

**LOW INCOME ENERGY EFFICIENCY PROGRAM  
WORKFORCE EDUCATION AND TRAINING PILOT  
FINAL REPORT**

**Submitted By**

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**1. Education and Training Pilot Implementation  
Description, Findings, and Recommendations**

**1.1. Recruitment Efforts**

- 1.1.1. Please provide a narrative account of your recruitment effort during the course of this pilot, including the demographic breakdown of your recruit pool.

*Response:*

Target Geographic Area and Population. The targeted geographic area for recruiting participants for Low Income Energy Efficiency (LIEE) Program training during the Workforce and Education Training Pilot (WE&T Pilot) was Los Angeles Trade-Technical College's primary service area.

Los Angeles Trade-Technical (LATTC) is located in and predominately serves the South Los Angeles area. This area was formerly called South Central Los Angeles, and is still widely known as South Central. South Los Angeles is indisputably the most disadvantaged and at-risk area in Los Angeles.

The adult population (ages 18-34) within LATTC's service is ethnically diverse and largely immigrant. Nearly all, or 96.5%, of the population is ethnic minority. Hispanic residents are the largest or majority ethnic group at 70.6% of the population. African Americans are the second largest ethnic group at 20.5 % of the population. The percentage of Hispanic and African American residents is 4.41% and 10.13% higher than the Hispanic and African American population of the other eight colleges comprising the Los Angeles Community College District. This percentage is also 4.86% and 14.72% higher than the same ethnic populations in other areas within Los Angeles County (US Census).

LATTC's service area also has a large concentration of immigrants. Foreign born residents comprise 46.7% of the population, and of those, 26.9% entered the United States between 1980 and 1990. Moreover, 65.1% of the population is non-native English speaking and 34.7% are limited or non-English speaking. LATTC has the highest

percentage of limited/non-English speaking population in the Los Angeles Community College District. LATTC's percentage of population that is limited/non-English speaking is 18.70% higher than the population of LA County, 25.20% higher than the population of California, and 31.60% higher than the US population of limited/non-English speakers (US Census).

LATTC's service area population is particularly disadvantaged, socio-economically where nearly one-third (32.4%) of the population lives at or below the Federal Poverty Level (FPL), and over one-half (53.3%) of the population lives within 150% of the FPL. LATTC ranks first in the highest percentage of population living within the FPL of all nine colleges of the Los Angeles Community College District. The percentage of the population living in poverty in LATTC's service areas is 17.3% higher than LA County's, 19.96% higher than California's, and 19.30% higher than the U.S.'s population living in poverty (US Census).

And LATTC's service area is educationally at-risk. More adults than not, living in LATTC's service area do not possess at least the equivalence of a high school education: 55.2% of the adult population does not have a high school diploma, GED, or equivalency; 20.2% have obtained only between a 9<sup>th</sup> and 12<sup>th</sup> grade education; and 35.0% have less than a 9<sup>th</sup> grade education. Adults in LATTC's service area are 23.6% more likely to have less than a 9<sup>th</sup> grade education and 6.7% more likely to have only a 9<sup>th</sup> to 12<sup>th</sup> grade education than adults living within Los Angeles County (US Census). Even more disturbing are the dramatically low, post-secondary education participation rates of 18-24 year-olds in LATTC's service area. Only 35% of 18-24 year-olds are enrolled as undergraduates in higher education institutions. This is 34.7% lower than the average post-secondary education participation rates of adults living in Los Angeles.

Based on virtually every health and welfare indicator, the South Los Angeles area remains among the most disadvantaged and underserved communities in the nation. Statistics show that this is a community facing a dangerous existence with little economic opportunity. The homicide rate among South L.A. adolescents and young adults (ages 15 to 34) accounts for 76 percent of deaths, and is an alarming 200 percent higher than the county-wide rate. And this population has the lowest socioeconomic status in the county, with a per capita income of just \$11,000 per year (Critical Condition: Examining the Scope of Medical Services in South Los Angeles, October, 2007). More than 1/3<sup>rd</sup> (39%) of all children in long-term foster care and 20% of youths in Juvenile Hall in Los Angeles County are from the South Los Angeles area.

Lastly, homelessness is a serious condition in LATTC's service area. There is a ten square block area in downtown Los Angeles (and Trade-Tech's service area) referred to

as Skid Row. Approximately, 5,131 homeless people live in Skid Row, the greatest concentration of homeless persons in Los Angeles County—a number that grew 29% between 2005 and 2007. Perhaps most striking, 83% of homeless people are unsheltered— living on the streets, alleys, and overpasses, or in cars, doorways or encampments— rather than in emergency or transitional housing. Many homeless individuals come to the college as a means for a stable environment and a means for ending the cycle of homelessness and unemployment through education and training.

It is within this context that the WE&T Pilot was conducted.

Recruitment Methods. LATTC coordinated an extensive effort to recruit local community residents for the LIEE training through the WE&T Pilot. This was particularly important because a primary aim of LATTC’s training programs is to prepare and connect historically disconnected and disadvantaged populations to the most promising green jobs, including LIEE-related jobs within the community. Flyers were distributed, electronically, to community-based organization partners that serve the South Los Angeles community--including the Coalition for Responsible Community Development (CRCD), the Los Angeles Conservation Corps and others.

Announcements were made throughout the college campus and in within LATTC building and construction trade-related classes. Utilizing the LATTC Green Workforce Job Training website, individuals who expressed an interest in LIEE training were invited via an email and/or phone call to attend an Orientation provided by staff within the Workforce and Economic Development division at LATTC. The Orientation included an overview of LIEE Weatherization positions, job requirements, and training program specifics. In addition TELACU, a WE&T Pilot partner and LIEE contractor, participated in the orientations.

Demographics of Training Participants. The demographics of those who attended the Orientation and expressed interest in further training approximated the demographics of LATTC’s student body. More than half (55%) live at or below the Federal Poverty Level; more than one-third (36%) have goals considered to be transitional (e.g., to obtain GED, basic academic and/or employment skills); 39% have a primary language other than English; 37% have less than a 12<sup>th</sup> grade education, 98.9% require remedial math and English instruction; and 95% are likely to be an ethnic minority. The ethnic breakdown of program participants was approximately as follows:

- 50% - Latino;
- 30% - African American; and
- 20% - White, Asian, or Other.

1.1.2. Please summarize the most successful practices utilized.

*Response:*

The following are the two recruitment practices that were considered most useful during the WE&T Pilot.

Green Jobs Website Portal. LATTC established a website portal to announce WE&T Pilot and other LATTC green job trainings available at the college; including Weatherization Installer and Weatherization Outreach Specialist training. The website portal was utilized to ensure that students, community members, non-profits and community based organizations had access to the most up-to-date information on green job training and orientation descriptions and schedules at the college. The website portal included a brief description of the skills/nature of the occupations, employment requirements, and a link to RSVP online for an Orientation. Over 300 individuals expressed an interest to be trained for LIEE weatherization installation over the duration of the WE&T Pilot through the portal. The portal is available at: <http://college.lattc.edu/green/greenjobs/>.

Cohort-based Recruitment. Another promising recruitment practice was the recruitment of cohorts of recent high school graduates through a partnership program with TELACU and Warren High School in Downey, California. The cohort-based recruitment enabled the college to work with a LIEE employment provider to pinpoint younger adults within a specific, targeted community. It also enabled students with similar backgrounds and experiences to readily engage in teams and establish collaborative work groups to assist one another with the hands-on and safety components of the training program.

1.1.3. Describe the recruitment challenges experienced during the course of the pilot. What modifications were made during the progression of this pilot to address those specific challenges?

*Response:*

Disparity in Employability Expectations. The most immediate, recruitment challenge faced by the college centered on establishing realistic expectations of training participants as to the eligibility requirements for LIEE-related employment. Many participants had LIEE-related employment barriers including law enforcement backgrounds, DMV records and/or failure to meet drug testing requirements. Upon debriefing with staff at the conclusion of the WE&T Pilot, it is conservatively estimated

that 70% of individuals who expressed interest in training and employment were not eligible due to one or more of these factors.

As a result, LATTC had to alter the Orientation in May 2010, to expand the time and emphasis placed on employment requirements, impact of participant's background on employment prospects and the drug testing requirements of WE&T Pilot employer partners (i.e., TELACU and CES). Although LATTC provided instruction on these eligibility requirements in the initial Orientation, a number of participants still opted to attend training with the hope that their demonstration of skill competencies would have a positive effect on employment decisions. Summarily, there was quite a disparity between participants' expectations about their employability and the LIEE employment eligibility requirements.

- 1.1.4. Based on the experience of executing the pilot, please provide your recommendations for future recruitment strategies. Please include a) the most successful and effective practices, b) foreseeable obstacles and challenges in implementing these strategies, c) proposed solutions to address each challenge including candidate prescreening recommendations (i.e. contractor/IOU requirements like clean DMV, ability to pass background check, etc.)

*Response:*

Successful Practices. Recruitment efforts should include a combination of methods including direct recruitment to the community through community-based organizations, churches, community centers; direct announcements within classes at the college and online "advertising" through a website portal.

Foreseeable Obstacles and Challenges. The disparity between the personal histories of individuals in underserved communities (e.g., institutional backgrounds, poor DMV records, prior drug use) and employment eligibility requirements for LIEE occupations will continue to be an obstacle and challenge when training for LIEE occupations for the unforeseeable future. If the intent is to prepare individuals from underserved communities to be employed in occupations that support LIEE Program goals within those same communities, then specific strategies for addressing these challenges should be considered.

Establishing participant criteria that addresses these issues and pre-screening them prior to enrollment in a training program at a community college, like LATTC, is an

approach that presents a myriad of foreseeable obstacles as well. If the training program is wholly-funded by a source external to the college (e.g., a grant, corporate-sponsorship, etc.), such pre-screening practices can likely be conducted. State laws, local policies and the financial constraints of community colleges greatly limits the colleges ability to conduct these pre-screening activities presently.

Proposed Solutions. To address the disparity between participant histories and employment expectations the following are proposed solutions.

- Inform participants ahead of time of requirements and provide basic guidance for next steps in case their situation can improve before the training begins.
- Provide opportunities for participants to engage in LIEE-related training that DOES NOT require an in-depth background check for individuals who have demonstrated a commitment for personal change (e.g. no felony/misdemeanor in past 12 months; minor drug offense, DUI over three years, etc).
- Develop orientation or bridge programs, funded wholly by external entities, in which pre-screening activities can be implemented.
- Change state and local regulations and policies to enable the pre-screening of individuals seeking to enroll in LIEE-related education and training programs at community colleges -- similar to the policies and procedures that are in effect for enrollment in nursing programs. To establish such regulations and policies may also require an accrediting or licensing agency for LIEE professionals be established (i.e., similar to the California Board of Registered Nursing).

## **1.2. Prerequisite Education/ Soft-Skills Training**

- 1.2.1. Please identify any issues or concerns experienced with the recruiting class in terms of attendance, behavior, incoming level of education, and soft skills preparation.

*Response:*

Attendance. Attendance did not present significant program concerns given that the college job training orientations provided participants with clear participant, college and employer expectations in this regard. LIEE workforce participants were eager to learn new skills with the goal of on-the-job-training or actual employment for the “green” workforce.

Participant Behaviors. Although attendance was not a concern, LATTC staff and faculty indicate that tardiness had an impact: orientation and training sessions could not begin on time thus shortening the time covering information and skills or staff and



instructors had to try to assist students coming in late which was often disruptive to instruction and activities.

WE&T pilot instructors indicate that participants' inability to overcome adversity or obstacles impacted their success in LIEE training as well.

Also, initial WE&T pilot training cohorts were not fully aware of the employment eligibility requirements which impacted their ability to garner LIEE employment. As was discussed previously, the Orientation program was altered to increase participants' awareness of eligibility requirements and to increase the emphasis placed on participant backgrounds.

Basic Skill Competencies. To reiterate, the target population recruited for the WE&T Pilot training comes from an extremely disadvantaged community with high socioeconomic risk factors and low levels of prior educational attainment--approximately 1/2 have less than a high school diploma or equivalent and of those who do, approximately 67% and 50% test at or below the 10<sup>th</sup> and 8<sup>th</sup> grades in math and/or English, respectively. The college was faced with challenges training participants with such low basic skill levels --particularly for those individuals with less than 8<sup>th</sup> grade math and/or English skills. Many LIEE Program activities require 12<sup>th</sup> grade mathematics skills. For example attic ventilation activities and complying with combustion ventilation air standards requires one to have the ability to calculate volume and area; convert whole numbers to decimals; and add, subtract, and multiply fractions.

Participants low math/English levels required our faculty trainers to adapt the WE&T Pilot curriculum in an effort to prepare students who test at or below 8<sup>th</sup> grade. These adaptations primarily included: (1) developing a math pre- and post-test to provide students with a clearer understanding of the differences between their current and needed mathematical skills; (2) developing a contextualized, mathematics and calculations curriculum module that is conducted prior to technical training; and (3) imbedding mathematics skill building activities throughout training modules -- particularly those modules that require math skills such as attic ventilation. These adaptations were made in the final versions of the curriculum materials developed for the WE&T Pilot.

Soft Skills. WE&T faculty trainers indicate that participants' "work ethic" was a significant barrier. Many participants' expectation was that attendance alone would enable them to garner the necessary skills and competencies to gain employment. In addition, there were great disparities between participants' perceptions of "the work" it

would take to address their math/English and technical skill gaps and/or their personal matters that precluded them from being eligible for LIEE employment.

Another soft skills issue encountered in the WE&T Pilot was that participants' generally had insufficient job search, resume writing and interviewing skills.

1.2.2. Identify the most crucial soft-skills that were instrumental and helpful for your recruit cohort.

*Response:*

The most crucial soft-skill that was instrumental for the WE&T Pilot training cohorts was "work-ethic". As a result, faculty integrated more tasks that would require demonstration of work ethic attitudes and skills within hands-on, LIEE activities. Based on feedback received by training participants, instructors and LIEE contractors in the WE&T Pilot, additional work-readiness materials have been developed and implemented with 12 cohorts beginning in March 2010 and in weatherization training conducted at the college after the WE&T Pilot concluded.

Additionally, WE&T classes and workshops were scheduled starting in August 2010, to assist participants with their job search and interviewing skills, to enable them to maintain an updated resume and to be eligible for continued on-the-job training experiences.

1.2.3. Identify any pre-requisite or level-setting courses that were instrumental and helpful for your recruit cohort.

*Response:*

One of the fundamental principals LATTC adhered to when developing and implementing activities in this pilot, was that these activities could be sustained through the operational funding it receives for instruction in the state apportionment process--rather than having to rely on external funding sources. Thus, any courses that were developed in the pilot would have to adhere to the state regulations and Los Angeles Community College District and college policies and procedures. This principal is particularly important if the training program is to be replicated at other community colleges.

Because the WE&T Pilot was conducted utilizing not-for-credit, contract education training rather than credit-based courses at the college, the establishment of pre-requisites or level setting courses did not apply. This was mostly due to the duration of the pilot which would not allow sufficient time to create college credit-bearing

courses/programs (including the required local, regional, and state approval processes), conduct the required validation processes for establishing pre-requisites, and then pilot both the pre-requisites and courses. This is typically a two-to-three year process.

However, while LATTC developed and conducted the not-for-credit training in the WE&T pilot, findings were used to develop a credit-based certificate and degree program that addresses the preparation needed for participants prior to engaging in core, technical training. These findings, and the resulting recommended curriculum, are more fully outlined later in this report.

- 1.2.4. Based on your experience, please identify, going forward, a) which soft skills training courses should be provided/required prior to enrolling in such a pilot or curriculum, and b) which pre-requisite or level-setting courses should be provided/required prior to enrolling in such a pilot or curriculum.

*Response:*

Competency Model Framework. Based on the lessons learned from training faculty in the WE&T Pilot, and from TELACU and So Cal Gas recommendations, LATTC has developed a comprehensive inventory of soft skill competencies essential for LIEE Weatherization occupations including: personal effectiveness (e.g. interpersonal relations, professionalism, initiative, dependability/reliability, communication, customer service, teamwork and collaboration); checking, examining, and recording on written and computerized forms and logs; and test taking to name a few. These soft skill competencies have been organized into a Competency Model Framework for weatherization occupations.

Comprehensive Assessment Included in Orientation Program. As a result of the WE&T Pilot findings, it has been concluded that prior to enrolling individuals in LIEE technical training, an assessment process should be included in the Orientation. This process should include a diagnostic assessment of math/English competencies, employability skills, and soft skills (including work ethic and an assessment of barriers to employment). The Tests for Adult Basic Education (TABE) locator test has been identified as a tool to be used for the math/English assessment. Research is still being conducted on employability and soft skills assessment instruments that could be used for this purpose. Of great importance will be the affordability of these assessment instruments, particularly if the Orientation is to be replicated.

Prep Program. Depending on assessment results, participants are either directly enrolled in LIEE technical training or are referred to a “prep” program that is designed to provide participants with the requisite math, English, and soft skills to succeed in LIEE training and subsequent employment. It is anticipated that the LIEE prep program could be modeled after LATTC’s existing Utilities and Construction Prep Program or Clean Energy Pre-Apprenticeship Program. Both programs provide an overview of the industry and occupations including employment eligibility requirements, contextualized basic skills, employment test preparation skills and entry-level technical training including workforce readiness and employability skills.

LIEE training faculty have recommended that the prep program should be intensive (e.g., several hours per day or session) and conducted over an extended period (e.g., 8 or more weeks) to allow sufficient time for participants to increase skill levels.

Pre-Requisites or Assessment Levels. Lastly, based on the WE&T Pilot findings, it has been determined that participants should either be assessing at 12<sup>th</sup> grade for mathematics and 10<sup>th</sup> grade for English (according to TABE locator test results) or should have successfully completed Math 105 (Arithmetic for College Students) and English 64 (Intermediate Reading and Composition) prior to enrolling in technical training.

### **1.3. Logistical Efforts**

- 1.3.1. Please describe the logistical challenges (curriculum delivery delays, enrollment issues, other complications, etc.) experienced during the course of the pilot. Specify any collaborative efforts between your program and IOU training personnel. What modifications were made during the progression of this pilot to address those specific challenges?

*Response:*

Communication Challenges. There were communication challenges during the WE&T Pilot. Communication challenges resulted from differing interpretations or definitions of training and education terms used by community college practitioners and industry training professionals. For example, the term “curriculum” typically means course descriptions and outlines to community college practitioners. To industry training professionals in WE&T Pilot organizations, the term “curriculum” means instructional materials utilized in training.

Communication challenges also stemmed from differing expectations between WE&T Pilot organizations. First, LATTC's expectations were based primarily on its written proposal in response to the specific parameters that were articulated in the Request for Funding Application. Subsequent to the college's proposal being accepted, the pilot parameters were changed in the final contract awarded to the college--in essence establishing alternative expectations.

Communication issues also arose as a result of the college's perceptions of the role of the contracting IOU (PG&E) and the regional IOU and LIEE contractor partners in the Pilot project. This is most evident in the collaborative process use for implementing key activities. For example, the college relied primarily on interaction and feedback from the LIEE contractor when "piloting" curriculum and implementing training activities, less so from the regional IOU.

Organizing Curriculum in a Logical Sequence. After piloting initial LIEE trainings, much time was spent determining "how" curriculum should be packaged for dissemination and feedback amongst WE&T partners. A LIEE Curriculum Module Checklist was developed to accompany each curriculum package. The checklist identifies the topics and standards being addressed. Curriculum components included in each package are itemized on the checklist. This checklist was developed in an attempt to communicate and verify curriculum expectations amongst Pilot project organizations to address some of the communication challenges described above. In addition, the college worked on "standardizing" curriculum components that could be included in each module such as student guides and worksheets, instructor lesson plans, and instructor tip sheets.

Field-Based Experiences. A challenge of the WE&T Pilot is the limitation of simulating "real world", LIEE experiences within a classroom or lab setting. As such in October 2010 the college piloted and deployed a new training capability—a mobile weatherization instructional lab—that could be used to conduct field training. The mobile instructional lab is comprised of all materials, instructional supplies and tools needed to conduct Basic Energy Efficiency/Weatherization instruction at actual residences. A material checklist has also been developed to coincide with the mobile instructional lab that includes all the materials, tools, supplies and storage cases that can be carried by one full size pickup truck or panel van. Presently, considerable thought is being conducted to expand the mobile instructional lab to incorporate the materials and tools necessary for advanced concepts and practices training (e.g., exterior door replacement, blower door, duct testing, and furnace clean and tune).

- 1.3.2. Based on the experience of executing the pilot, please provide best practices including potential solutions for any of the logistical concerns described above for future cohorts.

*Response:*

Best Practice - Curriculum Module Checklist. This checklist was developed in an effort to provide clarification amongst WE&T Pilot organizations on curriculum matters. It also provided an effective framework or tool for organizing instructional materials and training activities.

Proposed Solutions to Pilot Logistical Challenges. In order to preclude many of the communication challenges experienced in this Pilot, several solutions are proposed as follows:

- Participating organizations should clarify their interpretation/definition of key deliverables (e.g. curriculum) at the beginning of the project.
- Participating organizations should articulate roles and expectations at the beginning of the project—particularly if any differences exist between the parameters from the accepted proposal and the final contract.
- In future training pilot programs, the regional IOU should play a central, coordinating role in the development, implementation, and assessment/revisions of key activities.
- The desired outcomes for programs selected should be detailed and used to establish the parameters in the Request for Funding Application to ensure compatible expectations.

#### **1.4. Curriculum Design**

- 1.4.1. Please present your latest LIEE pilot curriculum, complete with course description, class summaries and length of each course. Please include the IOU specific training courses with course description, class summaries and length of each course that supplemented your pilot curriculum.

*Response:*

LIEE Pilot Curriculum. LATTC approached the Energy Efficiency/Retrofit (weatherization) training utilizing 3 curricular modules, namely: (1) Preliminary Skills, (2) Basic Weatherization, and (3) Advanced Concepts and Practices. Each curricular module is comprised of one or more sub-topic skill areas, totaling 76 hours, and is more fully described below.

The Preliminary Skills module includes competency-based skills training necessary for participants to obtain requisite basic tool use and safety, as well as computational skills necessary to complete basic weatherization measures. The sub-topic skill areas included in this module are: Measurements and Calculations and Hand and Power Tool Safety and Operation. The Measurement and Calculations sub-topic is a review of the basic measurement and calculations used in LIEE program activities such as measuring units of length with a tape measure; calculating percentages, area, and volume, converting percentages to decimals, and calculating percentage reduction. This sub-topic is 4 hours in length. The Hand and Power Tool Safety and Operation sub-topic covers general safety procedures and the correct selection and safe and proper use of hand and power tools commonly used in LIEE program activities. This sub-topic is 4 hours in length.

The Basic Weatherization curricular module includes competency-based skills training necessary for participants to conduct LIEE program activities within established standards. The sub-topic skills areas included in this module are: Introduction to Weatherization, Energy Basics, Building Shell Sealing, Conservation Measures and Efficiency, Combustion Basics, and Natural Gas Appliance Testing (NGAT). The Introduction to Weatherization sub-topic consists of defining weatherization; describing and differentiating between the different weatherization programs (e.g., LIEE, WAP, LIHEAP, and CSD); and common weatherization measures. This sub-topic is 2 hours in length. The Energy Basics sub-topic covers the types of energy, heat, and energy movement and definitions of key energy-related terms (e.g., energy, power, Therm, BTU, watt, kilowatt, infiltration, vapor, air barrier, etc.). The Energy Basics sub-topic is 2 hours in length. The Building Shell Sealing sub-topic covers the proper identification, selection, and application of building shell sealing materials including those used for caulking, weather-stripping and glazing. The Building Shell Sealing sub-topic is 12 hours in length. The Conservation Measures and Energy Efficiency sub-topic is comprised of ceiling insulation, attic ventilation, identification, selection and proper application of water heater and pipe insulation materials; differences between types of light bulbs; and standards for energy-saver shower heads and faucet aerators, evaporative cooler and air conditioner vent covers, compact fluorescent lamps and fixtures, insulation installation and refrigerator replacement. The Conservation Measures and Energy Efficiency sub-topic is 12 hours in length. The Combustion Basics sub-topic includes mathematical calculations used in combustion measures such as volume and unit conversions; the basic elements of combustion (oxygen, fuel, heat); the byproducts of combustion (complete and incomplete) and combustion ventilation air calculations. The Combustion Basics sub-topic is 4 hours in length.

The Advanced Concepts and Practices module builds on the information and skills covered in the Preliminary Skills and the Basic Weatherization modules and prepares

participants for more advanced LIEE activities and measures. The sub-topic skill areas included in this module are: Door Replacement, Window Replacement, Furnace and Water Heater Installation, Blower Door and Duct Testing, and Furnace Clean and Tune. The Door Replacement sub-topic consists of the proper identification, selection and application of materials and tools to replace a door to LIEE standards. The Door Replacement sub-topic is 8 hours in length. The Window Replacement sub-topic is 4 hours and consists of proper flashing and sealing and plumb and level installation or replacement windows. The Furnace and Water Heater Installation sub-topic consists of the proper identification, selection, and application of materials and tools to install wall furnaces and water heaters to meet LIEE standards. The Furnace and Water Heater Installation sub-topic is 8 hours in length. The Blower Door and Duct Testing sub-topic covers the procedures for setting up a blower door and duct tester, including the use of monometers and the sealing of ducts. The Blower Door and Duct Testing sub-topic is 8 hours in length. The Furnace Clean and Tune sub-topic is 4 hours in length. The Natural Gas Appliance Testing (NGAT) sub-topic covers the meaning and purpose of NGAT training, 8 common items for pre-weatherization NGAT, testing for gas leaks, and combustion ventilation air. The Natural Gas Appliance Testing sub-topic is 4 hours in length.

In addition, based on LIEE contractor (TELACU) and SoCalGas input, LATTC developed the framework for the Weatherization Outreach Assessor Preparation Program. The purpose of this program was to adopt SoCalGas' "Whole Neighborhood Approach" by training the residents of south and greater Los Angeles to:

1. Understand Low Income Energy Efficiency Program goals and eligibility requirements;
2. Review the State, IOU and program employment requirements including drug and background testing and the Home Inspector Sales application (to once again reinforce the same information that is also provided during the Orientation);
3. Identify LIEE Outreach Specialist as an entry-level green job position in a greater green job career ladder (e.g., Overview of Green Workforce Industry);
4. Expose participants to the LIEE measures in the LATTC Weatherization Lab;
5. Review basic math and English skills to better prepare participants for the SoCalGas entry test;
6. Fulfill employment eligibility requirements including background checks, and



7. Ensure participants have the customer service skills and technical preparation to successfully pass SoCalGas' test and complete SoCalGas training.

This portion of the training was not originally considered in the Request for Funding Application or in the college's proposal as a component of Weatherization training. The Outreach component was identified as a significant factor in increasing the number of homes eligible for LIEE weatherization. LATTC's training goal with the Outreach Prep was to prepare individuals to understand how residents are enrolled for LIEE services. The training was considered to bridge individuals and provide a larger candidate pool for SoCalGas' 40 hour, Outreach and Assessor training.

- 1.4.2. If a statewide Community College-level Low Income Residential Energy Efficiency and Weatherization curriculum were to be implemented, please identify your recommendations on how to structure the course curriculum.

- 1.4.2.1. Please include the recommended a) pre-requisites courses, b) Soft skills training courses, c) full community college curriculum and d) any additional off campus training. (Please include full descriptions, summaries and recommended length of each course/training identified above.)

*Response:*

General Recommendations. A primary finding from the WE&T Pilot is that a "career ladder" does not necessarily exist for the LIEE occupations for which training was conducted in this pilot. More specifically, there are no "entry-level" weatherization installation occupations--that with additional training and experience—lead to advancement to a "higher-level" weatherization installer occupation. Therefore new, workforce entrants to installer occupations must possess more advanced technical skills and math competencies than was previously considered.

The implications of this finding is that multiple, preparatory programs must be developed for populations with lower level mathematics competencies and little or no related-technical skills. In addition, the time it takes to address gaps in these competencies and skills requires intensive and repetitive instructional activities over an extended period of time.

However, of concern is whether or not underprepared individuals will have the motivation or ability to commit the time and effort it will take to obtain these skills and competencies considering their perceptions of the “pay off” that will result in terms of salary and career advancement opportunities. In other words, typically individuals who are interested in these occupations and training have multiple barriers to address--including significant gaps in math competencies and technical skills and background issues--but are looking for short-term solutions that enable them to obtain a job and income quickly (e.g., in a matter of weeks).

It is recommended that thoughtful consideration be given as to how to address the disparity between the time and effort or “investment” that is required of underserved, underprepared individuals to garner these occupations and the “pay off” that results in terms of the salary and career advancement opportunities. Paid internships or paid on-the-job training may provide opportunities for individuals to earn income during training that requires extended periods of time.

Training and Education Program Recommendations. It is important to reiterate here that a fundamental premise underlying LATTC’s participation in this pilot was that the resulting training and education programs could be sustained with the state apportionment funding the college receives through not-credit or credit-bearing courses.

As such, many of the findings and recommendations that have been provided elsewhere in this report, which are based on this premise, were considered in making the recommendations outlined below.

Orientation and Assessment Program. Prior to enrolling students, a comprehensive assessment and orientation process should be conducted. This program should include diagnostic math and English assessments, career interest inventories, collection of information on participant backgrounds, and soft and aptitude skill assessments. This program should also include activities that adequately orient and equip participants with the knowledge, skills, tools, and resources to be able to: (1) make informed choices about career opportunities, training/education requirements and related post-secondary options that “best fit” their personal circumstances and (2) be prepared to succeed in post-secondary education.

It has determined that individuals choosing to enroll in energy efficiency education programs, including weatherization training, should either be assessing at 12<sup>th</sup> for mathematics and 10<sup>th</sup> grade for English (according to TABE locator test results) or should have successfully completed Math 105 (Arithmetic for College Students) and

English 64 (Intermediate Reading and Composition). In addition, employment eligibility barriers should be addressed prior to enrollment in technical training.

As was discussed previously, if these conditions must be met as a requirement for enrollment in a certificate or degree program, changes in state and local regulations and policies must be made to enable the pre-screening of individuals--similar to the policies and procedures that are in effect for enrollment in nursing programs.

Prep Program. Depending on assessment results, participants are either directly enrolled in weatherization/energy efficiency short-term training, or certificate and degree programs, or are referred to a “prep” program that is designed to provide participants with the requisite math, English, and soft skills to succeed in energy efficiency education programs. It is recommended that this Prep Program be 86+ hours in duration and should include an overview of the industry and occupations including employment eligibility requirements (9 hours), contextualized basic skills and employment test preparation skills (36-72 hours depending on current skill levels), and entry-level technical training including workforce readiness and employability skills (40 – 72 hours depending on current skill levels).

Short-Term, Technical Training Program. For those individuals who: (1) assess at 12<sup>th</sup> grade level in math, 10<sup>th</sup> grade level in English (or have successfully completed Math 105 and English 64); (2) meet employment eligibility requirements; and (3) assess at or above pre-determined levels on soft skill and aptitude assessments are “ready” to be enrolled in a short term, technical training program. Individuals who successfully complete the Prep Program and meet employment eligibility requirements are also “ready” to enroll in the technical training program. It is recommended that this program be similar in duration and include the topics and activities that were developed in this pilot. Please refer to the LIEE Pilot Curriculum section of this report for more detailed information.

Lastly, on-the-job training and experience, for at least two months, is recommended after the short-term technical training program.

Certificate and Degree Program. For individuals who want to prepare for energy efficiency occupations in multiple career pathways, enrollment in an energy-efficiency certificate and degree program is recommended.

LATTC has incorporated the findings and lessons learned as a result of the WE&T Pilot to develop a “stackable” certificate and degree program in energy efficiency. The stackable certificate and degree program includes the following: 1) a “fundamentals” certificate which includes basic academic, employability, and industry-wide skills and

competencies; 2) a “core technical” certificate, which are occupation-specific skills and competencies; and 3) the AA/AS degree, which includes advanced technical skills and liberal arts courses. This stackable certificate and degree program has received local and regional approval and is currently pending approval by the California Community College Chancellor’s Office.

The following table summarizes the industry recognized credentials the program intends to prepare individuals for and the specific certificate and degree programs designed to do so.

| Industry Recognized Credentials  | Certificates and Degrees  |
|--|---|
| OSHA 10, The National Center for Construction Education and Research (NCCER) Core, NCCER Green, Building Performance Institute (BPI) Building Analyst, BPI Building Envelope | (Fundamentals) Energy Systems Technology Fundamentals Certificate of Achievement, (Core Technical) Energy Efficiency Certificate of Achievement, (Advanced Technical) Renewable Energy AS Degree w/Energy Efficiency Emphasis |

A detailed description of the specific certificate and degree program requirements is as follows.

Energy Systems Technology Fundamentals Certificate of Achievement. Provided below is a table that summarizes the recommended courses and hours for the first certificate in the “stackable” energy efficiency degree program. Specific course descriptions are provided following the table.

| Course                              | Title   | Units | Lecture Hours* | Lab Hours* |
|-------------------------------------|---|-------|----------------|------------|
| <b>Core Technical Courses</b>       |   |       |                |            |
| ECONMT 100                          | Occupational Safety                           | 2     | 2              | 0          |
| BLDGCTQ 010                         | Energy and Utility Industry Careers           | 3     | 3              | 0          |
| ECONMT 115                          | Fundamentals of D.C. Electricity              | 3     | 3              | 0          |
| ECONMT 116                          | Hand Tools and Wiring Practices               | 2     | 0              | 6          |
| ECONMT 129                          | Fundamentals of Alternative Current           | 3     | 3              | 0          |
| <b>Applied Mathematical Courses</b> |   |       |                |            |
| ECONMT 119                          | Applied Electrical Calculations & Measurement | 3     | 3              | 0          |
| OR                                  |   |       |                |            |
| ECONMT 173                          | Electrical Mathematics                        | 3     | 3              | 0          |
| Subtotal Units                      |   | 16    | 14*            | 6*         |

*\* Note Lecture and Standard Hours in this table are represented as “standard hours” of instruction. To determine the actual hours spent in lecture and lab activities and settings, multiple the standard hours by 18.*

### **ECONMT 100: (OSHA) Safety Standards: Construction and Industry**

This course provides instruction on industry safety and health rules as it applies to workers and employers within the construction industry. Topics such as fall protection, lock out tag out procedures, PPE, excavations, etc. are covered. Participants that meet the required hourly attendance and successfully pass the final exam will be eligible to receive their OSHA (30 hr) safety-training certificate.

### **BLDGCTQ 10: Energy and Utility Industry Careers**

This course reviews high demand jobs in the energy and utility industry and assists students in deciding on an appropriate career path. Hiring process and interview skills will be explored and fitness for duty and other physical and physiological characteristics will be discussed. An A to Z guide to private, state, federal, and international career opportunities will be presented.

### **ECONMT 115: Fundamentals of D.C. Electricity**

This course covers the basic principles of D.C. electricity. Analyzing series, parallel and complex circuits, using Ohm's law, the power equation, and Kirchoff's laws.

### **ECONMT 116: Hand Tools and Wiring Practices**

This course covers the proper use of tools, conductor identification and selection criteria, and industry standards for splicing and termination of conductors. An introduction to various codes and related publications is also included.

### **ECONMT 129: Fundamentals of Alternative Current**

This course focuses on the generation of electrical sine waves and response of various circuits when A.C. is applied. Mathematical analyses of resistive circuits are studied.

### **ECONMT 119: Applied Electrical Calculations and Measurement**

This is an entry-level course in electrical calculations with special emphasis on the application problems encountered in the construction industry.

### **ECONMT 173: Electrical Mathematics**

This course studies the mathematics of varied problems encountered in the electrical trades. The course reviews prime numbers, fractions, and decimals, powers, signed numbers, algebraic and simultaneous equations and applications involving electrical formulae.

**MATH 115 or Higher: Elementary**

Topics include signed numbers, variables, the order of operations; addition, subtraction, multiplication and division of signed numbers and polynomials. Solve linear equations, inequalities; factor, graph. Solve word problems, systems of equations, rational equations, radicals and quadratic equations.

Energy Efficiency Certificate of Achievement. The next certificate in the “stackable” certificate and degree program is the Energy Efficiency Certificate of Achievement. This program has already received approval from the California Community Colleges Chancellors Office. Provided below is a table that summaries the core courses and hours for this certificate program. Specific course descriptions are provided following the table.

| Course                        | Title   | Units | Lecture Hours* | Lab Hours* |
|-------------------------------|---|-------|----------------|------------|
| <b>Core Technical Courses</b> |   |       |                |            |
| ECONMT 100*                   | Occupational Safety   | 2*    | 2*             | 0          |
| BLDGCTQ 007                   | Weatherization – Practical Energy Efficiency Techniques     | 3     | 3              | 0          |
| BLDGCTQ 008                   | Weatherization – Energy Efficiency Practices                | 1     | 0              | 3          |
| BLDGCTQ 009                   | Energy Auditor – Residential                                | 3     | 0              | 3          |
| BLDGCTQ 012                   | Energy Auditor – Residential Practices                      | 1     | 0              | 3          |
| BLDGCTQ 921                   | Cooperative Education, Building and Construction Techniques | 2     | 2              | 0          |
| Subtotal Units                |   | 10    | 5*             | 9*         |

*\* Note: This course also meets the requirements for the Energy Systems Technology Fundamentals Certificate of Achievement (see above). In addition, Lecture and Standard Hours in this table are represented as “standard hours” of instruction. To determine the actual hours spent in lecture and lab activities and settings, multiple the standard hours by 18.*

**\*ECONMT 100: (OSHA) Safety Standards: Construction and Industry**

This course provides instruction on industry safety and health rules as it applies to workers and employers within the construction industry. Topics such as fall protection, lock out tag out procedures, PPE, excavations, etc. are covered. Participants that meet the required hourly attendance and successfully pass the final exam are eligible to receive their OSHA (30 hr) safety-training certificate.

**BLDGCTQ 007 - Weatherization - Practical Energy Efficiency Techniques**

This course provides instruction on various techniques that can be used to weatherize homes and other structures. The course is suitable for application by a professional home or energy inspector. Homeowners would also benefit from the knowledge and application of the simpler techniques. Efficiency techniques related to: Energy basics, sealing, insulating, window replacement/installation, environmental air, water, appliance energy efficiency, and lighting are just some of the areas that are covered.

#### **BLDGCTQ 008 - Weatherization - Energy Efficiency Practices**

This course provides laboratory exercises to build skills necessary for the effective application of energy techniques that can be used to weatherize homes and other structures. Course is suitable for application by a professional weatherization contractor training entry level workers or a homeowner looking to improve their own home. Efficiency practices related to: Energy basics, sealing, insulating, window replacement/installation, environmental air, water, appliance energy efficiency, and lighting are just some of the areas that are covered.

#### **BLDGCTQ 009 - Energy Auditor – Residential**

A course focusing on residential energy requirements, loss and efficiency. How energy is used and lost will be discussed, along with the testing techniques and approaches to measure the amount of energy lost. Students learn the components of an energy audit report and complete necessary forms.

#### **BLDGCTQ 012 - Energy Auditor – Residential Practice**

A course focusing on the practical application of residential energy requirements, loss and efficiency. Testing techniques and measurement the amount of energy lost. Students perform actual energy audits of simulated structures and complete necessary forms.

#### **BLDGCTQ 921 – Cooperative Education – Residential Practice**

This is an individually tailored course in which a portfolio documenting several specific educational goals is developed by the student, instructor and employer. The instruction will be accomplished on the job with activities undertaken by the student and supervised and evaluated by the employer and instructor of record.

Clean Energy Technician AS Degree with an Emphasis in Energy Efficiency.  
Requirements for the Clean Energy Technical AS degree with an emphasis in Energy Efficiency may be satisfied by completing a minimum of 42 units in the required fundamentals, core technical, and advanced courses and an additional 18 units in general education courses. In addition to the required courses comprising the Energy Systems Technology Fundamentals and Energy Efficiency Certificate of Achievement

programs, the following advanced technical courses are required for the AS degree.

| Course  | Title  | Units | Lecture Hours* | Lab Hours* |
|---|--|-------|----------------|------------|
| <b>Advanced Technical Courses</b>   |  |       |                |            |
| ECONMT 110  | Renewable Energy Systems   | 3     | 3              | 0          |
| CRPNTRY 148   | Computer Assisted Estimating                                     | 3     | 1.5            | 4.5        |
| REF A/C 100   | Project Management   | 3     | 3              | 0          |
| <b>Code Course Option – Choose 1 of the Following</b>   |  |       |                |            |
| ECONMT 171  | Electrical Codes and Ordinances                                  | 3     | 3              | 0          |
| PLUMBNG 28  | Plumbing Code I  | 3     | 3              | 0          |
| <b>Other Course Requirements –<br/>1 or more courses from the following list of courses to reach 60 units total</b> |  |       |                |            |
| REF A/C 105   | Solar Thermal Theory   | 3     | 3              | 0          |
| REF A/C 110   | Solar Thermal Practices  | 2     | 0              | 6          |
| REF A/C 165   | Thermal Heat Storage   | 4     | 1.5            | 4.5        |
| ECONMT 105  | Fundamentals of Solar Electricity                                | 3     | 3              | 0          |
| ECONMT 205  | Solar Energy Installation & Maintenance Principles and Practices | 2     | 0              | 6          |
| Advanced Technical Totals   |  | 16+   | 10.5-12.5      | 4.5-10.5   |

|  | Units   | Lecture Hours* | Lab Hours*    |
|--|---------|----------------|---------------|
| Total Fundamentals, Core Technical, and Advanced Technical Units and Hours | 42<br>+ | 29.<br>5-31.5  | 19.<br>5-25.5 |

*\* Note Lecture and Standard Hours in this table are represented as “standard hours” of instruction. To determine the actual hours spent in lecture and lab activities and settings multiple, the standard hours by 18.*

### **ECONMT 110: Renewable Energy Systems**

This course covers energy basics, solar basics; active and passive solar, solar-thermal, solar-electric, wind, water; hydropower, wave and tidal power, bio-fuel and biomass resources, geothermal power, energy storage, and hydrogen fuel cells. Both large and small scale, grid interactive and stand alone systems will be discussed. Energy collection, site evaluation, design analysis of various systems, material use, and methods of construction (“green building”) are also covered, along with overviews of



California and US energy policy and global energy use. This course is designed for students interested in a career in the renewable energy industry.

**CRPNTRY 148: Computer Assisted Estimating I**

Instruction is given in the use of a personal computer to make 2D and 3D design drawings, with an emphasis on conforming to the Uniform Building Code and producing a materials list.

**REF A/C 100: Project Management**

This course provides project manager instruction. Topics covered include blueprint reading, Microsoft spreadsheets, Microsoft Word documents, Microsoft Project, design build criteria, estimating, change orders, request for information, GANTT Charts, scheduling, schedule of values, purchase orders, submittals, transmittals, reading of air balance reports, warranty letters and close out packages.

**CODE COURSE OPTIONS**

**ECONMT 171: Electrical Codes and Ordinances**

Basic electrical codes and ordinances are the focus of this course. General codes, wiring methods and fittings, and circuit requirements specified in the various ordinances are reviewed.

**OR**

**PLUMBNG 28: Plumbing Code I**

Instruction is given in plumbing codes and ordinances that affect rough-in work, in city and county areas. Installation of wastes, vents, cleanouts, traps, gas fittings and gas vents, and water pipe requirements are reviewed.

**OTHER TECHNICAL REQUIREMENTS** – 1 or more courses from the following list of courses to reach 60 or more units:

**REF A/C 105: Solar Thermal Theory**

This course is designed for students interested in a career in the solar thermal industry. The fundamental principles and functions related to the solar thermal industry will be introduced. This course covers the theory, planning, installation, maintenance and necessary components for a solar thermal water system. The specifics for pools heating systems are also reviewed. Basic heating, plumbing, and related concepts are covered.

**REF A/C 110: Solar Thermal Practices**

This course is designed for students interested in a career in the solar thermal industry. The fundamental practices and functions of the solar thermal industry will be introduced. This course covers the skills and practices for planning, installation, and maintenance of all the necessary components for a solar thermal water system.

### **REF A/C 165: Thermal Heat Storage**

Thermal energy storage and heat recovery principles of TES and basic definitions are the focus of study in this course. Load profile and electric cost are introduced and system design including space requirements and component election based on load profiles and costs are covered.

### **ECONMT 105: Fundamentals of Solar Electricity (3)**

*Lecture: 3 hours*

This course is designed for students interested in a career in the solar industry. The fundamental principles and functions of photo voltaic industry will be introduced. This course covers planning, installation, maintenance and all the necessary components for a photo voltaic system. The transmission and distribution of electric power will be reviewed. Basic concepts of electricity, identification, functions and operations of components will be surveyed.

### **ECONMT 205: Fundamentals of Solar Electricity**

This course is designed for individuals that have the basic electrical and mechanical skills of an energy technician or electrician and are looking to expand into the renewable energy field. This is a “hands on” class to develop the fundamental principles and practices for installation and maintenance of solar, wind, and similar renewable energy systems. This course covers basic planning, installation, and maintenance of the necessary components for various renewable energy systems.

## **1.5. Classroom to On-the-Job Experiences**

- 1.5.1. Please explain how in-class skills were applied in recruiting on-the-jobs internships. Also, include a narrative summary of the on-the-job training/shadowing (hours required for completion) and any employer/student feedback.

*Response:*

On-the-job training participants were monitored by LATTC staff. A database tracking system was put into place in order to ensure that all participants' progress was monitored, competencies were recorded, and follow-up activities were conducted.

Training faculty developed and utilized a weatherization and employability skills rubric to assess each participant. In addition to demonstrating skills and techniques to LIEE standards, the rubric includes several employability skill rating including attitude, work habits, team work, and communication skills to name a few. The rubric also included participants' results on the weatherization math exam and weatherization knowledge post-test. Based on participants' scores on all of these factors, the instructor recommended them for employment or referred them for additional training.

LATTC staff members maintained contact with employers to ensure that the classroom training was preparing participants for success on the job.

Individualized, follow-up sessions were held with all participants to support them in their interviews and on-the-job transition. Participants who were involved with on-the-job were enrolled in college Cooperative Education courses and tracked by faculty with input from TELACU and CES.

- 1.5.2. If applicable, identify any challenges faced on the job but not addressed through the in-class skills learned. Were these skills addressed through other means (IOU specific training, other pre-requisite courses, etc.)?

*Response:*

The employers, TELACU and CES, have both been indicated satisfaction with the quality of the training and the knowledge and abilities of the participants.

- 1.5.3. Please provide the participation rate of students who went on to complete the on the job training/shadowing.

*Response:*

As of December 31, 2010, 23 individuals had engaged in on-the-job training.

- 1.5.4. Based on the experience of executing the pilot, please provide your recommendation for the on the job contractor training/shadowing experience. (Include the specific areas and measures that each cohort should experience, the length of the training/shadowing, and the timing of the experience within the overall curriculum (mid course, before or after the IOU specific training, etc.?)

*Response:*

The WE&T Pilot included a four-week on the job shadowing experience with participating LIEE contractors. This on the job experience was extremely helpful for preparing participants for LIEE Program measures. Participants were also concurrently enrolled in a college work experience (e.g., Cooperative Education) course to allow LIEE faculty the ability to, with training participants, establish work objectives and monitor progress. This strategy also provided a forum for LIEE faculty to obtain input from the LIEE contractor's on participant skill level and recommendations for improvement.

Based on the findings of the WE&T Pilot, it is recommended that a one-month on the job contractor training/shadowing experience be conducted at the conclusion of the technical training for "Basic Weatherization" measures (e.g., Caulking, Weatherstripping, Cover Plate Gasket, Window Replacement, Glass Replacement, Water Heater Insulation, Water Heater Pipe Insulation, Energy-Saver Shower Head and Faucet Aerator, Evaporative Cooler and Air Conditioner Vent Cover, Thread-Based Compact Fluorescent Lamp, Hard-Wired Compact Fluorescent Fixture, and Refrigerator Replacement). This experience enables participants to demonstrate the ability to complete the LIEE measures to the standards and within the expectations of LIEE contractors. It is also recommended that participants concurrently enroll in a Cooperative Education course while completing the training/shadowing experience for the reasons stated above.

It is further recommended that upon completion of the one-month on the job contractor training/shadowing experience, participants return for a twice-a-week training on "Advanced Weatherization" measures while simultaneously continuing employment with a LIEE contractor (e.g. an "apprenticeship" model). Advanced Weatherization measures include Natural Gas Appliance Testing, Exterior Door Replacement, Natural Gas Water Heater Replacement, Blower Door, Duct Testing and Sealing, Natural Gas Central Forced Air Heating System Repair and Replacement, and Natural Gas Wall and Floor Furnace Repair and Replacement.

More specific information on the LIEE measures, skill topics, and duration of training for the Basic Weatherization and Advanced Concepts and Practices (e.g., Advanced Weatherization) training are outlined in section 1.4.1 above.

**1.6. Enrollment Levels**

1.6.1. Please comment on whether enrollments have decreased since the beginning of the semester, and explain.

*Response:*

Multiple, short-term trainings were conducted during the WE&T Pilot rather than one training over the length of a semester. Individuals were enrolled as “cohorts” in each of the trainings. A total of 12, cohort trainings were conducted and are itemized in the table below. In summary, a total of 285 individuals participated in the cohort trainings and 23 individuals participated in on-the-job training.

*Participant Summary – January 1, 2010 – December 31, 2010*

| <b>Training Cohort</b> | <b>Cohort/– Group Type &amp; Topic</b> | <b>Participant Background</b>   | <b>Number of Participants (as of December 31, 2010)</b> | <b>Number Placed in OJT with Contractor Partner (30 days)</b> | <b># Continued Employment (As of 12/31/2010)</b> |
|------------------------|--|---|---|---|--|
| Jan–Feb 2010           | Beginner Group – Installer             | No previous construction experience who lack a high school diploma (#116)   | 18  | 0   | 1  |
| Jan 2010               | Advanced Group- Installer              | Participants who have either one semester of college construction-related coursework and/or have six months experience working in a construction-related job (#115) | 24  | 4   | 6  |

| <b>Training Cohort</b> | <b>Cohort/- Group Type &amp; Topic</b>   | <b>Participant Background</b>  | <b>Number of Participants (as of December 31, 2010)</b> | <b>Number Placed in OJT with Contractor Partner (30 days)</b> | <b># Continued Employment (As of 12/31/2010)</b> |
|------------------------|--|--|---|---|--|
| Mar 2010               | Weatherization Outreach Specialist Prep  | No previous construction experience. (#119)  | 18  | 8   | 9  |
| Mar 2010               | Weatherization Installation Advanced     | Participants who have either one semester of college construction-related coursework and/or have six months experience working in a construction-related job | 9   | 7 TELACU Riverside  | 5  |
| Mar-Apr 2010           | Weatherization Installation              | Varied (#121/122)  | 35  | 2   | 11   |
| May 2010               | Weatherization Outreach and Installation | Various backgrounds from previous construction experience to no experience.(#135)  | 35  | 2   | 6  |
| May-July 2010          | Comprehensive                            | Various backgrounds from previous construction experience to no experience.(#134)  | 26  | NA  | 14   |
| June 2010              | Weatherization Outreach and Installation | Diverse backgrounds from previous construction experience to none.(#136, 130, 145)   | 44  | 0   | 9  |

| Training Cohort | Cohort/- Group Type & Topic             | Participant Background                         | Number of Participants (as of December 31, 2010) | Number Placed in OJT with Contractor Partner (30 days) | # Continued Employment (As of 12/31/2010) |
|-----------------|---|--|--|--|---|
| Aug 2010        | Weatherization Outreach Specialist Prep | No previous construction experience (#149/150) | 15   | 0  | 7   |
| Sept 2010       | Energy Efficiency Retrofit Measures     | Multiple Layers (#154)                         | 20   | 0  | 0   |
| Oct 2010        | Energy Efficiency Retrofit Measures     | Multiple Layers (#155/156)                     | 41   | 0  | 0   |
| <b>Total</b>    |   |  | <b>285</b>                                       | <b>23</b>  | <b>68</b>                                 |

## 1.7. Final Hiring Information

- 1.7.1. Please present the final hiring data of the pilot participants. Include any recommendations on ways to increase these numbers and reduce barriers to LIEE employment.

*Response:*

Final Hiring Data. As of December 31, 2010, 68 individuals are currently employed. Twenty-six (26) individuals are employed with LIEE contractors--19 with TELACU, 4 with CES and 3 with Maravilla.

Recommendations for Increasing Employment. As was stated previously, of concern is whether or not underprepared individuals will have the motivation or ability to commit the time and effort it will take to obtain the requisite skills and competencies for employment considering their perceptions of the "pay off" that will result in terms of salary and career advancement opportunities. In other words, typically individuals who are interested in these occupations and training have multiple barriers to address--including significant gaps in math competencies and technical skills and background

issues--but are looking for short-term solutions that enable them to obtain a job and income quickly (e.g., in a matter of a few months).

It is recommended that thoughtful consideration be given to how to address the disparity between the time and effort or "investment" that is required of underserved, underprepared individuals to garner these occupations and the "pay off" that results in terms of the salary and career advancement opportunities. In particular it is recommended that consideration be given to establishing more entry-level occupations in a weatherization/energy efficiency career pathway requiring lower level skills and competencies then provide opportunities for additional paid experience and training to move individuals to occupations with higher skill/competency and eligibility requirements.