to function as a lead worker and train or instruct employees performing related or similar activities.
3. Excellent verbal and written communication skills.
4. Excellent time management and organizational skills.
5. Ability to function effectively and harmoniously as a team member.

Degrees/Certificates/License/ Experience:

High school diploma. Specialized training beyond high school such as from a



community or technical college program or trade school. A minimum of two years' experience in a related field. Previous supervisory experience and experience in the construction and energy conservation field preferred. Must complete EPA Lead safe work practices/job site supervisor certification within six months of hire.

Special Requirements:

Valid Washington State Driver's License by time of hire. Good driving record. A three-year driving abstract must be submitted prior to hire. Must be 21 years of age. A medical exam and drug screening exam may be required.

Physical Requirements/Working Conditions

- **Strength:** Lifting and carrying tools and materials, typically weighing up to 70 pounds.
- **Manual Dexterity:** Operates and uses manual and power hand tools on a regular, routine basis.
- **Mobility:** Climbing and descending stairs and ladders; bending and crawling; pushing and dragging materials and tools; laying on 2x4 trusses while balancing; sitting for long periods of time; driving.
- **Concentration:** Situations encountered may be unclear and may require clarification. Determining the correct answer may require conducting some analysis or information gathering, as well as moderate knowledge of the functional field and agency policies, practices and precedents.
- **Judgment/Temperament:** Individual decisions/recommendations typically have an impact on – and occasionally beyond – an entire work team. Daily work impacts

clients through direct service. Moderate supervision is received.

Working Conditions:

Work is performed primarily in a residential setting. Work may be performed outdoors in all weather conditions, typically in an environment similar to a construction site. Frequently works in confined spaces, such as beneath floors, in attics and crawl spaces. May require working on rooftops and other potentially hazardous areas, such as around electrical wiring or moving machinery. May be exposed to dusty, wet, muddy, poorly ventilated and occasionally unsanitary environments. Requires frequent travel; occasionally requires driving in adverse weather conditions. Sometimes exposed to adverse weather conditions, dust and/or loud noises such as sirens and traffic congestion.

Skills refer to proficiency in an applied activity. This activity could be physical, mental or interpersonal in nature.

Knowledge is a particular set of information.

Abilities are broad human characteristics that result from natural talent, training or experience.

Tools are materials, equipment and implements a worker must be able to use competently to meet the requirements of the job.



Essential Knowledge, Materials and Equipment

Knowledge of foundational science and engineering concepts and theories is essential in order to perform functions required of Weatherization Crew Leaders. These concepts are listed below, and are important supplements to the technical knowledge and skills listed with each key activity.

Science Concepts

- Physics including air flow
- Building science
- Combustion (basic)
- Materials science
- HVAC fundamentals
- Electricity fundamentals
- Plumbing fundamentals
- Mechanical fundamentals
- Psychrometrics (dew point)
- Roofing and siding fundamentals

Math for Weatherization Crew Leaders and Installers

- Calculate total square footage
- Calculate minimum ventilation guidelines
- Calculate volume (cubic feet)
- Use tape measure or other measuring devices
- Use basic geometry to calculate area
- Estimate materials
- Use basic arithmetic (including negative numbers) and basic algebra
- Calculate U-values and R-values
- Calculate house pressures

Weatherization Concepts

- Heat loss reduction
- Hot water systems
- Ventilation systems
- HVAC systems
- Heating systems
- Lighting systems
- Pressure and thermal boundaries
- Energy efficiency concepts
- Diagnostic testing procedures
- Insulation principles and concepts



Materials

- R-value rating system
- Insulation materials such as: blown-in fiberglass, batt fiberglass, cellulose, mineral wool, cotton/denim, rock wool, silica wool, vermiculite, sawdust, spray foam, rigid foam board, pipe wrap, foam pipe wrap
- Siding materials such as: shake, hardy plank, aluminum, vinyl, lap siding, asbestos, slate
- Sealers such as: exterior caulking, 1-part and 2-part foam, tapes, mastic, high-temperature sealants
- Ducting materials such as: rigid ducts, flexible ducts, vent capabilities
- Windows: U-values, triple panes, double panes, storm, vinyl, louvered, aluminum, wood frame
- Doors: R-values, metal, hollow-core, solid core, sliding glass, mobile home, in-swing, out-swing, pocket
- Weather stripping such as: metal, plastic, foam, silicone, magnetic, vinyl, brush, felt
- Ventilation such as: bath fans, kitchen fans, fresh air ducts, in-line fans, fan timers
- Supplies such as: plastic bags, tapes, plastic sheets, paints, wood putty, spackle, glues, rubber gloves, cleaning supplies, brooms, fasteners (nails, screws, etc)



Equipment

- Insulation blowers and tubes
- Generators
- Truck
- Personal Protective Equipment (PPE) such as masks, harnesses, eye and ear protection, Tyvek® suits, booties, gloves, hats
- Head lamps
- Calculator
- Computer
- Ladders and scaffolding
- Metal brake
- Safety equipment such as: fire extinguisher, first aid kits
- High-Efficiency Particulate Air (HEPA) filter vacuums
- Lead testing equipment such as: X-Ray Fluorescence Gun (XRF) or swab
- Camera, cell phone
- Compressor
- Pneumatic tools

Tools

- Power tools such as drills, saws, saws-alls, roto-hammer
- Standard hand tools
- HEPA attachments
- Staple guns, nail guns
- Sheet metal tools
- Caulk gun

Test Equipment

- Blower door
- Monometers
- Monoxer[®] gas detector
- Thermometer
- Smoke sticks
- Leakator[®] gas leak detector
- Pressure pan
- Duct blaster
- Flow hood
- Wind meter
- Hydrometer
- Infrared camera
- Magnahelic gauge

Reference Materials

- Material Safety Data Sheets (MSDS)
- Weatherization specifications
- Weatherization procedures
- Wage rates/employee rights information
- Lead-safe certifications
- Company or agency-specific manuals
- Map books
- Purchase orders
- Vehicle logs
- Change order forms



Table 2 provides SCANS Survey results for Weatherization Crew Leaders.

Table 3 lists the job standards required for a Weatherization Crew Leader. The primary tasks that the Crew Leader is required to accomplish in various scenarios are highlighted in the next section.

Table 2.
SCANS Survey Results: Weatherization Crew Leader

Foundation Skills and Personal Qualities	Key: 1 = Basic Competency Level; 5 = Advanced Competency Level.					Critical Competencies
	1	2	3	4	5	
Basic Skills						
Demonstrates Effective Reading Strategies						Identifies relevant details, facts, specifications, follows set of instructions; probes to gain knowledge/information and qualifies/analyzes information.
Demonstrates Effective Writing Strategies						Records information accurately, writes simple documents and summarizes/paraphrases information.
Applies Arithmetic Processes						Performs basic computations and measurements, converts numerical data and predicts arithmetic results.
Applies Mathematics Processes						Utilizes mathematical formulas and processes, summarizes and translates mathematical data.
Demonstrates Effective Listening Skills						Listens attentively, responds to non-verbal communication and confirms, interprets, clarifies and influences communication.
Demonstrates Effective Speaking Skills						Actively participates in discussions, explains concepts and presents complex ideas and information.
Thinking Skills						
Applies Creative Thinking/Generates Ideas						Recognizes patterns and relationships, demonstrates creative thinking process while problem solving and develops creative solutions.
Applies Decision-Making Strategies						Analyzes situations and information, considers risks and implications and compiles multiple viewpoints.
Recognizes and Solves Problems						Identifies the problem, analyzes possible causes/reasons, recommends action plan and generates/evaluates solutions.
Demonstrates Visualization						Utilizes previous training and experience to predict outcomes; visually analyzes relationship between parts/whole and process/procedure and interprets charts and graphs.
Knows How to Learn						Draws upon experiences and prior knowledge, interprets and applies new knowledge and experience and interprets symbols, diagrams and schematics.
Applies Reasoning Skills						Applies rules/principles to process, uses logic to draw conclusions and analyzes rules and principles.



Table 2.
SCANS Survey Results: Weatherization Crew Leader
Continued

Foundation Skills and Personal Qualities	Key: 1 = Basic Competency Level; 5 = Advanced Competency Level.					Critical Competencies
	1	2	3	4	5	
Personal Qualities						
Demonstrates Responsibility						Follows policies and procedures, pays attention to details, works with minimal supervision, demonstrates initiative and monitors performance standards.
Demonstrates Belief in Self Worth						Responds assertively, defends own viewpoints, accepts constructive criticism and responsibility for own behavior and understands own impact on others.
Demonstrates Sociability in Groups						Responds appropriately to others, takes active interest in others, establishes rapport with co-workers and customers, modifies behavior to environment and shows understanding/empathy for others.
Demonstrates Self-Management						Accepts responsibility for own behavior, accepts constructive criticism, sets well-defined/realistic goals, demonstrates commitment to self improvement, and applies self-management skills.
Demonstrates Integrity/Honesty						Demonstrates honesty and trustworthiness, accepts responsibility for own behavior, analyses societal implications of decisions and recommends ethical course of action.
Management of Time/Resources						
Manages Time						Effectively manages time; prepares and organizes multiple schedules and manages timelines.
Manages Money						Performs routine recordkeeping.
Manages Materials/Facilities						Maintains job-specific supplies and equipment, orders and maintains inventory and monitors safe and efficient utilization of materials.
Manages Human Resources						Analyzes work assignments, assesses individual knowledge and skills, determines workload and monitors performance.
Management/Use of Information						
Acquires/Evaluates Information						Identifies need for data/information; integrates and analyzes multiple items of data; predicts outcomes.
Organizes/Maintains Information						Interprets information; analyzes organization of information; transfers information between formats.
Interprets/Communicates Information						Recognizes accuracy of information; prepares basic reports; summarizes/integrates information.
Uses Computers to Process Information						Understands computer operation; retrieves stored information, data; manipulates/ interprets data.



Table 2.
SCANS Survey Results: Weatherization Crew Leader
Continued

Foundation Skills and Personal Qualities	Key: 1 = Basic Competency Level; 5 = Advanced Competency Level.					Critical Competencies
	1	2	3	4	5	
Interpersonal Skills						
Participates as Team Member						Demonstrates commitment, works to improve team skills, encourages team members, assumes responsibility for accomplishing team goals.
Teaches Others						Conducts task-specific training, coaches others to apply related concepts, provides constructive feedback and develops appropriate training procedures.
Serves Customers						Demonstrates sensitivity to customer concerns and interests; analyzes and responds to customer needs; obtains additional resources to meet customer needs; makes exceptional effort on behalf of customer.
Exhibits Leadership						Leads by example, motivates others to extend their capabilities, displays enthusiasm/positive attitudes and develops majority/minority views.
Negotiates Agreements						Understands negotiations process; identifies conflicts and demonstrates composure; interprets complaints and concerns and analyzes group dynamics.
Works with Diversity						Understands the legal aspects of discrimination; respects the rights of others and demonstrates awareness of diversity; recognizes the value of diversity.
Understanding/Management of Systems						
Understands System						Understands the organization and system hierarchy and follows procedures and recognizes system strengths and limitations.
Monitors/Corrects System Performance						Monitors system performance, analyzes system operation, and distinguishes trends in performance.
Improves/Designs Systems						Suggests system modifications/improvements and determines system components to be improved.
Use of Technology						
Selects Appropriate Technology						Understands the requirements of the task and technological results and analyzes task/technology relationship.
Applies Technology to Task						Understands technology applications, manipulates technology for desired results and analyzes technology output.
Maintains/Troubleshoots Technology						Follows specified maintenance, identifies and corrects malfunctions, troubleshoots failures, evaluates performance of technology.



Table 3.
Weatherization Crew Leader: Critical Work Functions and Key Activities

Critical Work Functions	Key Activities					
<p>A. <i>Ensure a Safe Work Environment and Meet Safety Standards</i></p>	<p><i>A1</i> Lead safety & pre-job meetings</p>	<p><i>A2</i> Ensure that all work is performed safely</p>	<p><i>A3</i> Identify and report unsafe conditions and take corrective actions</p>	<p><i>A4</i> Obtain and maintain required licenses and certifications</p>	<p><i>A5</i> Perform safety inspections</p>	
<p>B. <i>Manage the Crew</i></p>	<p><i>B1</i> Ensure that installers possess the necessary skills</p>	<p><i>B2</i> Provide leadership and support for crew</p>	<p><i>B3</i> Ensure that project goals are met</p>			
<p>C <i>Conduct Training and Participate in Continuous Learning</i></p>	<p><i>C1</i> Achieve and maintain proficiency in current and new technologies, materials and work processes</p>	<p><i>C2</i> Train others in specific installation and repair procedures (on-the-job)</p>	<p><i>C3</i> Conduct or provide for training</p>	<p><i>C4</i> Conduct or provide for safety training</p>		
<p>D. <i>Prepare for the Job</i></p>	<p><i>D1</i> Obtain materials, tools and equipment</p>	<p><i>D2</i> Maintain and inspect hand tools and replace those that are non-functioning</p>	<p><i>D3</i> Maintain, inspect, and repair or replace equipment</p>	<p><i>D4</i> Maintain and operate truck, tools and stock</p>	<p><i>D5</i> Verify auditor report and recommendations</p>	<p><i>D6</i> Develop workplan based on auditor report</p>



Table 3.
Weatherization Crew Leader: Critical Work Functions and Key Activities
Continued

Critical Work Functions	Key Activities					
E. <i>Interact and Communicate with Coworkers, Suppliers, Inspectors, Customers & Contractors</i>	<i>E1</i> <i>Participate in pre-job meetings</i>	<i>E2</i> <i>Participate in meetings and problem solving groups with crew, contractors, auditor and/or management</i>	<i>E3</i> <i>Educate the public and owners and respond to concerns</i>	<i>E4</i> <i>Communicate with suppliers or appropriate staff regarding parts, tools and refurbishment</i>	<i>E5</i> <i>Communicate with inspectors, auditors and contractors</i>	
F. <i>Adhere to Policies and Standards</i>	<i>F1</i> <i>Comply with environmental regulations</i>	<i>F2</i> <i>Adhere to site specific work practices and procedures</i>	<i>F3</i> <i>Negotiate unanticipated or additional work</i>	<i>F4</i> <i>Adhere to program or company/agency specific work practices and procedures</i>		
G. <i>Inspect Weatherization Installation</i>	<i>G1</i> <i>Verify proper and complete installations</i>	<i>G2</i> <i>Prepare for and request final inspections</i>	<i>G3</i> <i>Perform customer walk-throughs</i>	<i>G4</i> <i>Complete documentation</i>	<i>G5</i> <i>Conduct diagnostic and performance testing and make necessary corrections</i>	
H. <i>Supervise Installation Work or Perform Installation as Needed</i>	<i>H1</i> <i>Ensure that leakage sites are properly identified</i>	<i>H2</i> <i>Ensure that sealing is performed properly</i>	<i>H3</i> <i>Ensure that insulation is properly handled and installed</i>	<i>H4</i> <i>Ensure that windows and doors are properly installed or retrofitted</i>	<i>H5</i> <i>Ensure that mechanical ventilation is properly installed</i>	<i>H6</i> <i>Conduct diagnostic and performance testing and make necessary corrections</i>



Scenarios: Routine, Crisis and Long-Term





Routine Scenario

Today the crew is on site and they are insulating an under floor. The Weatherization Crew Leader will be coordinating with the client for house access. The lead will also be taking into account the client's general understanding of the work and the workers' well-being, as they plan to remain in the home while the work is underway.

As the crew follows the job scope, the lead observes and manages the time the crew is spending on the job, and provides on-the-job training where needed. The lead also directs contractors who arrive at the site to orient them and to show them where their specific work is to be done. On this day, an electrical contractor will be wiring a fan that the crew installed while the crew continues to install insulation. The lead provides background and direction to the contractor about where the fan was installed and what control is to be used.

As the job is completed, the lead calls out for an inspection to verify that the work meets current standards, as determined by a quality insurance inspector. Once the job is signed off, the lead heads back to the shop and displays on the shop table all of the work he and his crew have done, and he makes sure that the proper forms are completed and that the file is in order.

After the paperwork has been completed, the lead can now turn the job over to the project coordinator to finalize; the lead may also make recommendations for additional work that could or should be done for the customer, or for future jobs that should be considered.

The primary tasks involved in the routine scenario are listed in Table 4.



Table 4.
Primary Tasks and Functions Involved in Routine Scenario

(Highlighted in Tan)

Critical Work Functions	Key Activities					
A. <i>Ensure a Safe Work Environment and Meet Safety Standards</i>	A1 <i>Lead safety & pre-job meetings</i>	A2 <i>Ensure that all work is performed safely</i>	A3 <i>Identify and report unsafe conditions and take corrective actions</i>	A4 <i>Obtain and maintain required licenses and certifications</i>	A5 <i>Perform safety inspections</i>	
B. <i>Manage the Crew</i>	B1 <i>Ensure that installers possess the necessary skills</i>	B2 <i>Provide leadership and support for crew</i>	B3 <i>Ensure that project goals are met</i>			
C <i>Conduct Training and Participate in Continuous Learning</i>	C1 <i>Achieve and maintain proficiency in current and new technologies, materials and work processes</i>	C2 <i>Train others in specific installation and repair procedures (on-the-job)</i>	C3 <i>Conduct or provide for training</i>	C4 <i>Conduct or provide for safety training</i>		
D. <i>Prepare for the Job</i>	D1 <i>Obtain materials, tools and equipment</i>	D2 <i>Maintain and inspect hand tools and replace those that are non-functioning</i>	D3 <i>Maintain, inspect, and repair or replace equipment</i>	D4 <i>Maintain and operate truck, tools and stock</i>	D5 <i>Verify auditor report and recommendations</i>	D6 <i>Develop workplan based on auditor report</i>



Table 4.
Primary Tasks and Functions Involved in Routine Scenario
Continued

Critical Work Functions	Key Activities					
<p>E. <i>Interact and Communicate with Co-workers, Suppliers, Inspectors, Customers & Contractors</i></p>	<p>E1 <i>Participate in pre-job meetings</i></p>	<p>E2 <i>Participate in meetings and problem-solving groups with crew, contractors, auditor and/or management</i></p>	<p>E3 <i>Educate the public and owners and respond to concerns</i></p>	<p>E4 <i>Communicate with suppliers or appropriate staff regarding parts, tools and refurbishment</i></p>	<p>E5 <i>Communicate with inspectors, auditors and contractors</i></p>	
<p>F. <i>Adhere to Policies and Standards</i></p>	<p>F1 <i>Comply with environmental regulations</i></p>	<p>F2 <i>Adhere to site-specific work practices and procedures</i></p>	<p>F3 <i>Negotiate unanticipated or additional work</i></p>	<p>F4 <i>Adhere to program or company/agency-specific work practices and procedures</i></p>		
<p>G. <i>Inspect Weatherization Installation</i></p>	<p>G1 <i>Verify proper and complete installations</i></p>	<p>G2 <i>Prepare for and request final inspections</i></p>	<p>G3 <i>Perform customer walk-throughs</i></p>	<p>G4 <i>Complete documentation</i></p>	<p>G5 <i>Conduct diagnostic and performance testing and make necessary corrections</i></p>	
<p>H. <i>Supervise Installation Work or Perform Installation as Needed</i></p>	<p>H1 <i>Ensure that leakage sites are properly identified</i></p>	<p>H2 <i>Ensure that sealing is performed properly</i></p>	<p>H3 <i>Ensure that insulation is properly handled and installed</i></p>	<p>H4 <i>Ensure that windows and doors are properly installed or retrofitted</i></p>	<p>H5 <i>Ensure that mechanical ventilation is properly installed</i></p>	<p>H6 <i>Conduct diagnostic and performance testing and make necessary corrections</i></p>





Crisis Scenario

The air seal crew has been working on the Jones' residence for the past two days. The Weatherization Crew Leader has been supervising his crew as well as all the sub-contractors that have been on the job site. The Crew Leader has inspected all the hands-on work and his air seal crew begins to conduct their combustion safety test for the day, before he calls for a final inspection.

During the combustion testing the Crew Leader discovers that the natural gas furnace and hot water tank are not drafting due to depressurization issues in the combustion appliance zones. The Crew Leader determines that all the room pressures are too high and that the interior doors of the home will need to be undercut to relieve the pressure inside each room and to decrease the overall negative pressure in the home.

The Crew Leader explains the situation to the client and the reasons why the additional work will be required to avoid a potential health and safety risk to the client and his family. Despite the explanation, the client says that he will not allow the crew to undercut his interior doors, even though he understands why the additional work is required. The Crew Leader quickly works to devise an alternative solution to relieve the pressure. He contacts the auditor to discuss the issue and options to solve the problem. Working with the auditor, the Crew Leader

proposes an effective alternative and receives authorization from the auditor for the additional work, which includes installing a jumper duct from each room to the main body of the home.

The Crew Leader draws a diagram for the client to explain what will be involved and how the system works. Upon review with the client, the Crew Leader receives the sign off from the client on the alternative method and assigns the work for his crew. Once the jumper ducts are added and the insulation is re-installed, the Crew Leader conducts the combustion safety test again and verifies that the alternative method was a success and the health and safety issue has been corrected.

The Crew Leader completes all the required paperwork and forwards the file to the inspector for a final inspection and sign off on the job.

The primary tasks involved in the crisis scenario are listed in Table 5.



Table 5.
Primary Tasks and Functions Involved in Crisis Scenario

(Highlighted in Tan)

Critical Work Functions	Key Activities					
A. <i>Ensure a Safe Work Environment and Meet Safety Standards</i>	<i>A1 Lead safety & pre-job meetings</i>	<i>A2 Ensure that all work is performed safely</i>	<i>A3 Identify and report unsafe conditions and take corrective actions</i>	<i>A4 Obtain and maintain required licenses and certifications</i>	<i>A5 Perform safety inspections</i>	
B. <i>Manage the Crew</i>	<i>B1 Ensure that installers possess the necessary skills</i>	<i>B2 Provide leadership and support for crew</i>	<i>B3 Ensure that project goals are met</i>			
C <i>Conduct Training and Participate in Continuous Learning</i>	<i>C1 Achieve and maintain proficiency in current and new technologies, materials and work processes</i>	<i>C2 Train others in specific installation and repair procedures (on-the-job)</i>	<i>C3 Conduct or provide for training</i>	<i>C4 Conduct or provide for safety training</i>		
D. <i>Prepare for the Job</i>	<i>D1 Obtain materials, tools and equipment</i>	<i>D2 Maintain and inspect hand tools and replace those that are non-functioning</i>	<i>D3 Maintain, inspect, and repair or replace equipment</i>	<i>D4 Maintain and operate truck, tools and stock</i>	<i>D5 Verify auditor report and recommendations</i>	<i>D6 Develop workplan based on auditor report</i>



Table 5.
Primary Tasks and Functions Involved in Crisis Scenario
Continued

Critical Work Functions	Key Activities					
E. Interact and Communicate with Co-workers, Suppliers, Inspectors, Customers & Contractors	E1 <i>Participate in pre-job meetings</i>	E2 <i>Participate in meetings and problem-solving groups with crew, contractors, auditor and/or management</i>	E3 <i>Educate the public and owners and respond to concerns</i>	E4 <i>Communicate with suppliers or appropriate staff regarding parts, tools and refurbishment</i>	E5 <i>Communicate with inspectors, auditors and contractors</i>	
F. Adhere to Policies and Standards	F1 <i>Comply with environmental regulations</i>	F2 <i>Adhere to site-specific work practices and procedures</i>	F3 <i>Negotiate unanticipated or additional work</i>	F4 <i>Adhere to program or company/agency-specific work practices and procedures</i>		
G. Inspect Weatherization Installation	G1 <i>Verify proper and complete installations</i>	G2 <i>Prepare for and request final inspections</i>	G3 <i>Perform customer walk-throughs</i>	G4 <i>Complete documentation</i>	G5 <i>Conduct diagnostic and performance testing and make necessary corrections</i>	
H. Supervise Installation Work or Perform Installation as Needed	H1 <i>Ensure that leakage sites are properly identified</i>	H2 <i>Ensure that sealing is performed properly</i>	H3 <i>Ensure that insulation is properly handled and installed</i>	H4 <i>Ensure that windows and doors are properly installed or retrofitted</i>	H5 <i>Ensure that mechanical ventilation is properly installed</i>	<i>Conduct diagnostic and performance testing and make necessary corrections</i>





Long-Term Scenario

A scheduled weatherization job is fast approaching, and the project coordinator has drafted his notes about what can be done on the home, and then converted those notes into a basic work scope document for the Crew Leader to use. This will further require converting the notes and work scope into a checklist for both the Crew Leader and the crew to follow. From this checklist the Crew Leader will develop a materials list and will coordinate with the project coordinator and/or suppliers to purchase or access needed materials. After verifying materials, the Crew Leader will inspect and make repairs or recommend repairs to personal and crew equipment to streamline this and future jobs.

Beyond preparing for scheduled jobs and to help the company maintain a consistent flow of jobs, the Crew Leader must also support management's efforts to develop new business opportunities and adapt to changes in the industry and business context. Crew Leaders provide input during the business planning process, help identify new clients, communicate on-the-job difficulties as well as propose company-wide solutions, and identify ways to improve quality and crew productivity so that the company is competitive.

Though not responsible for providing the initial assessment or work scope, it is vital for the Crew Leader to be proactive in communicating opportunities and challenges with all the other departments and employees related to the business and the actual work. In many cases, planned job scopes change, sometimes based on contractor expertise, knowledge of the hands-on work, and an understanding by the Crew Leader about customer expectations and cost. These unanticipated changes cannot be successfully completed without intentional communication and cooperation by each person involved; the lead must ensure that long-range planning and mid-course adjustments are communicated to all parties, including customers, management, crew members and contractors.

The primary tasks involved in the long-term scenario are listed in Table 6.



Table 6.
Primary Tasks and Functions Involved in Long-Term Scenario

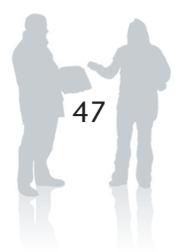
(Highlighted in Tan)



Critical Work Functions	Key Activities					
A. <i>Ensure a Safe Work Environment and Meet Safety Standards</i>	<i>A1 Lead safety & pre-job meetings</i>	<i>A2 Ensure that all work is performed safely</i>	<i>A3 Identify and report unsafe conditions and take corrective actions</i>	<i>A4 Obtain and maintain required licenses and certifications</i>	<i>A5 Perform safety inspections</i>	
B. <i>Manage the Crew</i>	<i>B1 Ensure that installers possess the necessary skills</i>	<i>B2 Provide leadership and support for crew</i>	<i>B3 Ensure that project goals are met</i>			
C <i>Conduct Training and Participate in Continuous Learning</i>	<i>C1 Achieve and maintain proficiency in current and new technologies, materials and work processes</i>	<i>C2 Train others in specific installation and repair procedures (on-the-job)</i>	<i>C3 Conduct or provide for training</i>	<i>C4 Conduct or provide for safety training</i>		
D. <i>Prepare for the Job</i>	<i>D1 Obtain materials, tools and equipment</i>	<i>D2 Maintain and inspect hand tools and replace those that are non-functioning</i>	<i>D3 Maintain, inspect, and repair or replace equipment</i>	<i>D4 Maintain and operate truck, tools and stock</i>	<i>D5 Verify auditor report and recommendations</i>	<i>D6 Develop workplan based on auditor report</i>

Table 6.
Primary Tasks and Functions Involved in Long-Term Scenario
Continued

Critical Work Functions	Key Activities					
E. <i>Interact and Communicate with Co-workers, Suppliers, Inspectors, Customers & Contractors</i>	E1 <i>Participate in pre-job meetings</i>	E2 <i>Participate in meetings and problem-solving groups with crew, contractors, auditor and/or management</i>	E3 <i>Educate the public and owners and respond to concerns</i>	E4 <i>Communicate with suppliers or appropriate staff regarding parts, tools and refurbishment</i>	E5 <i>Communicate with inspectors, auditors and contractors</i>	
F. <i>Adhere to Policies and Standards</i>	F1 <i>Comply with environmental regulations</i>	F2 <i>Adhere to site-specific work practices and procedures</i>	F3 <i>Negotiate unanticipated or additional work</i>	F4 <i>Adhere to program or company/agency-specific work practices and procedures</i>		
G. <i>Inspect Weatherization Installation</i>	G1 <i>Verify proper and complete installations</i>	G2 <i>Prepare for and request final inspections</i>	G3 <i>Perform customer walk-throughs</i>	G4 <i>Complete documentation</i>	G5 <i>Conduct diagnostic and performance testing and make necessary corrections</i>	
H. <i>Supervise Installation Work or Perform Installation as Needed</i>	H1 <i>Ensure that leakage sites are properly identified</i>	H2 <i>Ensure that sealing is performed properly</i>	H3 <i>Ensure that insulation is properly handled and installed</i>	H4 <i>Ensure that windows and doors are properly installed or retrofitted</i>	H5 <i>Ensure that mechanical ventilation is properly installed</i>	H6 <i>Conduct diagnostic and performance testing and make necessary corrections</i>



Verification Survey Results

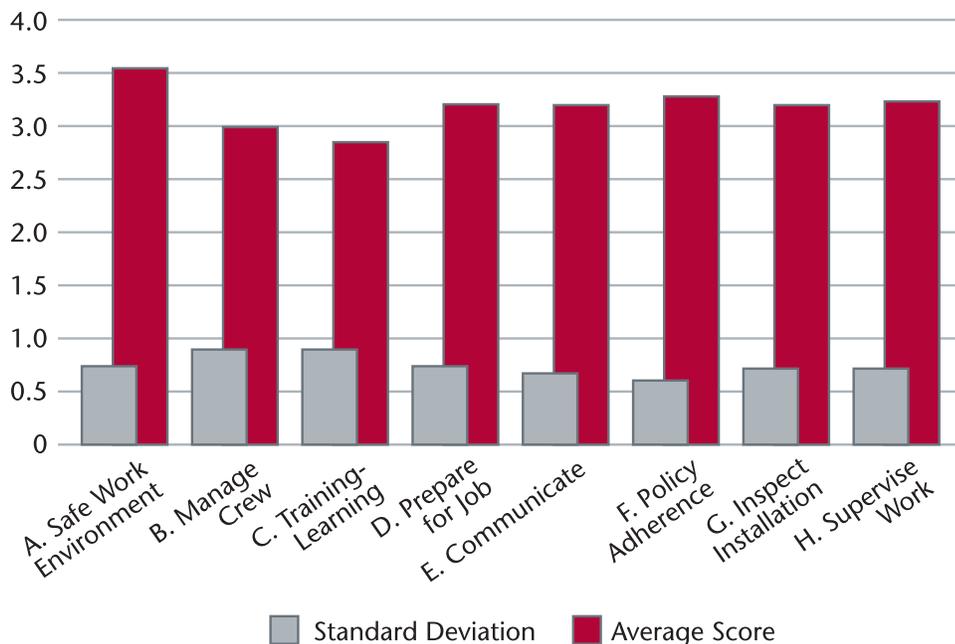
Verification surveys were administered to determine if the critical work functions and tasks identified by the Weatherization Crew Leaders would be verified by a broader sample of crew leaders and subject-matter experts in Washington State; a total of 51 completed surveys were received. Analysis of results for the 37 survey items revealed no inconsistent response patterns or scores. Figure 4 shows the average importance and standard deviation (variation) among each function, rated on a scale from 0 (not important) to 4 (critical). These results generally verify that the critical work functions included in the skill standards document are relevant to the industry at large.

all critical work functions, followed by *Function F, Policy Adherence*. The lowest-rated critical work function was *C, Conduct Training and Participate in Continuous Learning*, followed by *Function B, Manage the Crew*. These two lowest-rated critical work functions also showed the largest variation (standard deviation) in scores across all respondents; this variation is only slightly larger than the average for all items, and likely represents variations in the level of Crew Leader responsibility for these functions among different companies. It should also be noted that no critical work function had an average value of less than 2.8, which generally confirms that respondents view all eight critical work functions as important or very important to the work of Crew Leaders.



The results in Tables 7 - 14 show that *Critical Work Function A, Ensuring a Safe Work Environment*, rated highest among

Figure 4.
Weatherization Crew Leader – Importance of Critical Work Functions



Weatherization Crew Leader Skill Standards

Critical Work Function:

Table 7. A: Ensure a Safe Work Environment and Meet Safety Standards

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>A1 Lead safety & pre-job meetings</p>	<p>Meetings are attended with proactive participation and with adequate preparation.</p> <p>Safety issues are accurately and thoroughly discussed and solutions are defined.</p> <p>Communications occur with courtesy and respect.</p> <p>Action items are followed up in a timely manner.</p> <p>Safety meetings are properly and accurately documented.</p>	<p>Knowledge of federal, state, local, company/agency, U.S. Department of Energy (DOE), Environmental Protection Agency (EPA) and Housing and Urban Development (HUD) guidelines for asbestos, lead, mold and other health hazards.</p> <p>Knowledge of company safety policies and procedures.</p> <p>Knowledge of Material Safety Data Sheets (MSDS).</p> <p>Knowledge of weatherization equipment, processes and procedures.</p>	<p>Demonstrates commitment, works to improve team skills, encourages team members, assumes responsibility for accomplishing team goals.</p> <p>Recognizes accuracy of information, interprets information and prepares basic summaries and reports.</p> <p>Follows policies and procedures, pays attention to details, works with minimal supervision, demonstrates initiative and monitors performance standards.</p> <p>Actively participates in discussion, explains concepts and presents complex ideas and information.</p> <p>Selects data relevant to the task, predicts outcomes, analyzes data and integrates multiple items of data.</p>



Table 7. A: Ensure a Safe Work Environment and Meet Safety Standards – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>A2 Ensure that all work is performed safely</p> 	<p>Safety laws and regulations are posted, supported and followed.</p> <p>Mandatory safety training is attended by all personnel.</p> <p>Safety discrepancies are followed up and appropriate action is taken in a timely manner in accordance with all applicable laws, regulations and company policies.</p> <p>Enforcement of all safety rules is consistent with company/agency policies and procedures.</p> <p>Accidents are recorded and filed with appropriate offices in accordance with company policies and in a timely manner.</p> <p>Contact and/or location information for local area emergency response is immediately accessible.</p>	<p>Knowledge of the importance of safety in the workplace.</p> <p>Knowledge of federal, state, local, company/ agency, DOE, EPA and HUD guidelines for asbestos, lead, mold and other health hazards.</p> <p>Knowledge of MSDS.</p> <p>Knowledge of industry and manufacturer’s safety standards, in particular around ladder, scaffolding, safety harness and other height-related safety.</p> <p>Knowledge of company/agency, state and federal safety regulations for weatherization installation.</p> <p>Knowledge of requirements for and correct use of Personal Protective Equipment (PPE).</p> <p>Knowledge of safe work practices.</p> <p>Ability to identify unsafe conditions.</p> <p>Knowledge of procedures for taking corrective actions.</p> <p>Knowledge of mandatory safety training requirements.</p>	<p>Applies rules/principles to process, uses logic to draw conclusions and analyzes rules and principles.</p> <p>Identifies relevant details, facts, specifications; follows set of instructions; probes to gain knowledge/ information and qualifies/analyzes information.</p> <p>Follows policies and procedures, pays attention to details, works with minimal supervision, demonstrates initiative and monitors performance standards.</p> <p>Analyzes situations and information, considers risks and implications and compiles multiple viewpoints.</p> <p>Leads by example, motivates others to extend their capabilities, displays enthusiasm/ positive attitudes and develops majority/ minority views.</p> <p>Knowledge of procedures for reporting accidents.</p> <p>Knowledge of local area emergency response and hospitals.</p>

Table 7. A: Ensure a Safe Work Environment and Meet Safety Standards – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>A3 Identify and report unsafe conditions and take corrective actions</p>	<p>Conditions that present a threat to health and safety are identified, reported, and documented promptly.</p> <p>Corrective actions are identified, and documentation is completed once corrective actions are taken.</p> <p>Appropriate parties are consulted about corrective actions.</p> <p>Corrective actions are taken promptly according to company/agency procedures.</p> <p>Follow-up procedures are conducted.</p>	<p>Ability to identify an unsafe condition.</p> <p>Knowledge of corrective actions.</p> <p>Knowledge of reporting procedures for unsafe conditions.</p> <p>Knowledge of roles and responsibilities of personnel at the job site.</p> <p>Knowledge of company/agency safety policies.</p>	<p>Demonstrates honesty and trustworthiness, accepts responsibility for own behavior, analyses societal implications of decisions and recommends ethical course of action.</p> <p>Records information accurately, writes simple documents and summarizes/paraphrases information.</p> <p>Identifies the problem, analyzes possible causes/reasons, recommends action plan and generates/evaluates solutions.</p> <p>Understands technology applications, manipulates technology for desired results and analyzes technology output.</p> <p>Suggests system modifications/improvements and determines system components to be improved.</p>



Table 7. A: Ensure a Safe Work Environment and Meet Safety Standards – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
A4 Obtain and maintain required licenses and certifications	<p>Mandatory trainings are attended as required.</p> <p>Tests are taken and passed as required.</p> <p>Copies of certification are on site in accordance with all applicable laws, regulations and company policies.</p>	<p>Knowledge of first aid and ability to maintain first aid and cardiopulmonary resuscitation (CPR) certification.</p> <p>Knowledge of requirements regarding the presence of certification on the site.</p> <p>Knowledge of MSDS.</p>	<p>Selects appropriate categories for information, interprets information and applies processes to new information.</p> <p>Draws upon experiences and prior knowledge, interprets and applies new knowledge and experience, and interprets symbols, diagrams and schematics.</p> <p>Identifies relevant details, facts, specifications; follows set of instructions; probes to gain knowledge/information and qualifies/analyzes information.</p>



Table 7. A: Ensure a Safe Work Environment and Meet Safety Standards – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
A5 Perform safety inspections	<p>Potential hazards are correctly identified and corrected.</p> <p>Routine tests/inspections are conducted and documented on safety equipment as required.</p> <p>Inspections are thorough and are conducted on a regular basis.</p> <p>Safety concerns are communicated to appropriate personnel effectively and in a timely manner.</p> <p>Safety protocols are followed, for example Occupational Safety and Health Administration (OSHA) and Washington State Safety and Health Administration (WSHA).</p>	<p>Knowledge of potential hazards and how to recognize them.</p> <p>Knowledge of federal, state, local, company/ agency, DOE, EPA and HUD guidelines for asbestos, lead, mold and other health hazards.</p> <p>Ability to perform and document routine tests on safety equipment.</p> <p>Knowledge of corrective actions for safety deficiencies.</p> <p>Knowledge of OSHA and WSHA safety protocols.</p>	<p>Utilizes previous training and experience to predict outcomes; visually analyzes relationship between parts/whole and process/ procedure and interprets charts and graphs.</p> <p>Demonstrates sensitivity to customer concerns and interests; analyzes and responds to customer needs; obtains additional resources to meet customer needs; makes exceptional effort on behalf of customer.</p> <p>Understands the requirements of the task and technological results and analyzes task/technology relationship.</p> <p>Performs basic computations and measurements, converts numerical data and predicts arithmetic results.</p> <p>Monitors system performance, analyzes system operation, and distinguishes trends in performance.</p>



Table 8. B: Manage the Crew

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
 <p>B1 Ensure that installers possess the necessary skills</p>	<p>Skills are relevant to the needs of the job.</p> <p>Skill requirements and gaps are communicated to the individual in an effective and timely manner.</p> <p>Training is planned and discussed with the individual, and properly documented.</p> <p>Reports of skill gaps from other workers are appropriately investigated.</p> <p>Enforce Equal Employment Opportunity/Harassment Free Workplace (EEO/HFWP) compliance policies.</p> <p>Review installers' performance and conduct, and identify recognition and/or corrective actions.</p>	<p>Knowledge of proper performance of weatherization procedures and testing.</p> <p>Knowledge of roles and responsibilities for weatherization crew.</p> <p>Ability to observe and evaluate job skill performance.</p> <p>Knowledge of company policies and procedures for performing work.</p> <p>Knowledge of training and human resource resources available for bridging skill gaps.</p> <p>Knowledge of EEO/HFWP policies.</p>	<p>Analyzes work assignments, assesses individual knowledge and skills, determines workload and monitors performance.</p> <p>Responds assertively, defends own viewpoints, accepts constructive criticism and responsibility for own behavior, and understands own impact on others.</p> <p>Draws upon experiences and prior knowledge, interprets and applies new knowledge and experience, and interprets symbols, diagrams and schematics.</p> <p>Understands the legal aspects of discrimination, respects the rights of others, demonstrates awareness of diversity, recognizes the value of diversity.</p>

Table 8. B: Manage the Crew – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>B2 Provide leadership and support for crew</p>	<p>Career advancement opportunities are accurately identified for the installer.</p> <p>Measures are taken to ensure good morale.</p> <p>Motivational techniques are employed as appropriate.</p> <p>Timelines and deadlines are accurately communicated in an effective manner.</p> <p>Pace is modeled in an effective manner.</p> <p>Crew progress is accurately monitored and documented.</p>	<p>Knowledge of career paths and advancement opportunities available within the company/agency.</p> <p>Knowledge of motivational techniques and measures to ensure good morale.</p> <p>Ability to perform work quickly and model pace and quality.</p> <p>Knowledge of timelines and deadlines for the project and ability to monitor and document crew progress.</p>	<p>Leads by example, motivates others to extend their capabilities, displays enthusiasm/positive attitudes and develops majority/minority views.</p> <p>Responds appropriately to others, takes active interest in others, establishes rapport with co-workers and customers, modifies behavior to environment and shows understanding/empathy for others.</p> <p>Conducts task-specific training, coaches others to apply related concepts, provides constructive feedback and develops appropriate training procedures.</p> <p>Listens attentively; responds to non-verbal communication; and confirms, interprets, clarifies and influences communication.</p> <p>Analyzes work assignments, assesses individual knowledge and skills, determines workload and monitors performance.</p>



Table 8. B: Manage the Crew – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>B3 Ensure that project goals are met</p>	<p>Project requirements, goals and timelines are communicated to crew members in a clear and concise manner.</p> <p>Availability of materials, equipment, tools and personnel is ensured.</p> <p>Personnel are appropriately assigned based on expertise, strengths, weaknesses, and compensation.</p> <p>Efficient use of materials, equipment and personnel is maximized.</p> <p>Housekeeping is monitored to ensure a clean and productive workplace.</p>	<p>Knowledge of job site conditions and priorities.</p> <p>Knowledge of the number of hours required and materials, tools, equipment and personnel to do a task or a project.</p> <p>Knowledge of how to create a coordinated work plan.</p> <p>Knowledge of project requirements, goals and timelines.</p> <p>Ability to observe and assess job skills.</p> <p>Knowledge of federal and state prevailing wages and work classifications.</p> <p>Ability to maximize efficient use of materials, equipment, personnel and time.</p> <p>Knowledge of house-keeping procedures.</p>	<p>Follows policies and procedures, pays attention to details, works with minimal supervision, demonstrates initiative and monitors performance standards.</p> <p>Utilizes mathematical formulas and processes, summarizes and translates mathematical data.</p> <p>Effectively manages time; prepares and organizes multiple schedules and manages timelines.</p> <p>Maintains job-specific supplies and equipment, orders and maintains inventory and monitors safe and efficient utilization of materials.</p> <p>Analyzes situations and information, considers risks and implications and compiles multiple viewpoints.</p> <p>Understands the organization and system hierarchy, follows procedures and recognizes system strengths and limitations.</p> <p>Performs routine recordkeeping.</p>



Table 9. C: Conduct Training and Participate in Continuous Learning

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>C1 Achieve and maintain proficiency in current and new technologies, materials and work processes</p>	<p>Technical training needs are identified and communicated in an effective manner.</p> <p>Technical trainings and working demonstrations are attended with full participation.</p> <p>Demonstrates initiative to participate in continuous learning opportunities.</p>	<p>Ability to identify technical training needs.</p> <p>Ability to access training provided by the organization.</p> <p>Knowledge of weatherization practices and technologies is maintained and kept current.</p>	<p>Draws upon experiences and prior knowledge, interprets and applies new knowledge and experience, and interprets symbols, diagrams and schematics.</p> <p>Follows specified maintenance, identifies and corrects malfunctions, troubleshoots failures, evaluates performance of technology.</p> <p>Selects data relevant to the task, predicts outcomes, analyzes data and integrates multiple items of data.</p> <p>Demonstrates sensitivity to customer concerns and interests; analyzes and responds to customer needs; obtains additional resources to meet customer needs; makes exceptional effort on behalf of customer.</p> <p>Monitors system performance, analyzes system operation, and distinguishes trends in performance.</p>



Table 9. C: Conduct Training and Participate in Continuous Learning – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
 <p>C2 Train others in specific installation and weatherization procedures (on-the-job)</p>	<p>Company goals are supported through effective mentorship.</p> <p>Training is accurately given and received, is relevant and is timely.</p> <p>Communication is clear and relevant and proper terminology is used.</p> <p>Proficiency in subject matter is maintained.</p> <p>Appropriate on-the-job training (OJT) opportunities are identified and communicated to fellow employees and trainees.</p> <p>Trainee performance is measured by improved performance level and demonstration of skills.</p> <p>Trainee’s tasks are clearly defined.</p>	<p>Knowledge of company industry terminology.</p> <p>Ability to teach weatherization procedures and safe work practices.</p> <p>Ability to identify installer’s learning needs.</p> <p>Knowledge of subject matter (weatherization processes, equipment, tools, materials, etc.). Ability to demonstrate proper weatherization practices.</p> <p>Ability to create a safe working and learning environment for the trainee.</p>	<p>Conducts task-specific training, coaches others to apply related concepts, provides constructive feedback and develops appropriate training procedures.</p> <p>Analyzes situations and information, considers risks and implications, and compiles multiple viewpoints.</p> <p>Applies rules/principles to process, uses logic to draw conclusions and analyzes rules and principles.</p> <p>Actively participates in discussion, explains concepts and presents complex ideas and information.</p> <p>Leads by example, motivates others to extend their capabilities, displays enthusiasm/ positive attitudes and develops majority/ minority views.</p>

Table 9. C: Conduct Training and Participate in Continuous Learning – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
C3 Conduct or provide for training	<p>Mandatory trainings are attended by all installers as required.</p> <p>Requests for training are made to management in an effective and timely manner.</p> <p>Training has defined objectives, which are based on job tasks.</p> <p>The effectiveness of training is measured by improved performance.</p> <p>Trainings for core knowledge, skills and abilities are scheduled as needed.</p> <p>Installer input is obtained regarding their requests for training.</p>	<p>Knowledge of available training and training resources.</p> <p>Knowledge of mandatory training. Knowledge of training request process.</p> <p>Knowledge of weatherization procedures, roles and responsibilities and skills for installers.</p>	<p>Accepts responsibility for own behavior, accepts constructive criticism, sets well-defined/realistic goals, demonstrates commitment to self improvement, and applies self-management skills.</p> <p>Selects appropriate categories for information, interprets information and applies processes to new information.</p> <p>Understands the organization and system hierarchy and follows procedures. Recognizes system strengths and limitations.</p> <p>Recognizes patterns and relationships, demonstrates creative thinking process while problem solving, and develops creative solutions.</p>



Table 9. C: Conduct Training and Participate in Continuous Learning – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
C4 Conduct or provide for safety training	<p>Training includes safety policies and procedures pertinent to installers' jobs and reviews of near-misses and accidents.</p> <p>Training builds on the organization's safety training.</p> <p>Unsafe work practices are clearly communicated. Participation of all is encouraged in an effective manner.</p> <p>All communications in trainings are respectful. Training has defined objectives that are based on job tasks.</p> <p>The effectiveness of training is measured by improved safety performance.</p>	<p>Knowledge of safety policies and procedures.</p> <p>Knowledge of organization's safety training.</p> <p>Knowledge of safe work practices.</p> <p>Ability to identify safety training objectives.</p> <p>Knowledge of available training and training resources.</p> <p>Knowledge of mandatory training.</p> <p>Knowledge of training request process.</p>	<p>Accepts responsibility for own behavior, accepts constructive criticism, sets well-defined/realistic goals, demonstrates commitment to self improvement, and applies self-management skills.</p> <p>Selects appropriate categories for information, interprets information and applies processes to new information.</p> <p>Understands the organization and system hierarchy and follows procedures. Recognizes system strengths and limitations.</p> <p>Recognizes patterns and relationships, demonstrates creative thinking process while problem solving and develops creative solutions.</p> <p>Understands the requirements of the task and technological results and analyzes task/technology relationship.</p>



Table 10. D: Prepare for the Job

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>D1 Obtain materials, tools and equipment</p>	<p>Materials are obtained in accordance with job plan, requirements and budget.</p> <p>Documentation for purchase and return is accurately and thoroughly completed.</p> <p>Materials are inspected to meet quality specifications and job requirements.</p> <p>Materials that do not meet specifications are returned.</p> <p>Discrepancies in materials and scope are communicated and resolved.</p> <p>Tools and equipment meet all safety and job requirements.</p>	<p>Knowledge of material specifications and job requirements.</p> <p>Knowledge of procedures for purchasing and returning materials.</p> <p>Ability to resolve discrepancies between materials and scope.</p> <p>Knowledge of safety and job requirements for tools and equipment.</p> <p>Knowledge of reporting procedures for quality deviations.</p> <p>Knowledge of uses of and safety requirements for tools and equipment.</p> <p>Knowledge of documentation required for purchase or returns.</p>	<p>Maintains job-specific supplies and equipment, orders and maintains inventory and monitors safe and efficient utilization of materials.</p> <p>Follows specified maintenance, identifies and corrects malfunctions, troubleshoots failures, evaluates performance of technology.</p> <p>Demonstrates honesty and trustworthiness, accepts responsibility for own behavior, analyzes societal implications of decisions and recommends ethical course of action.</p> <p>Understands negotiations process; identifies conflicts and demonstrates composure; interprets complaints and concerns and analyzes group dynamics</p> <p>Follows policies and procedures, pays attention to details, works with minimal supervision, demonstrates initiative and monitors performance standards.</p> <p>Understands computer operation, utilizes integrated/multiple software applications and networks, locates and retrieves stored information and data.</p>



Table 10. D: Prepare for the Job – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>D2 Maintain and inspect tools and replace those that are non-functioning</p>	<p>Tools are checked and correctly tested to ensure they are in safe and proper working order.</p> <p>Procedures regarding nonfunctioning tools are followed.</p> <p>Safety and operating procedures are followed.</p>	<p>Knowledge of tool terminology and the locations of tools, parts and equipment.</p> <p>Ability to properly inspect tools and submit nonfunctional tools for repair.</p> <p>Knowledge of established policies and procedures regarding tools.</p> <p>Knowledge of tools function and use. Knowledge of approved company and manufacturers' inspection procedures and specifications including WSHA and OSHA.</p> <p>Knowledge of tests to ensure tools are in good and safe working order.</p>	<p>Utilizes previous training and experience to predict outcomes; visually analyzes relationship between parts/whole and process/procedure and interprets charts and graphs.</p> <p>Understands the organization and system hierarchy and follows procedures. Recognizes system strengths and limitations.</p> <p>Records information accurately, writes simple documents and summarizes/paraphrases information.</p> <p>Follows policies and procedures, pays attention to details, works with minimal supervision, demonstrates initiative and monitors performance standards.</p> <p>Maintains job-specific supplies and equipment, orders and maintains inventory and monitors safe and efficient utilization of materials.</p>



Table 10. D: Prepare for the Job – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
D3 Maintain, inspect and repair or replace equipment	Equipment is checked and correctly tested to ensure it is in safe and proper working order.	Knowledge of equipment terminology and the locations of parts and equipment.	Analyzes situations and information, considers risks and implications and compiles multiple viewpoints.
	<p>Procedures regarding nonfunctioning equipment are followed.</p> <p>Ensure calibration of equipment.</p> <p>Pre start-up checks/ inspections are thoroughly performed.</p> <p>Safety and operating procedures are discussed and followed and proper PPE is utilized at all times.</p> <p>Preventive maintenance requirements are met and are completed in an effective and timely manner.</p> <p>Maintenance tasks are documented according to organizational policies and procedures.</p> <p>All applicable certifications and licenses are maintained.</p> <p>Minor repairs are performed as required.</p>	<p>Knowledge of calibration requirements.</p> <p>Ability to properly inspect equipment and submit nonfunctional equipment for repair.</p> <p>Knowledge of established policies and procedures regarding equipment.</p> <p>Knowledge of equipment function and use.</p> <p>Knowledge of approved company and manufacturers inspection procedures and specifications including WSHA and OSHA.</p> <p>Knowledge of pre start-up checklists and how to use them.</p> <p>Knowledge of tests to ensure equipment is in good and safe working order.</p> <p>Ability to read and interpret equipment specifications and recommendations based on prints and drawings.</p> <p>Ability to safely perform preventive maintenance.</p> <p>Knowledge of requirements for and correct use of PPE.</p>	<p>Follows specified maintenance requirements, identifies and corrects malfunctions, troubleshoots failures, and evaluates performance of technology.</p> <p>Identifies relevant details, facts, specifications; follows set of instructions, probes to gain knowledge/information and qualifies/analyzes information.</p> <p>Recognizes accuracy of information, interprets information and prepares basic summaries and reports.</p> <p>Utilizes previous training and experience to predict outcomes; visually analyzes relationship between parts/whole and process/procedure and interprets charts and graphs.</p> <p>Knowledge of how and why components and parts fail and how to prevent it.</p> <p>Ability to perform minor repairs.</p>



Table 10. D: Prepare for the Job – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>D4 Maintain and operate truck, and maintain and stock</p>	<p>Vehicle is in good working order, scheduled maintenance is consistently performed and licensing is maintained.</p> <p>Vehicle safety equipment is available and up-to-date.</p> <p>Truck tool bins are properly stocked and maintained in an orderly manner.</p> <p>Vehicle fuel is maintained on a regular basis.</p> <p>Vehicle weight is not over Gross Vehicle Weight Rating (GVWR).</p> <p>Information regarding missing, broken or depleted safety equipment and standard tools is communicated to appropriate personnel effectively and in a timely manner.</p> <p>Truck is operated safely, in accordance with all applicable laws, regulations and clearances.</p>	<p>Knowledge of characteristics of a vehicle in good working order or in need of repair.</p> <p>Knowledge of procedures for maintaining licensing of vehicle.</p> <p>Knowledge of scheduled maintenance for vehicles and how to obtain it.</p> <p>Knowledge of vehicle safety equipment, procedures, laws and regulations.</p> <p>Ability to determine if safety equipment is up-to-date.</p> <p>Knowledge of stock required for tool bins.</p> <p>Ability to ensure that vehicles are refueled regularly.</p> <p>Knowledge of GVWR and truck height.</p> <p>Ability to inspect safety equipment and standard tools, and communicate inspection information to supervisor.</p> <p>Ability to safely operate truck.</p>	<p>Understands computer operation, utilizes integrated/multiple software and networks, and locates and retrieves stored information and data.</p> <p>Monitors system performance, analyzes system operation, and distinguishes trends in performance.</p> <p>Understands the organization and system hierarchy and follows procedures. Recognizes system strengths and limitations.</p>



Table 10. D: Prepare for the Job – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
D5 Verify auditor report and recommendations	<p>Auditor’s pre-test report is reviewed in a thorough manner and diagnostic tests are conducted to verify the auditor’s measurement.</p> <p>Scope of work correctly aligns with audit report.</p> <p>Pre-site inspection is conducted and documented.</p> <p>Discrepancies are properly documented and reconciled.</p> <p>Communications with auditors are made in a timely manner.</p>	<p>Knowledge of audit pre-test report and ability to interpret the information contained in it.</p> <p>Knowledge of diagnostic tests.</p> <p>Ability to verify that scope of work aligns with audit report.</p> <p>Knowledge of pre-site inspection.</p> <p>Knowledge of pre-site inspection documentation requirements.</p> <p>Ability to identify and reconcile discrepancies between audit report and pre-site inspection/diagnostic tests.</p> <p>Ability to locate and/or contact auditor.</p>	<p>Identifies relevant details, facts, specifications; follows set of instructions; probes to gain knowledge/information and qualifies/analyzes information.</p> <p>Utilizes mathematical formulas and processes, summarizes and translates mathematical data.</p> <p>Applies rules/principles to process, uses logic to draw conclusions and analyzes rules and principles.</p> <p>Responds appropriately to others, takes active interest in others, establishes rapport with co-workers and customers, modifies behavior to environment and shows understanding/empathy for others.</p> <p>Recognizes accuracy of information, interprets information and prepares basic summaries and reports.</p>

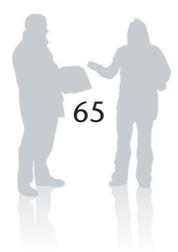


Table 10. D: Prepare for the Job – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>D6 Develop workplan based on auditor report</p>	<p>Tasks are prioritized based on weather conditions, type of job, efficiency, staffing, timelines, availability of materials and contractor availability.</p>	<p>Knowledge of the impact of weather conditions on workplan and prioritization of tasks.</p> <p>Ability to align workplan and prioritization of tasks with type of job.</p> <p>Ability to take into account efficiency, staffing, timeliness and availability of materials and contractors when developing the workplan and prioritizing tasks.</p> <p>Knowledge of company/agency procedures with respect to prioritization of tasks.</p>	<p>Applies rules/principles to process, uses logic to draw conclusions and analyzes rules and principles.</p> <p>Analyzes situations and information, considers risks and implications and compiles multiple viewpoints.</p> <p>Effectively manages time; prepares and organizes multiple schedules and manages timelines.</p> <p>Recognizes accuracy of information, interprets information and prepares basic summaries and reports.</p> <p>Suggests system modifications/improvements and determines system components to be improved.</p>



Table 11. E: Interact and Communicate with Co-Workers, Suppliers, Inspectors, Customers & Contractors

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
E1 Participate in on-site pre-job meetings	<p>The entire crew and, when applicable, contractors are in attendance.</p> <p>Meeting covers the scope of the job and individual work assignments.</p> <p>Work assignments are made in accordance with skills and abilities of individuals.</p> <p>Issues are thoroughly discussed and solutions are defined.</p> <p>Proper terminology is used.</p> <p>Meeting starts and ends on time.</p> <p>Acknowledgements and recognition are provided to individuals as appropriate.</p>	<p>Knowledge of company/agency and industry terminology.</p> <p>Knowledge of the weatherization process and equipment.</p> <p>Knowledge of meeting protocols and company policies and procedures regarding pre-job meetings.</p> <p>Knowledge of scope and goals of job.</p> <p>Knowledge of skills and abilities of crew and ability to match skills and abilities with required tasks.</p>	<p>Demonstrates commitment, works to improve team skills, encourages team members, assumes responsibility for accomplishing team goals.</p> <p>Understands the legal aspects of discrimination; respects the rights of others and demonstrates awareness of diversity; recognizes the value of diversity.</p> <p>Conducts task-specific training, coaches others to apply related concepts, provides constructive feedback and develops appropriate training procedures.</p> <p>Listens attentively; responds to non-verbal communication; and confirms, interprets, clarifies and influences communication.</p> <p>Responds appropriately to others, takes active interest in others, establishes rapport with co-workers and customers, modifies behavior to environment and shows understanding/empathy for others.</p> <p>Leads by example, motivates others to extend their capabilities, displays enthusiasm/positive attitudes and develops majority/minority views.</p>



Table 11. E: Interact and Communicate with Co-Workers, Suppliers, Inspectors, Customers & Contractors – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
 <p>E2 Participate in meetings & problem-solving groups with crew, contractors, auditor and/or management</p>	<p>Meetings are attended with active participation and advance preparation.</p> <p>Issues are accurately and thoroughly discussed and safety concerns are identified.</p> <p>Communication is respectful, clear and relevant.</p> <p>Open items are carried out in a timely manner.</p>	<p>Knowledge of industry and company/agency terminology.</p> <p>Knowledge of weatherization processes, procedures, tools and equipment.</p> <p>Knowledge of the roles and responsibilities of company/agency personnel, work groups and departments.</p> <p>Knowledge of company ethics and diversity policies.</p> <p>Ability to contact crew, contractors, auditor and management.</p>	<p>Identifies the problem, analyzes possible causes/reasons, recommends action plan and generates/evaluates solutions.</p> <p>Recognizes accuracy of information; interprets information and prepares basic summaries and reports.</p> <p>Responds appropriately to others, takes active interest in others, establishes rapport with co-workers and customers, modifies behavior to environment and shows understanding/empathy for others.</p> <p>Recognizes patterns and relationships, demonstrates creative thinking process while problem solving, and develops creative solutions.</p> <p>Understands technology applications, manipulates technology for desired results and analyzes technology output.</p>

Table 11. E: Interact and Communicate with Co-Workers, Suppliers, Inspectors, Customers & Contractors – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>E3 Educate the public and owners and respond to concerns</p>	<p>Owner and public needs are recognized and acknowledged.</p> <p>Information about owner and public requests, concerns and response actions are communicated to appropriate personnel effectively and in a timely manner.</p> <p>Owners and the public are properly educated regarding the weatherization process and its benefits and accurate information is provided.</p>	<p>Knowledge of owner and public rules and protocols when working on their property.</p> <p>Knowledge of the weatherization process and its benefits.</p> <p>Knowledge of procedures for responding to owner and public concerns.</p> <p>Knowledge of property owner/property manager contact information.</p>	<p>Demonstrates sensitivity to customer concerns and interests; analyzes and responds to customer needs; obtains additional resources to meet customer needs; makes exceptional effort on behalf of customer.</p> <p>Understands the legal aspects of discrimination; respects the rights of others and demonstrates awareness of diversity; recognizes the value of diversity.</p> <p>Selects data relevant to the task, predicts outcomes, analyzes data and integrates multiple items of data.</p> <p>Understands the organization and system hierarchy and follows procedures. Recognizes system strengths and limitations.</p> <p>Understands negotiations process; identifies conflicts and demonstrates composure; interprets complaints and concerns and analyzes group dynamics.</p> <p>Demonstrates honesty and trustworthiness, accepts responsibility for own behavior, analyses societal implications of decisions and recommends ethical course of action.</p>

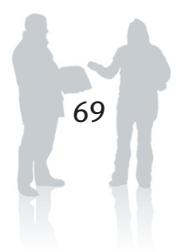


Table 11. E: Interact and Communicate with Co-Workers, Suppliers, Inspectors, Customers & Contractors – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
 <p>E4 Communicate with suppliers or appropriate staff regarding parts, tools and refurbishment</p>	<p>Research is conducted to properly prepare for the communication.</p> <p>Communication is respectful, clear and without discrimination.</p> <p>Actions and results of discussions with suppliers or appropriate staff are communicated to management and all required approvals are obtained.</p>	<p>Ability to research parts and tools.</p> <p>Knowledge of the function of parts.</p> <p>Knowledge of specifications of part in question.</p> <p>Knowledge of contact information for suppliers and/or staff.</p>	<p>Maintains job-specific supplies and equipment, orders and maintains inventory and monitors safe and efficient utilization of materials.</p> <p>Selects appropriate categories for information, interprets information and applies processes to new information.</p> <p>Follows specified maintenance, identifies and corrects malfunctions, troubleshoots failures, evaluates performance of technology.</p> <p>Understands negotiations process; identifies conflicts and demonstrates composure; interprets complaints and concerns; and analyzes group dynamics.</p> <p>Draws upon experiences and prior knowledge, interprets and applies new knowledge and experience, and interprets symbols, diagrams and schematics.</p>

Table 11. E: Interact and Communicate with Co-Workers, Suppliers, Inspectors, Customers & Contractors – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>E5</p> <p>Communicate with inspectors, auditors and contractors</p>	<p>Contracted services are monitored for effectiveness.</p> <p>Information is provided to inspectors, auditors and contractors effectively and in a timely manner.</p> <p>Communications regarding deficiencies are conducted in a clear and timely manner.</p> <p>Housekeeping is monitored to ensure a clean and productive workplace.</p> <p>Relationships are made and kept in a respectful and ethical manner.</p> <p>Company ethical guidelines are followed.</p>	<p>Knowledge of requirements for contracted services.</p> <p>Knowledge of requirements for inspections and audits.</p> <p>Ability to identify contracting deficiencies.</p> <p>Knowledge of company ethical guidelines with respect to contractors.</p> <p>Knowledge of the aspect of the job with which the contractor is working.</p> <p>Knowledge of industry terminology.</p> <p>Knowledge of weatherization process.</p> <p>Knowledge of contact information for inspectors, auditors and contractors.</p>	<p>Records information accurately, writes simple documents and summarizes/paraphrases information.</p> <p>Actively participates in discussion, explains concepts and presents complex ideas and information.</p> <p>Applies rules/principles to process, uses logic to draw conclusions, and analyzes rules and principles.</p> <p>Understands the organization and system hierarchy and follows procedures. Recognizes system strengths and limitations.</p> <p>Recognizes accuracy of information, interprets information and prepares basic summaries and reports.</p>



Table 12. F: Adhere to Policies and Standards

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>F1 Comply with environmental regulations</p>	<p>Safety, OSHA, EPA, and HUD regulations are supported and followed. Proper PPE is available and used by all personnel as required.</p> <p>Hazardous/non-compliant conditions are corrected, documented and reported in accordance with company/agency policies and procedures.</p>	<p>Knowledge of project and regulatory compliance requirements, including federal, state and local and OSHA, EPA and HUD regulations.</p> <p>Knowledge of procedures for taking corrective actions on hazardous/non-compliant conditions.</p> <p>Knowledge of requirements for and correct use of PPE.</p> <p>Knowledge of regulations protecting the environment.</p> <p>Ability to understand and interpret MSDS and other environmental regulatory references.</p> <p>Knowledge of company/agency requirements for documentation.</p>	<p>Follows policies and procedures, pays attention to details, works with minimal supervision, demonstrates initiative and monitors performance standards.</p> <p>Selects data relevant to the task, predicts outcomes, analyzes data and integrates multiple items of data.</p> <p>Draws upon experiences and prior knowledge, interprets and applies new knowledge and experience, and interprets symbols, diagrams and schematics.</p> <p>Leads by example, motivates others to extend their capabilities, displays enthusiasm/positive attitudes and develops majority/minority views.</p> <p>Analyzes situations and information, considers risks and implications, and compiles multiple viewpoints.</p>



Table 12. F: Adhere to Policies and Standards – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
F2 Adhere to site-specific work practices and procedures	<p>Site-specific work practices and procedures are completely followed.</p> <p>Crew and contractors are informed of site-specific work practices and procedures.</p>	<p>Knowledge of site-specific work practices and procedures.</p> <p>Knowledge of the weatherization process.</p>	<p>Draws upon experiences and prior knowledge, interprets and applies new knowledge and experience, and interprets symbols, diagrams and schematics.</p> <p>Understands the requirements of the task and technological results and analyzes task/technology relationship.</p> <p>Demonstrates sensitivity to customer concerns and interests; analyzes and responds to customer needs; obtains additional resources to meet customer needs; makes exceptional effort on behalf of customer.</p> <p>Recognizes accuracy of information, interprets information and prepares basic summaries and reports.</p> <p>Follows policies and procedures, pays attention to details, works with minimal supervision, demonstrates initiative and monitors performance standards.</p>



Table 12. F: Adhere to Policies and Standards – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>F3 Negotiate unanticipated or additional work</p> 	<p>Negotiations are carried out in a courteous manner.</p> <p>Accurate information is provided to the homeowner.</p> <p>Auditor/homeowner approvals are obtained in accordance with company/agency policies and procedures.</p> <p>Changes in work order are clearly communicated to the owner/property manager in an effective and timely manner.</p>	<p>Knowledge of company guidelines for adding work and chain of command for obtaining approvals.</p> <p>Ability to accurately estimate the type and quantity of materials required to cost-effectively perform additional work.</p> <p>Ability to prepare documentation, such as work orders/change orders.</p> <p>Knowledge of weatherization issues and their appropriate solutions.</p>	<p>Demonstrates sensitivity to customer concerns and interests; analyzes and responds to customer needs; obtains additional resources to meet customer needs; makes exceptional effort on behalf of customer.</p> <p>Performs routine recordkeeping.</p> <p>Identifies the problem, analyzes possible causes/reasons, recommends action plan and generates/evaluates solutions.</p> <p>Understands negotiations process; identifies conflicts and demonstrates composure; interprets complaints and concerns and analyzes group dynamics.</p> <p>Recognizes patterns and relationships, demonstrates creative thinking process while problem solving and develops creative solutions.</p>

Table 12. F: Adhere to Policies and Standards – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
F4 Adhere to program or company/agency-specific work practices and procedures	<p>Program and company/agency-specific work practices and procedures are completely followed.</p> <p>Crew and contractors are informed of program or company/agency-specific work practices and procedures.</p>	<p>Knowledge of program and company/agency-specific work practices and procedures.</p> <p>Knowledge of the weatherization process.</p>	<p>Draws upon experiences and prior knowledge, interprets and applies new knowledge and experience, and interprets symbols, diagrams and schematics.</p> <p>Understands technology applications, manipulates technology for desired results and analyzes technology output.</p> <p>Leads by example, motivates others to extend their capabilities, displays enthusiasm/positive attitudes and develops majority/minority views.</p> <p>Understands the organization and system hierarchy and follows procedures. Recognizes system strengths and limitations.</p>



Table 13. G: Inspect Weatherization Installation

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>G1 Verify proper and complete installations</p>	<p>Installation checklists and proper tools are used correctly.</p> <p>Problems are properly corrected and documented and procedures regarding missing or incorrect materials are followed.</p> <p>Inspection is thorough and conducted in a timely manner.</p> <p>Safety procedures are followed.</p> <p>When required, inspection documentation is filled out completely and in a timely manner.</p> <p>Materials are checked to ensure they meet specification.</p> <p>Inspection confirms or rejects that work has been completed to meet company/agency and program specifications.</p>	<p>Knowledge of installation checklists.</p> <p>Ability to prioritize and correct problems.</p> <p>Knowledge of inspection procedures.</p> <p>Knowledge of tools, equipment and PPE.</p> <p>Knowledge of safety procedures.</p> <p>Knowledge of documentation policies and procedures for inspections.</p> <p>Knowledge of material specifications and job requirements.</p> <p>Knowledge of scope of project and company/agency and program specifications.</p>	<p>Utilizes previous training and experience to predict outcomes; visually analyzes relationship between parts/whole and process/procedure and interprets charts and graphs.</p> <p>Demonstrates honesty and trustworthiness, accepts responsibility for own behavior, analyzes societal implications of decisions and recommends ethical course of action.</p> <p>Understands technology applications, manipulates technology for desired results and analyzes technology output.</p> <p>Follows policies and procedures, pays attention to details, works with minimal supervision, demonstrates initiative and monitors performance standards.</p> <p>Analyzes situations and information, considers risks and implications, and compiles multiple viewpoints.</p> <p>Monitors system performance, analyzes system operation, and distinguishes trends in performance.</p>



Table 13. G: Inspect Weatherization Installation – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
G2 Prepare for and request final inspections	<p>Appropriate steps are taken to ensure that final inspection is scheduled.</p> <p>Preparations for final inspections are completed, including checklists or job file.</p>	<p>Knowledge of organizational priorities.</p> <p>Knowledge of procedures for scheduling final inspection.</p> <p>Knowledge of checklists and procedures for preparing for final inspection.</p> <p>Knowledge of contact information for inspectors and auditors.</p>	<p>Leads by example, motivates others to extend their capabilities, displays enthusiasm/ positive attitudes and develops majority/ minority views.</p> <p>Understands computer operation, utilizes integrated/multiple software and networks, and locates and retrieves stored information and data.</p> <p>Records information accurately, writes simple documents and summarizes/paraphrases information.</p>



Table 13. G: Inspect Weatherization Installation – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>G3 Perform customer walk-throughs</p> 	<p>Customer walk-through is scheduled at mutual convenience of Crew Leader and owner.</p> <p>Walk-through procedures are followed in a thorough manner.</p> <p>All questions from owner are answered in a courteous and thorough manner.</p> <p>When applicable, sign-off is obtained from owner.</p>	<p>Knowledge of walk-through procedures.</p> <p>Knowledge of weatherization process and ability to explain it to owner.</p> <p>Knowledge of required sign-offs.</p> <p>Knowledge of contact information for owner/property manager.</p>	<p>Demonstrates sensitivity to customer concerns and interests; analyzes and responds to customer needs; obtains additional resources to meet customer needs; makes exceptional effort on behalf of customer.</p> <p>Actively participates in discussion, explains concepts and presents complex ideas and information.</p> <p>Responds assertively, defends own viewpoints, accepts constructive criticism and responsibility for own behavior, and understands own impact on others.</p> <p>Demonstrates honesty and trustworthiness, accepts responsibility for own behavior, analyses societal implications of decisions and recommends ethical course of action.</p> <p>Follows policies and procedures, pays attention to details, works with minimal supervision, demonstrates initiative and monitors performance standards.</p> <p>Listens attentively, responds to non-verbal communication, and confirms, interprets, clarifies and influences communication.</p>

Table 13. G: Inspect Weatherization Installation – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
G4 Perform documentation	<p>Documentation is performed according to company and agency policies and procedures.</p> <p>Files are input into database and properly filed or distributed to correct parties.</p> <p>Inspection results are accurately documented and documentation is legible and completed in a timely manner.</p> <p>All receipts and documents required for the job are completed and included in the job file.</p>	<p>Knowledge of documentation policies and procedures.</p> <p>Knowledge of inspection and test result documentation procedures and requirements.</p> <p>Knowledge of state and federal prevailing wage and work classifications.</p> <p>Knowledge of company/agency, federal, state, local, EPA, OSHA and HUD documentation requirements.</p>	<p>Records information accurately, writes simple documents and summarizes/paraphrases information.</p> <p>Understands the requirements of the task and technological results, and analyzes task/technology relationship.</p> <p>Selects appropriate categories for information, interprets information and applies processes to new information.</p> <p>Utilizes mathematical formulas and processes, and summarizes and translates mathematical data.</p> <p>Understands computer operation, utilizes integrated/multiple software and networks, and locates and retrieves stored information and data.</p> <p>Applies rules/principles to process, uses logic to draw conclusions and analyzes rules and principles.</p>



Table 13. G: Inspect Weatherization Installation – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>G5 Conduct diagnostic and performance testing and make necessary corrections</p>	<p>All required test equipment is identified and located.</p> <p>Test equipment is used correctly.</p> <p>Testing procedures are followed in accordance with company policies and procedures.</p> <p>Proper tests are conducted in accordance with company/agency policies and procedures such as combustion safety testing, blower door testing, pressure pan testing and/or moisture testing and duct blaster testing.</p> <p>Zone pressure diagnostics are properly conducted and results are accurately interpreted.</p> <p>Post-test results are compared with pre-test data and anomalies are corrected or referred to appropriate personnel or departments.</p> <p>Test results are accurately and thoroughly documented and properly filed.</p> <p>Occupant health and safety are ensured and maintained.</p>	<p>Knowledge of performance testing, such as combustion safety testing, blower door testing, pressure pan testing and/or moisture testing, and duct blaster testing and accompanying documentation.</p> <p>Knowledge of and ability to use test equipment.</p> <p>Knowledge of and the ability to calculate ventilation rates.</p> <p>Knowledge of and ability to interpret pre- and post-test results and documentation procedures.</p> <p>Ability to perform diagnostic testing and correct anomalies.</p> <p>Knowledge of federal, state, local, company/agency, EPA, OSHA and HUD reporting requirements regarding diagnostic and performance testing.</p> <p>Knowledge of the impact of weatherization task priorities.</p>	<p>Understands technology applications, manipulates technology for desired results and analyzes technology output.</p> <p>Recognizes accuracy of information, interprets information and prepares basic summaries and reports.</p> <p>Follows specified maintenance, identifies and corrects malfunctions, troubleshoots failures, and evaluates performance of technology.</p> <p>Identifies the problem, analyzes possible causes/reasons, recommends action plan and generates/evaluates solutions.</p> <p>Monitors system performance, analyzes system operation, and identifies trends in system performance.</p>



Table 14. H: Supervise Installation Work or Perform Installation as Needed

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>H1 Ensure that leakage sites are properly identified</p>	<p>Tools and equipment are properly used.</p> <p>All leakage sites are located (pressure and thermal boundaries are aligned).</p> <p>Leakage sites are properly documented in accordance with company/agency policies and procedures.</p> <p>Leakage sites are communicated to appropriate personnel effectively and in a timely manner.</p>	<p>Knowledge of minimum ventilation rates.</p> <p>Ability to use blower door and infra-red camera to locate leakage sites.</p> <p>Knowledge of the principles of air leakage.</p> <p>Knowledge of priority air sealing measures.</p> <p>Knowledge of alignment of pressure and thermal boundaries.</p> <p>Knowledge of company/agency policies regarding documentation of leakage sites.</p>	<p>Follows policies and procedures, pays attention to details, works with minimal supervision, demonstrates initiative and monitors performance standards.</p> <p>Suggests system modifications/improvements and determines system components to be improved.</p> <p>Utilizes previous training and experience to predict outcomes; visually analyzes relationship between parts/whole and process/procedure; and interprets charts and graphs.</p> <p>Understands the requirements of the task and technological results and analyzes task/technology relationship.</p> <p>Maintains job-specific supplies and equipment, orders and maintains inventory, and monitors safe and efficient utilization of materials.</p>



Table 14. H: Supervise Installation Work or Perform Installation as Needed – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>H2 Ensure that sealing is performed properly</p>	<p>Duct connections are properly sealed with mastic and fiberglass mesh tape or other approved material.</p> <p>Duct systems are properly modified as specified in work order.</p> <p>Proper air sealing materials and procedures are correctly matched with the location of the leakage area in accordance with state and manufacturer’s specifications.</p> <p>Minimum ventilation rates are maintained.</p> <p>Hand tools, power tools and sealing tools are used properly in accordance with manufacturer’s specifications.</p> <p>Materials are handled and installed properly.</p> <p>Proper PPE is available and used by all personnel as required.</p> <p>Pressure and thermal boundaries are properly aligned.</p>	<p>Knowledge of air sealing materials and procedures and the ability to match them to the leakage site.</p> <p>Ability to apply mastic and fiberglass mesh tape.</p> <p>Ability to seal attic floor bypasses at penetration points (pipes, wiring, etc.).</p> <p>Ability to seal penetration leaks for plumbing, electrical wiring, vents and ducts, soffits and balloon walls.</p> <p>Ability to seal leaks in knee-walls and finished attic spaces.</p> <p>Ability to seal basement band (rim) joints.</p> <p>Ability to properly apply caulk and spray foam insulation, foamboard, drywall, plywood, flashing and cement.</p> <p>Ability to identify, select and install weather-stripping on doors, windows and attic hatches.</p> <p>Ability to repair plaster and drywall</p> <p>Knowledge of hand tools, power tools and equipment.</p> <p>Knowledge of requirements for and correct use of PPE.</p>	<p>Demonstrates honesty and trustworthiness, accepts responsibility for own behavior, analyses societal implications of decisions and recommends ethical course of action.</p> <p>Follows policies and procedures, pays attention to details, works with minimal supervision, demonstrates initiative and monitors performance standards.</p> <p>Utilizes previous training and experience to predict outcomes; visually analyzes relationship between parts/whole and process/procedure; and interprets charts and graphs.</p> <p>Understands technology applications, manipulates technology for desired results and analyzes technology output.</p> <p>Identifies the problem, analyzes possible causes/reasons, recommends action plan and generates/evaluates solutions.</p> <p>Knowledge of pressure and thermal boundaries.</p> <p>Knowledge of standard construction and building science practices.</p>



Table 14. H: Supervise Installation Work or Perform Installation as Needed – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
H3 Ensure that insulation is properly handled and installed	<p>Insulation is properly aligned with the pressure boundary.</p> <p>Hand tools, power tools, insulation blowing machines and generators are used properly in accordance with manufacturer's specifications.</p> <p>Insulation materials are handled and installed properly and in accordance with federal, state, local, company/agency, EPA, OSHA and HUD requirements regarding lead and asbestos.</p> <p>Square footage, volume, R-values and bag counts are accurate and properly documented on the certificate.</p> <p>Proper PPE is available and used by all personnel as required.</p> <p>Closed wall cavities are accessed properly.</p> <p>Siding is removed correctly. Water heater blankets are installed correctly in accordance with state or manufacturer's specifications.</p> <p>Certificate of insulation is accurately and completely filled out and posted in the correct location according to company/agency policy.</p>	<p>Ability to align insulation with the pressure boundary.</p> <p>Knowledge of properties and application of various insulation materials.</p> <p>Ability to calculate square footage, volume, R-values and bag count.</p> <p>Knowledge of potential hazards of insulating around knob-and-tube wiring.</p> <p>Ability to access closed wall cavities and install dense packed cellulose, fiberglass or foam wall insulation.</p> <p>Ability to remove and replace siding.</p> <p>Knowledge of federal, state, local, company/agency, EPA, OSHA, and HUD requirements regarding lead and asbestos.</p> <p>Knowledge of water heater blankets.</p> <p>Ability to install insulation on construction components such as ducts, hydronic distribution pipes, and domestic hot water pipes, floors and attics.</p> <p>Knowledge of tools and insulation-blowing machines and generators and their safety requirements.</p>	<p>Performs basic computations and measurements, converts numerical data and predicts arithmetic results.</p> <p>Maintains job-specific supplies and equipment, orders and maintains inventory and monitors safe and efficient utilization of materials.</p> <p>Leads by example, motivates others to extend their capabilities, displays enthusiasm/positive attitudes and develops majority/minority views.</p> <p>Utilizes mathematical formulas and processes, and summarizes and translates mathematical data.</p> <p>Follows policies and procedures, pays attention to details, works with minimal supervision, demonstrates initiative and monitors performance standards.</p>
	<p>Knowledge of requirements for and correct use of PPE.</p> <p>Knowledge of requirements regarding certificate of insulation and accompanying documentation.</p>		



Table 14. H: Supervise Installation Work or Perform Installation as Needed – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>H4 Ensure that windows and doors are properly installed or retrofitted</p>	<p>Hand tools and power tools are used properly in accordance with manufacturer’s specifications.</p> <p>Window and door materials are handled and installed properly and in accordance with federal, state, local, company/ agency, EPA, OSHA and HUD requirements regarding lead and asbestos.</p> <p>Proper PPE is available and used by all personnel as required.</p> <p>Weather stripping is properly installed.</p> <p>Windows and doors are installed correctly and in accordance with manufacturer’s instructions and all applicable laws and regulations.</p> <p>If required, lead-safe practices are followed.</p> <p>Measurements are correct and square footage, united inches and linear feet are properly calculated in accordance with agency procedures.</p>	<p>Ability to use hand and power tools and read a tape measure.</p> <p>Ability to install weather-stripping on doors, windows and attic hatches.</p> <p>Ability to cut glass and replace broken window panes.</p> <p>Knowledge of procedures to install or retrofit windows and doors.</p> <p>Knowledge of federal, state, local, company/ agency, EPA, OSHA, and HUD requirements regarding lead and asbestos.</p> <p>Knowledge of requirements for and correct use of PPE.</p> <p>Knowledge of lead-safe practices.</p> <p>Knowledge of standard construction practices.</p> <p>Ability to calculate square footage, united inches and linear feet and knowledge of agency procedures regarding door and window calculations.</p>	<p>Recognizes patterns and relationships, demonstrates creative thinking process while problem-solving and develops creative solutions.</p> <p>Utilizes mathematical formulas and processes, and summarizes and translates mathematical data.</p> <p>Performs basic computations and measurements, converts numerical data and predicts arithmetic results.</p> <p>Understands technology applications, manipulates technology for desired results and analyzes technology output.</p> <p>Identifies the problem, analyzes possible causes/ reasons, recommends action plan and generates/ evaluates solutions.</p> <p>Ability to perform basic finish carpentry such as peep-hole installation, caulking, and insulation of doors and windows.</p>



Table 14. H: Supervise Installation Work or Perform Installation as Needed – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>H5 Ensure that mechanical ventilation is properly installed</p>	<p>Minimum ventilation rates are maintained.</p> <p>Hand tools and power tools are used properly in accordance with manufacturer’s specifications.</p> <p>Materials are handled and installed properly.</p> <p>Proper PPE is available and used by all personnel as required.</p> <p>Mechanical ventilation is installed in accordance with manufacturer’s specifications and to meet code requirements.</p> <p>Vent caps are properly installed in accordance with manufacturer’s specifications and agency policies and procedures.</p> <p>Correct testing techniques are conducted to ensure proper ventilation rate.</p>	<p>Ability to calculate and interpret minimum ventilation rates</p> <p>Knowledge of proper use of hand tools and power tools.</p> <p>Ability to modify or install mechanical ventilation.</p> <p>Knowledge of requirements for and correct use of PPE.</p> <p>Knowledge of testing techniques to ensure proper ventilation rate.</p> <p>Knowledge of roofing systems and types.</p> <p>Knowledge of types of vent caps and ability to install them.</p>	<p>Utilizes mathematical formulas and processes, and summarizes and translates mathematical data.</p> <p>Performs basic computations and measurements, converts numerical data and predicts arithmetic results.</p> <p>Selects data relevant to the task, predicts outcomes, analyzes data and integrates multiple items of data.</p> <p>Understands technology applications, manipulates technology for desired results and analyzes technology output.</p> <p>Monitors system performance, analyzes system operation, and distinguishes trends in performance.</p> <p>Recognizes accuracy of information, interprets information and prepares basic summaries and reports.</p>



Table 14. H: Supervise Installation Work or Perform Installation as Needed – Continued

Key Activity	Performance Indicators	Technical Knowledge	Employability Skills
	How do we know when the task is performed well?	Skills, Abilities, Tools	SCANS Skills and Foundational Abilities
<p>H6 Conduct diagnostic and performance testing and make necessary corrections</p> 	<p>All required test equipment is identified and located.</p> <p>Test equipment is used correctly.</p> <p>Testing procedures are followed in accordance with company policies and procedures.</p> <p>Proper tests are conducted in accordance with company/agency policies and procedures, such as combustion safety testing, blower door testing, pressure pan testing and/or moisture testing and duct blaster testing.</p> <p>Zone pressure diagnostics are properly conducted and results are accurately interpreted.</p> <p>Post-test results are compared with pre-test data and anomalies are corrected or referred to appropriate personnel or departments.</p> <p>Test results are accurately and thoroughly documented and properly filed.</p> <p>Occupant health and safety are ensured and maintained.</p>	<p>Knowledge of performance testing, such as combustion safety testing, blower door testing, pressure pan testing and/or moisture testing and duct blaster testing, and accompanying documentation.</p> <p>Knowledge of and ability to use test equipment.</p> <p>Knowledge of and the ability to calculate ventilation rates.</p> <p>Knowledge of and ability to interpret pre- and post-test results and documentation procedures.</p> <p>Ability to perform diagnostic testing and correct anomalies.</p> <p>Knowledge of federal, state, local, company/agency, EPA, OSHA and HUD reporting requirements regarding diagnostic and performance testing.</p> <p>Knowledge of the impact of weatherization priorities.</p>	<p>Follows policies and procedures, pays attention to details, works with minimal supervision, demonstrates initiative and monitors performance standards.</p> <p>Analyzes situations and information, considers risks and implications, and compiles multiple viewpoints.</p> <p>Understands the requirements of the task and technological results, and analyzes task/technology relationship.</p> <p>Recognizes accuracy of information. Interprets information and prepares basic summaries and reports.</p> <p>Monitors system performance, analyzes system operation, and distinguishes trends in performance.</p> <p>Demonstrates honesty and trustworthiness, accepts responsibility for own behavior, analyzes societal implications of decisions and recommends ethical course of action.</p>

Integration





Assessment and Certification: A Vital Connection

Skill standards, while useful on their own, are just one part of a much larger equation. Skill standards establish the standard of competent performance, but they do not tell a person whether he or she has succeeded in meeting that standard.

For this reason, developing skill standards does not end with their publication. Next steps should include developing voluntary assessments and certifications, which will make it possible for students, workers and any interested persons to determine their strengths and weaknesses based on the standards, and to earn certification showing that they can perform work competently as established by the skill standards.

In today's fast-moving technological economy, assessments and certification are crucial. The demand for both technical and employability skills are escalating as work becomes more complex. The workforce is more mobile, with workers moving freely between jobs and industries. This job mobility requires that workers must be able to communicate their qualifications to potential employers. They must keep up with technological change through continuous learning and worker retraining, and must be able to prove they have kept pace. All of these

factors mean more training and education for individuals, and the ability to show evidence that this training translates to performance on the job.

Voluntary assessments and certifications based on skill standards will help us address all these needs because of the guiding principles upon which skill standards are based, and because of the stakeholders – employers, labor, educators, workers, students, and government – who have needs that skill standards are designed to meet.

A step toward a statewide system of assessments and certifications is developing assessments that measure an individual's ability to perform work competently as defined by the skill standards. Once these assessments are developed, curriculum can be reviewed to determine that all necessary topics and practicums sufficiently cover the items in the assessment. As gaps are identified, learning activities and content adjustments can be made, and post/summative assessments can be administered.

Finally, it is critical that industry be involved every step of the way, and that standards are continuously reviewed and updated. Figure 5 provides a summary of this process.



Please Note: To ensure that the use of standards and their related assessments and certifications do not contradict U.S. employment law, employers will need to conduct an internal validation of the standards before using the skill standards to make hiring and promotion decisions. The purpose of this validation is to ensure that the knowledge, skills and performance described by the standards are needed for competent performance in an employer's organization. The need to validate the standards internally is a key requirement of U.S. employment law, which seeks to protect individuals from discrimination in hiring and promotion.

Figure 5.
Integrating Skill Standards



Assessment Strategies

Upon completion of skill standards development, performance assessments can be created to assess the criteria identified (see Table 15). Sample assessments and standards may be distributed to instructors and curriculum developers who will be educated on the skill standards elements.

Assessments based on the skill standards may include pre- and post-evaluations of the student to measure skill progression and to track the success rate of obtaining certification, where applicable.

Within a skill standards or competency-based system, assessment is the generation and collection of evidence of performance that can be matched to specified explicit standards that reflect expectations of performance in the workplace. There are two main forms of evidence:

- Evidence of actual performance
- Evidence of underpinning knowledge, skills and abilities

The types of evidence may vary and will include:

- Direct evidence (products and items produced by the performer)
- Indirect evidence (supporting evidence and information about the performer)

Evidence can be collected in a wide variety of educational or business settings. To a large extent, the range of opportunities available for demonstration will determine the most appropriate setting. Often it is difficult to actually perform the task in the authentic work setting. In this case, evidence generated during an

educational course or an in-house training session can be collected by individuals and added to their overall portfolios.

By requesting that the student or trainee produce tangible results in the form of take-away products (videos, tapes, paper, and electronic products), the participant will have created real evidence, which can be shown to human resource personnel, hiring managers, supervisors or assessors. When assessing these products, the trained assessor will seek:

- Validity
- Currency
- Authenticity
- Sufficiency

Therefore, when designing a skill standards-based assessment for an educational course or training session, the assessment process and results will meet four criteria:

Validity: The assessment instrument/process clearly relates to the relevant standards.

Currency: The assessment instrument/process calls for a demonstration of the current standards in the industry.

Authenticity: The individual being assessed produces the assessment results; it is his or her own work. Team activities will be useful to demonstrate the skills and abilities to work effectively with others, but not necessarily the end results. The individual can, if possible, identify his or her part of the team project to demonstrate evidence of his or her own results.

Sufficiency: Enough evidence is collected to match the key task and the performance criteria included in the skill standards.

When designing/revising the curriculum for weatherization careers, students will be assisted in generating high-quality evidence of performance or of underpinning skills, knowledge and abilities, which will help them to be successfully assessed as fully competent.

The preceding section was adapted from *Skill Standards Volume 2: Assessment*, 1999, Washington State Board for Community and Technical Colleges, and *Designing Competency-Based Training*, Shirley Fletcher, 1991, Pfiffer & Company, p. 86-88.



Table 15.
Assessment Design

Type of Authentic Assessment	Description of Authentic Assessment Strategies
Project	Hands-on demonstration of knowledge, skills and attitudes that reveals a student's ability to plan, organize and create a product or an event.
	Documentation of process of development from initial steps to final presentation.
Portfolio	Collection of pieces of evidence of a student's knowledge, skills and attitudes.
	Showcase of best work, work-in-progress.
	Record of student's progress over time.
	Content selection by student in collaboration with the teacher.
On-Demand Demonstrations	Hands-on performance by a student, which illustrates levels of knowledge, skills and attitudes.
	Typically involve a "real life" problem or situation to solve.
	Focus on the application of knowledge and skills learned in one situation as it connects to a new and different one.
Case Studies	Analysis of events and individuals in light of established criteria.
	Synthesis of evidence to support generalizations based on individual cases.
Paper/Pencil Tests	Multiple-choice, essay, true-false questions that rely on extended responses to further clarify a student's understanding of the knowledge being assessed.
	Graphic representations that reveal a student's understanding of connections among ideas.
Structured Observation	Observation of events, groups and individuals that focuses on the salient traits of the skill or attitude being observed.
Scenarios	A problematic or challenging situation presented in the context of a career-technical perspective.
	Study required to analyze or evaluate a situation.
	Apply relevant knowledge or skills.
Critical Incident	Prepare and justify a reasonable solution.
	An interview where the assessee is asked to describe past experiences that demonstrate skill standards.



Appendices





References

- National Skill Standards Board. *Built to Work*. 2000.
- Manufacturing Skill Standards Council. *MSSC Skill Standards, A Blueprint for Workforce Excellence*. 2001.
- Washington State Board for Community and Technical Colleges. *Manufacturing Skill Standards*. 1999.
- Washington State Board for Community and Technical Colleges. *Skill Standards Guidebook Volumes I and II*. Reprinted June 1999.
- Washington State Board for Community and Technical Colleges. *Transportation Skill Standards*. 2002.
- For a list of other Skill Standards for Energy Occupations in Washington State, see: [http:// www.cleanenergyexcellence.org/skill-panel/](http://www.cleanenergyexcellence.org/skill-panel/)
- For information on energy workforce development research and reports by the Washington State University Extension Energy Program, see: <http://www.energy.wsu.edu/ResearchEvaluation/WorkforceDevelopment.aspx>



For More Information

- Laborers' International Union of North America (LIUNA),
Weatherization Training Program
<http://www.liuna.org>
- Building Performance Institute, Inc.
<http://www.bpi.org>
- U.S. Department of Energy,
Weatherization Assistance Program,
Core Competencies for the Weatherization Assistance Program
<http://www.waptac.org/Training-Tools/Core-Competencies.aspx>



