

Residential Weatherization and Energy Efficiency Training at Illinois Community Colleges

An Illinois Green Economy Network (IGEN) Weatherization Task Force Report



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Executive Summary

Across the country, the commitment to create green jobs and increase building energy efficiency is growing. This is evident by the myriad state and federal policies and programs in existence or currently being developed and with the increased amount of money being invested in green programs and workforce development.

Community colleges are in the unique position to become leaders in training people to deliver services and perform work in what is known as the “Home Performance” industry. Home Performance is an umbrella term that evolved from what used to be known as simply “weatherization” work, but now includes energy auditing and building science-based analysis to improve home energy efficiency and comfort and to reduce energy use.

A majority of companies entering the Home Performance industry are small businesses, whose primary work often has been in residential construction, remodeling, or HVAC installation and service. Training opportunities for community colleges involve retraining current employees in these companies to prepare them for work in the Home Performance industry and identifying and training new workers as the industry grows. Experts recognize that because there is no natural market for elective energy efficiency retrofits, demand for work at this point largely depends on utility rebates and other incentives available to consumers. Although the numbers of companies and workers seem to be sufficient for now, as more incentives become available to homeowners, it follows that more qualified workers will be needed in the Home Performance contracting industry. Colleges need to recognize this, have a good understanding of the Home Performance industry, and be prepared to offer the training required for individuals and companies to succeed.

There are a variety of types of jobs available to individuals entering the industry. Among these are jobs in energy auditing or home performance assessing, retrofit work, quality assurance testing, sales, training, and customer service. Many rebate or incentive programs require individuals working in the to hold industry recognized professional designations and certifications, only attainable with extensive classroom study, field training, and testing.

Illinois community college training efforts to date have included credit programs where students work to earn certificates or degrees in building science technologies; workforce development or continuing education classes that offer specialized training and industry certification; and small business or community workshops. There are a number of considerations community colleges need to make when offering Home Performance industry training. These include: qualifying or screening students to find those with the background and experience needed to succeed; scheduling classes to serve different students; finding qualified faculty; securing the specialized equipment needed; including field components and hands-on training in the curriculum; and developing long-term relationships with key people in the industry who can assist in training and employment of students.

There are a number of recommendations that can be made to community colleges wishing to design and maintain effective training programs that will lead to employment. They include: consider the needs of employers; teach students entrepreneurial skills; identify and recruit students with the aptitude and ability to fulfill industry requirements; teach students fundamental math, science, and other basic skills; partner with local agencies; make training affordable; train to industry-acceptable standards; train in the field; and develop long-lasting relationships with trainees.

Overview of the Residential Weatherization/Energy Efficiency Industry

Introduction¹

Weatherization has come a long way since its inception in the 1970s. What we now commonly refer to as Weatherization is today part of the growing Home Performance industry and is a key component of the broader topic now known as “building science.” Home Performance is a term derived from the concept that a house is a collection of systems that need to operate correctly for the greatest energy efficiency and comfort. A variety of work and services fall under the term “Home Performance.” Included are energy audits and analyzing and rating a home’s performance in the areas of air quality, safety, comfort, and energy efficiency. Work such as residential weatherization, including air sealing and insulation, and equipment or system upgrades and retrofits falls under the umbrella of the Home Performance industry.

Beginning with the creation of the United States Weatherization Assistance Program (WAP) in 1976, the country has seen a very slow but steady climb in residential retrofit incentives and residential building efficiency requirements at all levels of government. This, in turn, has translated into measurable growth of the new Home Performance industry.

Expected growth can be attributed to policy drivers like the Statewide Home Performance with ENERGY STAR retrofit incentive program, which is scheduled to begin in June 2011 in Illinois; the 2009 American Recovery and Reinvestment Act (ARRA); and The Home Star Energy Retrofit Act of 2010. Although wide-scale government efforts in promoting residential weatherization retrofits is relatively new, the interest and intentions behind the development of a Home Performance industry is not.

This growth is leading to increased demand for job training related to Home Performance and building science. Community colleges in Illinois are rising to the challenge and looking for opportunities to offer training for individuals seeking to learn additional job skills or pursue new professions in the Home Performance industry and related fields. This white paper seeks to explore the opportunities that are available for community colleges when it comes to training in these areas by looking into new and existing job opportunities, the benefits and drawbacks of available training options and certifications, and what is currently being done in this arena on community college campuses. The white paper closes by offering recommendations for community colleges interested in pursuing training related to Home Performance, building science, weatherization, and related topics.

Green Jobs in the Residential Energy Efficiency Industry

The majority of Home Performance companies are small and entrepreneurial. A report jointly produced by Efficiency First and the Center for American Progress found that most companies involved in some type of retrofit work (insulation, roofing, windows, HVAC, lighting) employed fewer than 20 people.

¹ The following document was heavily referenced for the creation of this paper:
Redman, Elizabeth. (2010, May 5). *Green Jobs in the Residential Energy Efficiency Industry, The Home Performance Industry Perspective on Training and Workforce Development*. Retrieved from Home Performance Research Center: www.hpcenter.org

However, it should be noted that government incentives, utility rebates, efficiency requirements, and financing tools have also motivated larger, established companies to add Home Performance to their scope of services. In addition, companies that were hit hard by the recent slowdown in new construction have seen Home Performance as a way to stay viable in an uncertain economy. Since energy efficiency retrofits help homeowners save on their household energy costs, the theory is that this industry can deliver a service that companies can sell even during tough economic times.

The Home Performance industry also encompasses equipment manufacturers and distributors and many companies offering a range of specialized support services, including training providers, consultants, marketers, and customer outreach specialists.

Industry Concerns and Challenges

One of the biggest challenges facing the growth of the Home Performance industry is that there is no natural market for elective retrofits. Convincing home and business owners to make elective investments, when there is no forcing event like equipment failure, is a tough sell. It has taken concerted effort, education, and perseverance to develop programs and systems that measure and quantify both energy and cost savings, which in turn has helped to increase participation rates.

Despite increased participation rates, it is likely that a significant increase in growth of this industry will be dependent on when policies and incentive programs begin to drive an increase in customer demand. It is understandable that Home Performance companies today seem less concerned with how to train their workforce and more concerned with business development. Employers recognize that no type of training would be sufficient if there are no jobs to fill.

In addition, employers have voiced concern that too many training programs may result in trained workers without work. A labor analysis conducted by Bain & Company for the nonprofit *Chicago Green Jobs for All* concluded that despite the City of Chicago's recent emphasis on building green job training opportunities for disadvantaged Chicagoans, existing training capacity is already "sufficient to meet even aggressive retrofit demand projections." Although the conclusions of this report indicate too much training and not enough jobs, the anticipation of increased growth in this industry supports the need to begin to lay the groundwork for recruitment, training, and retention plans for the Home Performance industry workforce.

Employment Growth Projections

It is difficult to predict how many jobs will be created in the next several years. However, multiple estimates for residential retrofit industry employment growth suggest that an average of 12 to 13 direct and indirect jobs will be created per \$1 million of investment, or 40,000-70,000 jobs per year to achieve a 25 percent reduction in residential energy consumption by 2025. This does not necessarily account for the impact of proposed federal climate change legislation with aggressive greenhouse gas reduction targets or a national energy efficiency portfolio standard.

While these calculations can provide ballpark estimates for job creation in the Home Performance industry, they should always be accompanied by several caveats:

- In all of these scenarios, the ratio of jobs created per dollar of investment will vary across states. States with more experience supporting Home Performance programs will experience a lower ratio of new jobs to dollar of investment due to the higher productivity of the existing Home Performance workforce.
- Even when induced effects are excluded, not all of the jobs will be direct home assessment and retrofit jobs. Industry experts assume 12-30 percent of new jobs created in the Home Performance industry will be overhead jobs (administrative, managerial, etc.).
- Not all jobs will be new jobs for new employees. Existing companies will add Home Performance assessments to their list of customer offerings and retrain workers to complete Home Performance assessments and retrofits.

Job Types and Opportunities

Models for structuring the Home Performance retrofit process vary by program and by retrofit company business model (audit only vs. comprehensive retrofit services, dividing the responsibilities of the auditors and the retrofit workers into two positions vs. training workers to handle both tasks, etc.). However, the majority of retrofit jobs have five major components:

1. *Audit or Home Performance Assessment:* An initial utility bill analysis, a conversation with the homeowner or tenant, and a series of diagnostic tests to evaluate the energy efficiency of the home. Though assessment components vary by company, this phase usually includes a blower door test, infrared camera evaluation, a duct leakage test, an insulation assessment, and the “test-in” or establishment of baseline energy performance. Based on the assessment, a report is generated for the customer providing retrofit recommendations and, in some cases, cost estimates.
2. *Basic Retrofit:* The basic retrofit generally includes sealing air leaks around chases and can lights; insulating attics, basements, and/or crawlspaces; and duct sealing.
3. *Skilled Work:* In some cases, more complex or specialized repairs are undertaken by the customer, such as electrical work; plumbing; heating, ventilation, or air conditioning (HVAC) mechanical system upgrades; window and door replacement; and carpentry work to close off air leakage pathways.
4. *Quality Assurance and Testing:* In the final phase, the “test-out” verifies the energy performance improvements over the baseline established by the test-in and assures the homeowner that the improvements have produced tangible, safe results. In some cases, the test-out results may be required before rebates or incentives can be processed.
5. *Customer and Staff Support:* Throughout the process, retrofit companies need administrative, managerial, promotional, and clerical support staff who can assist and manage the field workforce, interact with customers, and serve as a liaison to program managers and policymakers.

It is likely that jobs in the Home Performance industry will fall into one of two general categories: existing jobs that have been refocused or “emerging” occupations that are unique to this evolving industry. The majority of these jobs fall into construction-related field positions, followed by administrative or office positions, with the remainder in manufacturing.

Promotional Jobs: Promotional and marketing activities are necessary to reach out to potential customers and complete sales of initial energy assessments and subsequent retrofit work. Industry experts assume that

promotional jobs will represent 15 to 20 percent of the jobs in a typical Home Performance company. These roles include:

- Analysts/auditors/estimators
- Business development
- Marketing and consumer education
- Inside and outside sales staff

Field/Labor Jobs: Though Home Performance companies typically complete two to three times the number of energy audits as they do retrofit jobs, the actual home retrofit is the core of the Home Performance business and the way to actually make home energy efficiency improvements. Retrofit crews often work in teams of two or three, bringing in specialized subcontractors and tradespeople as necessary. Most work falls into the following job categories:

- Entry-level air sealing, duct sealing, and insulation installation
- Intermediate/advanced-level air sealing, duct sealing, and insulation installation; on-site crew supervision; construction and retrofit management
- Carpentry, electrical work, plumbing, HVAC repair or upgrade, and window replacement
- Analyst/auditor/estimator/quality assurance inspector (these jobs typically represent 60 to 75 percent of the jobs in the Home Performance industry)

Office and Support Jobs: The day-to-day administrative and managerial responsibilities of any Home Performance company provide job opportunities for people with very different skill sets than those who work on retrofit crews. Office and support positions in this industry include:

- Administrative (human resources, information technology, etc.)
- Data entry, report writing, and proposal development
- Customer service
- Rebate processing
- Financial advising
- Purchasing and inventory management
- Engineering
- Business, construction, and project management

Accreditation and Quality Control Jobs: These workers provide quality assurance and company accreditation. These jobs fall within private companies, utilities, government program offices, and standards-setting organizations such as BPI and RESNET. Jobs in this arena include:

- Trainers
- Certification exam proctors for written and field tests
- Third-party verifiers and quality assurance inspectors

Indirect Jobs: Jobs in related and supporting industries, such as:

- Equipment and materials manufacturers
- Utilities
- Retrofit program administrators and government agencies

Existing Training, Standards, and Industry Certification

Weatherization work is seen today by most in the field as a component of the emerging Home Performance contracting industry. The larger field of Home Performance contracting applies to either existing homes or new/major rehab homes. Weatherization applies only to existing homes.

There are two leading business models in Home Performance contracting with respect to existing homes: Companies or organizations providing energy auditing only and those offering comprehensive retrofit services. The latter model typically begins with a preliminary assessment of a house (essentially, an energy audit), proceeds to the work identified in the audit, and then tests the completed work to ensure improvements made will be effective. This is the “test-in/test-out” model. All Federal low-income weatherization assistance programs use the same general approach: initial assessment, weatherization improvements, and final assessment. In Illinois, the local weatherization agency does the initial and final assessments, while an outside contractor performs the work on a home.

Knowledge and skills needed for performing assessments encompass much of the same knowledge and skills needed for performing the actual improvements. Weatherization workers and supervisors may share a body of knowledge and skill similar to auditors, but may not need a similar level of expertise in building science, and certainly need certain skills unnecessary for auditing.

Consequently, the existing training, standards, and certifications in weatherization/retrofit work are varied.

Residential Energy Assessment/Auditor Certifications Currently Available in Illinois

- 1) Illinois Home Weatherization Assistance Program (IHWAP) Assessors: Individuals certified and employed strictly by the Illinois Weatherization Assistance Program (WAP) Local Administrative Authorities serving low income homeowners across the state;
- 2) Building Performance Institute (BPI) Building Analysts: Individuals certified by the Building Performance Institute of Malta, NY;
- 3) Residential Energy Services Network (RESNET) Home Energy Rating Service (HERS) Raters: Certified by the Residential Energy Services Network;
- 4) Home Energy Tune-uP Auditors: Individuals certified by a private company based in Maryland with a network of “auditors” across the United States. Many “Tune-uP” energy auditors are licensed home inspectors, which is a target market for CMC, the company that operates this network;
- 5) Home Energy Score Assessors: Individuals participating in a Federal DOE pilot program introduced in early 2011 in the Chicago market. As a pilot program, prospective HES Assessors need to seek authorization from the party awarded administration of the pilot program, CNT Energy.

Existing Residential Weatherization Certifications Available in Illinois

- 1) Building Performance Institute (BPI) offers the following types of specialization certifications to individuals working in weatherization:
 - a. *Envelope Specialist*
 - b. *Residential Building Envelope Whole House Air Leakage Control Installer*
 - c. *Residential Building Envelope Whole House Air Leakage Control Crew Chief*
 - d. *Manufactured Housing Specialist*
 - e. *HVAC: Heating System Specialist*
 - f. *HVAC: Air Conditioning and Heat Pump Specialist*
 - g. *Multifamily Specialist (pending)*

Residential Weatherization Certifications That May Become Available in Illinois

- 1) The Federal DOE Weatherization Assistance Program Technical Assistance Center (WAPTAC) has proposed the following certifications for individuals who successfully complete components of the master WAPTAC weatherization curriculum being promulgated and offered to qualified parties:
 - a. *Weatherization Installer Technician*
 - b. *Weatherization Installer Technician Mobile Homes*
 - c. *Weatherization Crew Chief*
 - d. *Weatherization Energy Auditor Single Family*
 - e. *Weatherization Energy Auditor Multi-family*
 - f. *Weatherization Technical Monitor-Inspector*
 - g. *Weatherization Train-The-Trainer*

As recently as March, 2011, the DOE awarded the Interstate Renewable Energy Council (IREC) the task of managing the Accreditation of Federal WAP-authorized weatherization training centers in anticipation of offering a nationwide program for individual certifications in the above named specialties.

Other Related Residential Weatherization Certifications in Illinois

- 1) The Illinois Home Weatherization Assistance Program (IHWAP) program has proposed to certify contractors active in the IHWAP program, but not individuals. IHWAP is not planning to offer any individual certifications at this time.
- 2) North American Technician Excellence (NATE) offers individual certification to experienced HVAC-R technicians working in the residential and light commercial market. Though a NATE certification may imply technical competence in ensuring HVAC systems are optimized for safe and energy efficient operation, weatherization, per se, is not the focus of a NATE certified technician.

- 3) National Comfort Institute (NCI) offers certification to individuals experienced in residential and light commercial HVAC work, but the NCI scope and protocol focuses entirely on the air balancing diagnostic and improvement skills required for optimizing exhaust fan and forced air systems. As with NATE, an NCI certification does not address “weatherization,” per se, but does address the skills and knowledge needed for diagnosing and improving residential exhaust fan or forced air system with respect to energy efficiency and comfort.

Existing Standards for Individuals Gaining Certification

The standards promulgated by the various entities and agencies that currently offer certification of individuals active in weatherization vary. This is a constantly evolving area, “dynamic” in the sense that the standards of each entity currently granting certification have changed over the last several years or are currently changing.

In residential energy auditing/assessment wherein weatherization is involved:

- 1) IHWAP Assessors and Final Inspectors: Typically, any candidate for certification is first hired by a local IHWAP weatherization agency to be eligible for this training.

All assessors and final inspectors are required to successfully complete seven basic courses, altogether about 6 weeks of classroom and field education and training. The topics covered include all of the same building science topics that each of the other certification programs includes, such as heat loss, building types, heating systems, health and safety issues, and general diagnostics.

Upon completion of these courses, an enrollee takes a proficiency test to be certified as a Weatherization Energy Auditor. All current assessors and final inspectors are required to complete these courses and pass the proficiency test within their first year of employment. New assessors and final inspectors must complete these courses and pass the test within nine months of being hired by a local agency. If an existing or new assessor or inspector fails to achieve certification during the grace period, they will be prohibited from conducting assessments or inspections until they obtain certification.

- 2) BPI Building Analysts: The Building Performance Institute is a non-profit organization that has a network of BPI Affiliates, which are typically weatherization contractors and occasionally non-contractor agencies, and BPI Accredited Contractors. BPI Affiliates are authorized by BPI to train and proctor the written and field exams for BPI certification candidates. BPI Accredited Contractors are certified by BPI as being staffed with certified BPI Building Analysts and equipped to conduct BPI home energy assessments (auditing). BPI is considered by many throughout the country as the model for energy auditing of existing homes, in that it has within its protocols what is known as “test-in / test-out,” an approach used throughout the country by the Federal WAP for low income home owners. In many states with “Home Performance with Energy Star” programs for upgrading existing homes, BPI protocols and certified individuals have been made an integral part of these programs.

- 3) RESNET: The Residential Energy Services Network is a non-profit organization of residential energy auditors and others that focus more-so on certifying new and major re-hab homes. RESNET alone is authorized by US DOE / EPA to certify homes as having met the criteria to certify them as Energy Star. RESNET is more focused on new homes.
- 4) Home Energy Tune-uP Auditors (CMC): CMC is a private sector company that certifies individuals in their home energy audit protocols under the brand "Tune-uP." This company is one example of a few nationwide companies offering home energy auditing.
- 5) Home Energy Score Assessors: The US DOE has launched a pilot program that may be increased at a later date that certifies individuals as HES Assessors. One pilot program is being run in Illinois. Until the pilot program is completed, there is very limited need for certifying more individuals as HES Assessors than already exist. One goal of this Federal initiative is to simplify home energy assessment / auditing to a point that makes it very low cost to homeowners.

Examination of Industry Demand

Many state and government Home Performance incentive programs have components that allocate funds for increasing consumer demand as well as training. Currently, although the demand for energy efficiency courses and training is high, the availability of jobs in the Home Performance industry is still limited. Many training program administrators cite the need to increase homeowner awareness and grow the customer base for the Home Performance industry as a top priority. As noted earlier in this report, the industry is largely driven by incentives and rebates available to consumers who will often hold off on Home Performance investments until these become available.

Policymakers are starting to understand that there is a need for clear and reliable information about what programs, incentives, and requirements will affect the Home Performance industry in the coming years and the timeline for implementation. As more Home Performance financing and utility incentives and rebates become available to consumers in a region, the demand for Home Performance retrofits will increase, as well as the need for more industry employees. In turn, this will impact the investment that is needed in workforce development.

Community College Training Programs

Residential weatherization programs are comprised of a variety of areas and levels of detail, from simple home energy efficiency measures such as weather-stripping doors and windows and replacing light bulbs to extensive energy retrofits that might include HVAC upgrades, envelope insulation projects, and whole-home retrofits. Accordingly, these can cover a variety of workforce sectors, ranging from homeowner-implemented measures; general laborer, construction, and specialty contractor trades; supervisory crew chief and auditor (e.g., LEED for Homes, NAHB, RESNET, and BPI) work; corollary occupations (administration, sales, management, TDL, etc.); and

even the architecture and engineering professions. It is exactly this variety of employment opportunities that has led to projections of wide-scale job creation, under the presumption of economic stimuli for energy efficiency retrofits in a broad segment of the housing market.

These various skills and activities can give rise to an extensive range of weatherization training and educational programs at community colleges (with a primary focus or at least components in building science and energy efficiency). In Illinois, community colleges have adopted a number of programs, developed in-house or through trade organizations, to address an increasing demand for the appropriate skills to conduct retrofits and construction.

This IGEN Weatherization Task Force has attempted to catalog the program types being offered through community colleges in Illinois at the time of this white paper.

Credit Programs

ICCB and IBHE-accredited programs in this field are mostly comprised of two types of curricula: those that are specifically focused on building science technologies (such as the Building Energy Technologies certificate program at Wilbur Wright College) and those that include weatherization and residential energy efficiency classes and/or topics within occupational career fields, such as the HVAC, construction management, and electronics technician certificate and AAS programs that currently exist at a number of Illinois colleges.

As USDOE rolls out their nine weatherization curricula (directed at specific job titles: Installer I, Installer II, Crew Chief, etc.) over the next 18 months, an independent course accreditation system has been initiated through their contracted standards organization. However, USDOE is also encouraging community colleges adopting these curricula to simultaneously consider accreditation of the programs by their state boards of higher education. This is a development that could gain traction on a national basis depending upon employment market outlook.

Workforce Training Courses/Non-Credit Continuing Education

Preceding the USDOE courses (noted above), the energy office at Illinois DCEO developed a 32-classroom-hour training curriculum for the existing weatherization workforce that has been offered at 11 colleges in Illinois. It is known as the Illinois Home Weatherization Assistance Program – Building Envelope Certification. More than 300 contractors have been trained throughout the state to date. A corollary one-day program in Lead-Safe Workplace was given to nearly 500 contractors in September through December 2010, and a one-day program in dense-pack insulation was also provided to this same group as well. A curriculum in residential heating, air conditioning, and ventilation for this same target audience is in development.

Two independent national organizations (the Building Performance Institute and the Residential Energy Services Network) offer certification in residential energy efficiency auditing. Both offer multi-tiered specialty certification for professionals in the energy auditing field. Training curricula vary, but both require a field practicum and written exam. A number of colleges throughout the state have offered curricula (usually 5 to 7 days including the field exercises) leading to the certification, almost exclusively through arrangements with

third-party training and testing affiliates. These programs have been offered on an irregular schedule by at least five different colleges in Illinois. The Illinois Home Performance with ENERGY STAR program is expected to begin within the next year. Although details are not yet finalized, the IHPwES program will incorporate BPI training and certification as a major component in this effort.

Local gas and electric utilities and trade organizations have also become active in developing and sponsoring programs that lead to trade-specific certifications. The utilities are under regulatory mandate to reduce demand throughout their consumer base, and have initiated programs to train contractors on topics ranging from technical issues to how to assist customers with rebates and financing. Colleges, especially in the Com Ed and Ameren service territories, are often hosting these classes. Associated trade groups, such as the National Comfort Institute and the Air Conditioning Contractors of America, also have utilized community colleges for training and certification courses

In addition to government, utility, trade, and organizational-sponsored training programs, individual colleges have also offered their own classes, often for small businesses or individual proprietors, and some for continuing education credits, which are considered to be at the level of occupational training or certification prep. Moraine Valley, Heartland, Illinois Central, and others have worked with on-staff or affiliated experts to present graded, semester-long courses in specialty topics such as infrared technology, energy contracting, and other topics apart from degree or certificate programs.

Community/Small Business Workshops

A third and quite common area for weatherization-related training involves a series of workshops or seminars. These can range from two-hour up to multi-day programs, but serve a more informational, rather than workforce training, purpose. Colleges throughout the State have hosted or offered these programs for their local community residents and small businesses, often utilizing specific topic experts or other entities (utilities and others), for creation and delivery of the presentations.

These, too, cover a wide range of topics, and by way of example, have included such programs as: *How to Make Your Home Energy Efficient*, a one-day class for homeowners held at Prairie State College; *Chicagoland Natural Gas Savings Program*, half-day educational workshops on technologies and financing by Peoples Gas for contractors and homeowners held at Wilbur Wright College; and the *Green Institute Programs*, a series of half-day to one-day workshops in specialty topics such as LEED for Homes® for architects, contractors, and homeowners, held at Heartland Community College in conjunction with the Energy & Environmental Building Alliance.

These workshops are often presented for free or at a nominal fee and often cover regionally relevant topics.

Outcomes and Obstacles

As community colleges decide to develop and offer any of these weatherization training program types, there are a number of goals to target and barriers to surmount:

- Topics most pertinent to their community – Metropolitan campuses may wish to focus on weatherizing multi-family units, while rural areas may find few students for such a course or workshop.
- Level of educational or training complexity – A community with a burgeoning workforce need in HVAC, for instance, might prefer to establish a credit program, while a region with underemployment in that sector could be better served by educating homeowners in the benefits of HVAC upgrades through workshops.
- Background of the potential student cohort – Educational attainment, technical experience, etc. are factors governing what can and should be presented. Pre-screening students for some of the program types is a possible consideration.
- Timing and frequency of offerings – Weekdays, weekends, and weekday nights serve vastly different student needs. Additionally, depending on what type of weatherization training is being presented, there are even seasonal considerations to the curricula. For example, there are problems with field demonstration exercises regarding heating system auditing during the summer, air conditioning systems training during the winter, or infrared analysis during mild weather.
- Facility (and resource) considerations – Hands-on equipment, demonstration systems, mock-ups, and field practice can provide a very different teaching and learning experience than a simple classroom presentation and may dictate colleges' training-type capabilities.
- Long-term affiliations with key staff – Communities have people with the right expertise to instruct weatherization topics, but they may not be community college faculty. Relationships with local contractors, auditors, engineers, etc. will result in access to instructors and potential employers.
- Projected overall weatherization market and employment outlook – Federal stimulus funding for increased volumes of low-income weatherization projects is projected to wind down at the beginning of FY 2012, while incentives to encourage the broader for-profit home energy retrofit market have not yet been fully implemented. This lag would seem to point toward training and education for consumers rather than the weatherization workforce, but there is always at least some need for both. Striking the appropriate balance is a key consideration.

Recommendations for Community Colleges

Community colleges are uniquely positioned to offer training in the weatherization/energy efficiency field. It is important to identify the appropriate training program for your college. The existing training, standards, and industry certifications discussed earlier in this document provide a variety of opportunities for community

colleges to offer weatherization or Home Performance training in their communities. Training through community colleges may take a variety of forms, including:

- Training offered by a professional or trade association through the college
- Industry certification training such as BPI, RESNET/HERS, and Home Performance with Energy Star
- Community college special certificate programs (which may include one or more of the industry certifications mentioned above)
- Community college semester-long courses (which may include one or more of the industry certifications mentioned above)
- Energy efficiency training programs serving target populations (such as the IHWAP program currently training contractors in Illinois)
- Pre-apprenticeship union training programs developed through colleges
- Online coursework.

Determining which type of training, or combination of more than one option, that best fits a college and its community's needs may depend on a number of factors, including but not limited to the cost of programs for the college and students, what curriculum has already been developed to support the program(s), what support existing programs provide to colleges, and the perceived value of the specific college or industry credentials the student(s) may receive in the community and/or in the field.

In the course of developing or offering a weatherization or home performance training program, colleges also must identify potential obstacles to offering the program and make a plan for overcoming these obstacles. For instance, these types of training programs require specific equipment (possibly related to duct sealing; air sealing; insulation; door and window replacement; HVAC, mechanical, and electrical systems; and plumbing). The college may have to purchase this equipment and also will need considerable space to demonstrate the equipment to students as well as to store the equipment when not in use.

There are a number of recommendations that can be made for designing and maintaining effective training programs to make sure trainees are on a track that can lead to employment. They include:

Consider the Needs of Employers

Customer demand will spur the growth of companies in the residential energy efficiency/weatherization industry. In turn, these companies will need to re-train existing employees for work in this field or make new hires as their business grows. Colleges will want to identify these companies and reach out to them, build trust, be aware of market changes, and target training to meet their needs.

Develop Employer Relationships

Colleges should cultivate relationships with employers and employer groups or local industry associations. Involve them in training programs as advisors or for feedback. They can be a source of instructors and will be hiring graduates. Companies will look to the college for future hiring needs if a program provides them with

quality candidates. Colleges can engage employers by providing them with free marketing and name recognition in the community, customer outreach, and homeowner education.

Offer Entrepreneurial Training

Targeted students are underemployed and unemployed individuals. Many of these would be served well by entrepreneurial training. Looking at the employment projections—from 2008 to 2018, the most significant increase in employment will be in professional and business services, of which home performance/weatherization is a part, according to the Bureau of Labor Statistics (BLS USDL-09-1503). While existing businesses will attempt to capture much of this emerging market, opportunities do exist for individuals to start a business on a smaller, more specialized level, succeeding where a project perhaps is too small for a large organization to mobilize efficiently.

Identify Trainees Suitable for the Industry

Colleges should focus student recruiting efforts on people with a real potential for a defined career in the home performance industry. Assessing a candidate's aptitude for positions in the Home Performance industry is an important factor in their ultimate success. Trainees should be screened not only on their desire, but also on their ability to fulfill industry requirements. While training programs targeting poor or disadvantaged workers are politically attractive, employers have the most difficult time finding qualified managerial staff, positions that require experience and previous education. For this reason, training grants and employment subsidies should be available for all types of individuals. Candidates should be screened to meet basic physical requirements and take placement tests to determine the job sector that is appropriate for them. A background check should also be conducted on all candidates to ensure that they are eligible to perform work within a residence. Likely candidates for training programs are people who may have been laid off due to the recession, as well as unemployed workers with construction, remodeling, home repair, and weatherization experience.

Simplify Training and Make it Affordable

Training can be prohibitively expensive for individuals and Home Performance companies. Community colleges should work to simplify access to training and limit unnecessary paperwork or procedures for training. Policies should be designed to be sensitive to cash flow issues of businesses. Also helpful: assistance with financial subsidies so students can avoid paying for the full cost of training upfront.

Train to Industry-Approved Standards

Rather than create certificate or degree programs that may not be recognized beyond a limited geographical area, colleges should strive to teach to recognized, industry-acceptable standards. Credentials achieved after training should be meaningful and recognized in the labor market. Industry certification and designation

following training would provide potential employers with the assurance that the job candidate has a sufficient level of knowledge and skills. For workers, this would mean more mobility, bargaining power, and higher returns in the labor market. For consumers it provides information on the quality of work they can expect.

Train in the Field

Colleges should understand that classroom work alone is not sufficient preparation for work in the field. It does not expose students to different circumstances found in the field or teach them how to safely deal with different kinds of problems encountered in real homes. Courses should have an extensive field component. Many successful programs include internships, apprenticeships, or other on-the-job training. With fully integrated field opportunities, the issue of who pays for liability insurance must be addressed.

Consider “Basic” Training Courses and Teaching Other Relevant Skills

Not only are hard skills necessary, particularly in fundamental math and science areas, but soft skills are possibly more important to a favorable outcome. These involve teaching the importance of job attendance and punctuality, customer service skills, making a positive impression of homeowner/customers, and paying attention to instructions and job detail, including cleanup and follow-up when needed.

Further, courses in such topics as OSHA safety, first aid, asbestos and lead safety, customer service, and computer use, should be offered and required of trainees to make them more qualified and productive employees in the Home Performance industry.

Partner with Local Social Agencies

In 2011, the Urban Weatherization Initiative will be single largest green jobs program in the State of Illinois, according to the Illinois Department of Commerce and Economic Opportunity. The intent is to train residential weatherization professionals, who will be able to improve the energy efficiency of homes and enable families and homeowners to lower their utility costs.

When a community college is able to partner with local social agencies, this is beneficial to both organizations. They can each specialize in their given areas. The college can provide training; the agency can offer a pool of potential students with tracking ability. Much of the government money that is currently available is aimed at groups that might need, for whatever reason, more developmental training.

Develop Long-Lasting Relationships with Trainees

Educational institutions should develop a system for long-term communication with their trainees. They should know who has been hired, who may need additional training, and which companies are looking for more workers. Past graduates can be invited back to speak about the benefits of the training program. These graduates may want advanced training or need continuing education to maintain certifications.

Conclusions

The national focus on increased building energy efficiency and desire to create "green" jobs is fueling the push for programs and policies that are expected to lead to significant growth in the Home Performance industry. Community colleges have the unique opportunity to position themselves as leaders in training for existing companies and those entering the industry, and for workers seeking retraining or industry recognized certifications. Colleges need to understand the nature, size and scope, and workforce needs of the industry and recognize what components contribute to successful training. They need to work closely with employers and partner with community groups and local agencies to promote public awareness and education on residential energy efficiency.

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Appendices (Deliverables)