

## **Community Energy Efficiency Programs Best Practices – Workforce Development**

*Prepared by Clean Energy Solution, Inc.*

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The recent dramatic increase in funding for weatherization, energy efficiency and renewable energy (ee/re) programs has drawn attention to the lack of verifiable training in the field of energy audits and efficient building science in many communities. The economic downturn increases pressure on these programs to create jobs both to put members of the building trades back to work and to create new jobs. Moreover, testimony from contractors around the country points to workforce development as a key limitation in their ability to serve the expanding markets for ee/re installations.

LEAs have a central interest in this process. To succeed in their own missions—and to deliver measurable value to their communities and the local political leadership—they must allocate some resources to the whole process of:

- Recruiting workers with aptitudes for this work, paying attention to affirmative action and equal opportunity in employment and promotion
- Ensuring training and certification matched to the real and continuing job market
- Placing graduates appropriately, ensuring on-the-job training and career advancement opportunities
- Soliciting feedback from trainees, employers, and trainers, to improve the process and to support LEA reports to its funders

This paper offers advice in collecting the data necessary to support this process, describes workforce and contractor certification programs, and presents some case studies of “best practices” around the country.

### **A. Data Gathering and Processes to support Workforce Development**

To be assured the program is compatible with the local market and to create appropriate expectations around job creation, it is advised that LEAs conduct a survey of the local weatherization and ee/re market to determine existing stakeholder efforts and to create a proper timeline for the training and certification programs.

Most ee/re jobs will be created in the construction trades such as insulation professional, energy auditors, electricians, solar technicians, plumbers and HVAC mechanics. A proper survey to forecast the demand for the services beyond the ARRA, Retrofit Ramp Up, and other incentive programs will ensure that the trades are not over-promised about long term job creation. This type of survey can cost anywhere from \$10k to \$200k and take for 2 – 8 months to complete. Becoming properly certified in this field can be a long and expensive process; the LEA needs to ensure there is demand for these skills before

investing in programs and encouraging the local trades to pay for the certification. That said, any community intent on creating a long-term market for energy conservation needs to be assured of the quality of the contractors' work completed in these early days. This type of long-term market creation requires a workforce development program that integrates pieces of local high school curriculum, local vocational schools, community colleges and universities, union apprenticeship programs and community organizations, and makes them compatible with the ultimate training, on the job.

### *Market Characterization*

- Where are the jobs and their markets, by location and type (commercial, residential, multifamily)
- How many
- Skill, experience and certification requirements for completing jobs
- Wages for projects for specific consumer types

To do: Identify the funding source(s) and personnel to carry out the following tasks:

- Conduct comprehensive survey to ascertain the information listed above
- Work with employers/contractors (and weatherization agencies, unions and utility) to assess potential consumer demand over the next three years, in light of funding influx to area.

### *Stakeholder Engagement*

Once the market has been characterized, there are three categories of stakeholders that should be engaged in designing a program: workers, employers, and trainers. Without addressing all three categories of stakeholder, the workforce development program will be unable to support a developing energy services market.

#### 1. WORKERS

Four categories:

- currently employed
- currently underemployed
- currently unemployed
- students interested in green jobs

To do: Identify funding source(s) and personnel to carry out the following tasks:

- Conduct skills and training needs assessment within each category
- Create a skills development plan based on gaps identified.
- Create a training plan based on gaps identified (see TRAINERS below)

2. Energy Efficiency (EE) EMPLOYERS/CONTRACTORS, (including weatherization agencies and unions)

- Who are they
- Where are they based
- What types of jobs do they have and require going forward
- What are their wage/benefit levels
- Existing service delivery gaps
- On the Job Training availability and advancement potential

To do: Identify funding source(s) and personnel to carry out the following tasks:

- Develop comprehensive list of area employers/contractors
- Conduct survey of employers/contractors to ascertain information required
- Determine need for current employers/contractors to scale up operations, or incubate new company(ies)
- Track job creation and preservation over time

3. TRAINERS/TRAINING RESOURCES (including weatherization agencies and unions)

- Who are they
- Where are they located (proximity)
- Type of trainings(s) offered
- Certifications offered
  - National vs local
- Degree(s) offered
- Internships provided
- Types of 'continuum of services' offered (pre-training skills assessment; remedial education; training; job readiness; job placement; on-the-job training)

To do: Identify funding source(s) and personnel to carry out the following tasks:

- Conduct comprehensive assessment of training resources available.
- Create an Educational Partners Collaborative to share information and incubate new training ideas and methods
- Determine the gaps in continuum of services
- Identify training resources necessary and willing to respond to skills and training gaps identified in WORKERS section above (either scaling up existing training or creating new training modules responsive to market opportunities)

## **B. Some “Best Practices” in Training and Placement**

A workforce development program will need to be tailored to each community drawing on existing resources and adding new ones where necessary. Many communities rely on community colleges and technical institutes to create a curriculum and certification programs. Cities with a union presence in the building trades can complement existing trades apprenticeship programs, creating certification programs with the unions that are specific to energy efficiency. Apprenticeship programs provide job-training candidates with a job ladder to follow and job placement on projects. Several communities have signed Community Workforce Agreements that set goals and / or requirements around wage rates, health care, local hires, minority and women-owned business inclusion, etc.

Overall, LEAs should be sure to include as many lessons as possible from the following programs, in their design phase.

*NYSERDA, New York*  
<http://www.nyserda.org/>

NYSERDA selected Hudson Valley Community College in Troy to develop a statewide network of 10 residential energy-efficiency learning centers. Hudson Valley created the Center for Energy Efficiency and Building Science (CEEBS), and instituted a number of residential building training courses in 2007. Headquartered at Hudson Valley Community College, CEEBS develops and delivers workforce development building-science training in the System Benefits Charge utility territories across New York State. The training, which is recognized by the Building Performance Institute (BPI), provides building science instruction to building technicians, architects, engineers, and other building professionals.

Upon completing a training class, students may apply, and test for BPI certification. Certified technicians and professionals are then eligible to participate in NYSERDA’s residential energy conservation programs, including the Home Performance with ENERGY STAR®, and the ENERGY \$MART Multifamily Performance Program.

To date, partners such as HVCC, Bronx Community College (BCC), OCM BOCES, Erie Community College, and the Association for Energy Affordability have trained thousands of builders and contractors. HVCC and BCC are also two of seven photovoltaic training centers supported by NYSERDA. These initiatives are linked to NYSERDA’s support of accreditation and certification programs such as that of the BPI, the North American Board of Certified Energy Practitioners, and the Institute for Sustainable Power.

In addition, NYSERDA has provided a number of technical and professional development programs to train the existing workforce on energy efficiency technologies, practices, and

building systems for the Commercial/Industrial (C/I) sector, and to encourage new job opportunities in the field. Offerings are organized into four categories:

- 1) Labor Unions/Trade Training,
- 2) Professional Certification Training,
- 3) Accredited College/University Curriculum and Continuing Education, and
- 4) Career Development and Professional Training.

Programs range from career development to certificate and degree programs. Certifications include BPI, North American Technician Excellence, and LEED. In addition, NYSERDA has sponsored a portion of tuition costs for technical training or certification examination costs for program participants, such as NYSERDA-sponsored ASHRAE Workshop on Improving Data Center Efficiency, and the National Council on Qualifications for the Lighting Professions (NCQLP) certification exam for participants in the Small Commercial Lighting Program.

NYSERDA has also provided support to the City University of New York (CUNY) to provide Building Operator Certification (BOC) training. This is a competency-based training and certification licensed from the Northeast Energy Efficiency Council.

NYSERDA has also assisted in the development of technology-based training for trade unions in New York State, such as Unitary HVAC Advanced Diagnostics Training & Train-the-Trainer, Green Building Maintenance Training, and Green Building Operations Energy and Water Efficiency Training. Green Building curriculum is based on standards established by the Building Performance Institute (BPI), and the U.S. Green Buildings Council (USGBC) LEED Green Building Rating System.

*WeatherizeDC, Washington, DC*  
<http://www.weatherizedc.org/>

#### Community Workforce Agreement

WeatherizeDC uses a neighborhood-canvassing model that specifically targets homeowners that can afford the cost of ECM without incentives and are sympathetic to WeatherizeDC's mission to get local workers hired on the projects. In addition, WeatherizeDC created a community workforce agreement between a local home performance contractor and a local union apprenticeship program. The canvassing efforts of WeatherizeDC was thus far able to feed nearly 60 homeowners into a contract with a home performance contractor who in turn agreed to engage local workers enrolled in a union apprenticeship program on green building. Thus far two new union wage green jobs have been created by the programs.

#### Successes:

- WeatherizeDC was successful in targeting sympathetic homeowners with the capacity to finance their projects without incentive

- The program successfully used the aggregating of small projects into a larger contract to support the union apprenticeship program

Limitations:

- This model relied on participants with enough capital to fund their own projects.

*Building Futures, Providence, RI*  
<http://www.bfri.org>

### Apprentice Utilization Program

Building Futures Rhode Island is a job-training program for low-income residents of Providence, RI. In order to ensure jobs for graduates of the program, Building Futures partnered with a number of large organizations in the area that regularly hire union workers for jobs. The organizations, like Blue Cross Blue Shield, Brown University and the City of Providence, added a clause to their development contracts requiring a percentage of workers on their sites be graduates of the Building Futures program. This in turn led the local union, also a partner of Building Futures, to open apprenticeships to graduates of the program so that the Union could meet the requirement for the large projects.

*LEAP, Charlottesville, VA*  
<http://www.leap-va.org/>

Early in its creation, LEAP conducted two focus group sessions with contractors in the local market to determine their level of knowledge on building science and the demand from property owners for energy services. Simultaneously they reached out to the EPA and DOE to hold a one-day seminar for local contractors on home performance contracting. The seminar was used to introduce contractors to the developing program and corral participants for LEAP's Technical Advisory Committee, a standing committee which works with LEAP to collaborate on and vet program development. This committee's input informed the requirements for certification for local EE work, program guidelines for the quality of work, and it also helped set a standard of a 4% charge on all energy services work that would go to support LEAP's programs. This early participation and buy in from local contractors gave LEAP credibility with the building trades. LEAP has also been instrumental in championing a state trade association chapter of Efficiency First to support home performance contractors and is working with programs in development statewide in Virginia and Virginia's Weatherization Training Director to create pathways for proper training in all levels of the building trades through courses offered at local community colleges:

#### Training

- o Without a union apprenticeship program, there is no existing method to provide certification for the employees of contractors in energy efficiency.

LEAP is working with other energy efficiency program implementers, training facilities, and the building trades to establish continuity between programs and encourage the adoption of state standards for licensing and/or certification.

- The State of Virginia Community College System is creating a BPI certification program through its community colleges.  
BPI certification is mostly achieved by the crew chiefs or company owners. LEAP has found this can create a disconnect between those who oversee the projects and the laborers on the job. Additionally, BPI BA certification is valuable from the perspective of health and safety quality assurance, but it is not a guarantee that the contractor will perform the most cost effective works cope, especially if measures which track to that work scope are other from what they are used to.
- LEAP is working with its local community college to leverage weatherization training dollars to craft a seminar strategy for training various workers in a company – one that is informed by contractor feedback and issues observed during quality assurance checks. The premise is to provide free, shorter seminars for the workers to attend to emphasize good building science in their work. This strategy is well-suited for contractors who very experienced in their field (like HVAC), but is not meant to provide a full training package for those who are completely new to home performance contracting.
- LEAP also relies heavily on personal mentoring with its contractors.

#### Successes:

- In its first year of operation, LEAP has 50 homeowners in the pipeline somewhere between energy audit and final M&V.
- About half the homeowners received an audit from an independent auditor while the other half received the audit as part of the contractors outreach.

#### Limitations:

- Ideally, LEAP would like the work force development to lead to a more vertically integrated contractor model. LEAP has found a critical issue is who “owns” the job when the homeowner bids it out to different trades, but does not engage a general contractor to run it. The danger is in different trades working on the project out of sequence and/or in them creating a health and safety hazard that is not identified until test out.

This discussion illustrates workforce problems in a new market, where the early contractor participants come from existing trades whose individual focus may touch on energy efficiency. However, the contractor is not trained to look at the building as a whole or set up for addressing all of the potential issues presented by this approach.

## C. Workforce and Contractor Certification

### Types of Certification:

Many local certification programs exist, but the Home Performance with Energy Star program only recognizes two programs: Building Performance Institute (BPI) and RESNET Home Energy Rating System (HERS). While both programs are offered nationally, RESNET HERS certification is specifically for Energy Rating, while BPI provides certification in the building science of constructing for energy efficiency in addition to energy auditing. The BPI Whole House approach trains contractors in the start-to-finish process of contacting the property owner for an audit through assuring owner satisfaction with the final retrofit. RESNET training presumes an independent auditor whose business is completing audits, though they are currently partnering with BPI to educate HERS Raters on the selling and marketing of their business.

### Building Performance Institute (BPI)

BPI training targets both energy auditors and the building trades. Their “Whole House” approach encourages contractors to include the energy audit as part of the total project and to train the tradesmen in the best practices of building construction for efficiency.

### Training

- Practice “house as a system” approach as opposed to measure by measure
- Coach towards BPI certification
- Training provided through local vendors – See Hudson Valley Community College example below

### Certification

- One of two accepted certifications for Home Star and Home Performance with Energy Star
- 100 question exam
  - o HERS certified takes 50 question exam
- Types of Certification:
  - o Audit:
    - Building Analyst- energy auditor doing deeper audit.
    - Envelope – audit.
  - o Construction
    - Residential Building Envelope Accessible Areas Air Leakage Control Installer
    - Residential Building Envelope Whole House Air Leakage Control Crew Chief

- Manufactured Housing
- Heating
- Air Conditioning and Heat Pump
- Multifamily

### Program Support

- Programs must implement internal quality assurance programs
- BPI performance quality assurance checks
- Additional training available in Sales and Marketing

### Quality Assurance

- BPI hires inspectors independent of their programs to review work

### Cost

- Accreditation Fee: \$500 (annual)
- Quality Assurance Assessment: Based on gross revenue of company (ranges from \$1000 - \$7000/ year)

### Resnet HERS

Developed at the urging of regulators and the mortgage industry to create a standard upon which Energy Efficient Mortgage underwriting could be based. In addition, HERS has been used as a standard to prove compliance with energy efficient building codes and as a qualifying step for subsidy programs and incentives. RESNET focuses on training auditors that traditionally have performed independent audits. More recently, RESNET has sought to connect their auditors more directly to the entire construction process as a way to increase visibility and thus business for RESNET raters.

### Training and Certification

- Along with BPI, one of two accepted certifications for the pending Home Star Program.
- HERS raters should do the HERS training in order to qualify for testing
- HERS raters must perform two supervised ratings before being certified
- Training includes advice on how to market the business

### Quality Assurance

- RESNET performs independent checks of 1% of all ratings and checks the paper work on 10% of rating

### Cost to become a rater

- Up to \$4500 for equipment
- \$1500/year to maintain training and certification

## D. Some “Best Practices” in Local Workforce Development and Certification

Hudson Valley Community College  
<https://www.hvcc.edu/ceeb/index.html>

- Center for Energy Efficiency and Building Science
  - o Partnership with **BPI** to provide workforce development training and preparation for tradesmen and high school grads to achieve BPI certification.
  - o 12 Energy Smart Learning Centers across State of New York
  - o Received Community Based Workforce Development grant from **Department of Labor**
  - o Also funded by **NYSERDA**
  - o In addition to Building Science, specifically trains tradesmen in Sales and Marketing of the **Home Performance with Energy Star** Program including:
    - Listening to Client
    - Creating a presentation book
    - How to close the deal
  - o Curriculum and Cost
    - **NYSERDA** reimburses 50% of the tuition costs to individuals that pay a Systems Benefit Charge in NY State and successfully complete the program.
    - Building Analyst Certification: \$1245
    - Basics of Building Science: \$300
    - Sales and Marketing: \$399
    - Envelope Professional: \$1325
      - Prereq: Building Analyst Certification
    - Heating Professional: \$1400
      - Prereq: Building Analyst Certification
    - Cooling Professional: \$995
      - Prereq: Building Analyst, Heating Professional, EPA Section 608 certification
    - HERS Certification: \$1095
      - Prerequisite: BPI Building Analyst Certification

### Partners

- NYSERDA
- BPI
- New York State Builders Association

- Conservation Services Group

#### Los Angeles Trades and Technical College

<http://college.lattc.edu/green/>

- Green Work Force Education
  - LATT provides certification in a range of specific “green” trades, from a weatherization specific curriculum to building construction techniques to community planning.
  - A report by the Ella Baker Center in California highlighted key elements that make LATT’s program stand out including:
    - Career mapping that identifies a job ladder for students
    - Identifying skills for targeted occupations and then developing transferable skills based on the job ladder
    - Integrating soft skills and technical skills in the curriculum
    - Guiding underprepared students through the program
    - Established relationship with organized labor
    - Member of the **Los Angeles Infrastructure and Sustainable Jobs Collaborative**
- Preparing to offer **HERS** training to provide national certification

#### Wisconsin Regional Training Partnership

<http://www.wrtp.org/center-of-excellence.php>

- Building Industry Group Skilled Trades Employment Partnership (BIG STEP)
  - Led by Unions, this partnership was started in the mid 1990s and targets low-income residents in Wisconsin, particularly people of color and women.
  - First step is helping program participants qualify for apprenticeship programs in the local building trades:
    - Provides academic assessments, individualized tutoring for apprenticeship exams, and pre-employment training and certification,
    - In addition, the partnership connects the participants with community groups to help with issues of child care, transportation and GED prep.
  - In 2005, WRTP launched the **Center for Excellence**
    - The Center maintains BIG STEP’s database of apprenticeship-ready candidates available to local unions.
    - The center can certify the candidates for specific job hiring requirements.
    - Contractors and Unions can access the database when hiring for jobs in the area.
  - Model for **AFL-CIO** national curriculum

#### Laborers International Union of North America

<http://www.liuna.org/tabid/74/Default.aspx>

- Creating a training program particularly highlighting the skills needed in the **Weatherization Assistance Program** to ensure that small-scale residential retrofits are completed properly.
- The program is seeking to go beyond the tradition WAP level curriculum to also train small contractors in deeper retrofits.
- Laborers have 70 training sites around the US.