June 10, 2011

Ms. Carol Zabin
Donald Vial Center on Employment in the Green Economy
Center for Labor Research and Education
2521 Channing Way #5555
Berkeley CA 94720-5555

RE: ESAP/LIHEAP/WAP Contractors endorse "RHA, Inc. Comments on the California Workforce Education and Training Report."

Dear Ms. Zabin:

Last week a draft copy of RHA's comments was distributed to the network of ESAP/LIHEAP/WAP contractors and organizations and the final RHA document reflects input from those organizations. RHA's attached "Comments on the California Workforce Education and Training Report" ("Report") accurately describe the Report's errors of fact and interpretation.

We understand the Report will be a key element in the shaping of the opinions of regulators, legislators, and policymakers when they consider the next steps necessary to prepare California's workforce for the Green Economy.

The Reports states, "*The IOU LIEE programs, whose goal is to help low-income families reduce energy bills, may have an opportunity to both increase energy savings and improve access to good jobs if they are restructured.*" But the Report makes fundamentally mistaken assessments of the PUC and federal low income programs and, therefore, makes fundamentally mistaken recommendations for restructuring and improving the programs.

The Report paints with an overly broad brush, describing problems which may exist in the non-low income market but which do not exist in the heavily regulated low income programs. For example,

1. *"...the key workforce issue that surfaced in our interviews was the high incidence of poor quality installation... of new HVAC systems..."*
   As described by RHA, this is not the case for the low income programs in which HVAC installations must pass inspection before payment.

2. *"This same issue is prevalent in the residential retrofit and commercial advanced lighting sectors, where poor quality installation and the resulting failure to deliver on expected energy savings has undermined market growth, including financing."*
   As accurately explained by RHA, most low income program lighting quality issues observed in the field have not been due to poor quality installations, but from poorly manufactured lamps and ballasts, which have led to early lamp and ballast failure.

3. RHA correctly points out the Report's "characterization of LIEE and DOE WAP (ARRA) programs as taking "*a traditional single measure approach*" does not accurately

represent the approach used in LIEE (now ESAP) and DOE WAP low-income programs."

4. *"...retrofit work in the residential sector is done without the required permits, so the work is never inspected to ensure it is compliant with these codes."*
While that may be true of the non-low income market, ESAP and LIHEAP work is inspected and most weatherization work does not require permits in most jurisdictions and do not require Title 24 analysis (with the recent exception of HVAC system replacement). Installing insulation, water saving devices, caulking, weather stripping, energy-efficient lamps, and other energy measures (tuning up a heating and/or air conditioning system) do not require permits.

5. As explained by RHA, the Report presents an incomplete picture of ESAP/LIHEAP/WAP workforce training, quality assurance practices, and pay practices.

We hope you can appreciate the need to update your report to present a more accurate picture of the state's low income energy efficiency programs.

Sincerely,

James Hodges for
The East Los Angeles Community Union (TELACU)
The Maravilla Foundation
The Association of California Community and Energy Services (ACCES)
The Pacific Energy Policy Center
The Association of Rural Northern California Energy Providers (ARNCEP)
Redwood Community Action Agency
The Southern California Forum for Energy Efficiency,
Environmental, and Human Services Providers (SoCal Forum)

CC:
Commissioners
Julie Fitch
Jeanne Clinton
Low Income Oversight Board
Service List of A0805022

RHA
program design+management

June 8, 2011

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RE: *Comments on the California Workforce Education and Training Report*

To Whom It May Concern:

As a longtime provider of energy efficiency programs in California with extensive experience in workforce training and development, Richard Heath and Associates, Inc. (RHA) recognizes the importance of a thorough review of California's workforce education and training needs in the energy efficiency sector. RHA understands that with a trained and prepared workforce, the more California can accomplish in energy efficiency. Enclosed please find our observations and comments on the California Workforce Education and Training Report.

Thank you for the opportunity to submit our observations and comments. Please feel free to contact the undersigned should you have any questions or if you would like to discuss the enclosed document further.

Sincerely,

Tom Barrett
Senior Advisor,
Strategic Planning and Technical Resources

Comments on the California Workforce Education and Training Needs Assessment

Prepared by Tom Barrett
RHA, Inc.

RHA recognizes the importance of a thorough review of California's workforce education and training needs in the energy efficiency sector. The better trained and prepared the workforce, the more we can accomplish. As a longtime provider of energy efficiency programs in California with extensive experience in workforce training and development, we provide our observations and comments on Part One of the report as listed below.

1. Page XII

"The residential sector represents about one-third of California's current electricity and natural gas consumption. The EE Strategic Plan sets ambitious targets for energy use reduction in existing housing stock, and aims to give all eligible low-income customers the opportunity to participate in the fully-subsidized Low-Income Energy Efficiency (LIEE) program. The statewide residential retrofit incentive program mandated in AB 758 is now under the umbrella of Energy Upgrade California and has a budget of approximately $275 million from all funding sources. The IOU LIEE program has a budget of approximately $310 million for 2010 and the federally funded low-income programs have increased their budget to $257 million due to a temporary influx of 2009 American Recovery and Reinvestment Act (ARRA) funds."

"In all three sectors, the key workforce issue that surfaced in our interviews was the high incidence of poor quality installation, affecting immediate energy savings and the growth of the energy efficiency sector. This issue is most dramatic in the HVAC sector, where prior studies have reported that 30 to 50 percent of new HVAC systems and up to 85 percent of replacement systems are installed incorrectly, and that by 2020 potential energy savings from higher quality HVAC installation and maintenance could eliminate the need for the equivalent of two combined- cycle gas-fired 500 MW power plants. This same issue is prevalent in the residential retrofit and commercial advanced lighting sectors, where poor quality installation and the resulting failure to deliver on expected energy savings has undermined market growth, including financing."

Comments:
By stating "in all three sectors," the author claims there are significant quality issues within the HVAC sector, residential retrofit (low-income and retrofit incentive programs) sector, and commercial lighting sector, yet the authors provide supporting data for only the HVAC, residential incentive, and commercial lighting programs. The inclusion of low-income programs in the residential sector implies there are significant quality issues in this area, when this is not the case according to the full report.

While the author is certainly correct that "prior studies" have found "that 30 – 50 percent of new HVAC systems and up to 85 percent of replacement systems are installed incorrectly", this statement is based on a report published in 1999 and based on studies conducted in the mid-1990s by John Proctor and others. The findings of these studies resulted in utility-provided, HVAC installation training for contractors and innovative incentive programs to address the inadequacies identified by these reports. The CEC also responded by adding more Title 24 requirements to address these issues at the permit compliance level where they had been ignored before.

Studies conducted by RHA in the mid-1990s on duct system installations found that HVAC installers were not installing ducts to code or using the proper materials to seal ducts, which resulted in duct failure, leaks, and poor performance. As a result of these studies, PG&E developed a comprehensive program to train contractors on proper duct installation and sealing; provide rebates to incentivize contractors to install ducts to code; produce duct installation standards for contractors; and to monitor the program through quality assurance and control processes by utility personnel and third-party inspectors. These studies also informed the CEC to require duct testing as part of the Title 24 permit process to ensure proper installation. Similar studies today would provide vastly different results than those cited in the WE&T Needs Assessment.

Commercial lighting retrofit programs are described in the WE&T report as also suffering from poor quality installations, But most quality issues observed in the field have not been due to poor quality installations, but from poorly manufactured lamps and ballasts, which led to early lamp and ballast failure, much to the dissatisfaction of customers. RHA's commercial lighting retrofit program technicians (trained in-house) have installed tens of thousands of CFLs, energy-efficient lamps and ballasts, and energy-efficient fixtures with almost all "quality" issues stemming, not from poor installation practices, but from equipment failures. It is unclear how the author reached the conclusion that commercial lighting retrofit programs suffer inadequate training which results in poor quality installations as our experience with commercial lighting retrofit programs, documented by high customer satisfaction levels and positive evaluations by utility verifiers, doesn't result in the same conclusion.

2. <u>Page XIII</u>

> *"Low-Income Energy Efficiency programs, which have received significant additional funding through both one-time ARRA funds and on-going ratepayer funds, continue to take a traditional single measure approach to energy retrofits. Sometimes this work is based on subcontracting individual measures to other firms or individuals in ways that discourage leveraging of all available funding sources or linking of measures in a whole-house approach. The IOU LIEE programs, whose goal is to help low-income families reduce energy bills, may have an opportunity to both increase energy savings and improve access to good jobs if they are restructured."*

Comments:
The authors' characterization of LIEE and DOE WAP (ARRA) programs as taking "a traditional single measure approach" does not accurately represent the approach used in LIEE (now ESA – Energy Savings Assistance) and DOE WAP low-income programs. Low-income energy efficiency programs use a whole-house, "prescriptive" approach that is designed to install "all feasible measures" and do not take a "single measure" approach. This statement implies that low-income weatherization programs are not sophisticated or effective as the Whole House programs, which is not true.

In the low-income, whole-house, prescriptive approach retrofit measures are "prescribed" from a standardized list of cost-effective residential energy measures. These lists of measures have been vetted through numerous in-situ studies and building simulations. They are also Climate Zone based and typically meet stringent cost-effectiveness criteria required of each program's funding sources. The funds available on a per unit basis for each program and the cost-effectiveness criteria are different, so while both programs install similar measures, the State's Federally-funded programs can spend more per household and operate from a longer list of measures to install. While the lists of measures are not exhaustive, they do cover almost all cost-effective energy retrofits possible. Both programs also address combustion appliance safety issues that may arise from tightening the building shell. In addition, federally funded low-income programs also use a portion of their funds to fix non-energy items that may be hazardous to occupants.

The prescriptive approach eliminates the need to do an energy audit to justify the installation of any of the measures. An assessor or energy specialist identifies measures to be installed on a home from the list, which is passed on to the installation crew. By installing from a list of measures, preselected for cost-effectiveness, the LIEE and WAP programs not only save time, but are also able to spend more on energy saving measures by eliminating the cost of an energy audit for each household.

The "traditional single-measure approach" can be characterized by utility and government-funded, non-low income incentive programs. In these non-low income programs, homeowners and/or their hired contractors purchase and/or have installed an energy-efficient piece of equipment or measure and then apply for an incentive (utility rebate and/or government tax credit). Often contractors use marketing services (sales forces) with limited energy knowledge to market the incentives under the guise of energy savings to homeowners. No trained energy auditor makes a determination as to whether or not the home will benefit from the measure being promoted. The measure may be installed by the homeowner or by a contractor, who may or may not have specific training pertaining to proper installation of the retrofit measure. This approach in the non-low income sector is completely different from LIEE/ESA or WAP approaches and often leads to poorly installed measures, inadequate assessment of energy savings potential, and customer dissatisfaction. Homeowners and untrained contractors can inadvertently cause a number of air quality and safety issues when they seal a home too much or fail to implement combustion appliance safety requirements.

A third approach, the "Whole House Approach", is a "performance approach". This approach utilizes a detailed energy audit and building diagnostics to create a list of energy retrofit measures for the homeowner. The approach is based on the concept of a "house as a system" where changes made to one part effect other parts and this interaction needs to be taken into account to make the house more efficient. Many of these same diagnostic tests are also conducted in the DOE WAP prescriptive approach and the LIEE/ESA program conducts natural gas appliance testing in their prescriptive approach. The end result is very similar to standard weatherization practices; however, as one spokesperson stated at a conference, "Weatherization is a low-income program, whole-house retrofits is not a low-income program."

While the whole-house approach is considered by many to be a "Best Practice" and the "gold standard of residential energy retrofits", the total cost to implement all the recommendations to make an older house energy efficient, can be in the $20,000 - $30,000 range, or more. This type of "up-scale" weatherization work is the "high road" goal that is touted as the place the State's workforce development is trying to reach; however, the cost of doing the work and the ability to for a homeowner to pay for the work is the major obstacle to this approach. Not only may the energy savings never cover the cost of the improvements, but also many people may not be able to finance the work without deep incentives or special financing programs. Economic factors, more than the lack of a trained competent workforce, are impeding the progress of this approach in the non-low income market segment which is larger and consumes far more energy than the low-income segment and has the greatest opportunity for meeting the State's goals.

The low-income programs (DOE WAP, LIHEAP, and LIEE/ESA) utilize program leveraging to provide low-income households with the best package of measures for which they are qualified. Besides program requirements that households receive a minimum number of measures (not a single measure) agencies and contractors strive to provide as much as they can within program limitations. The authors' portrayal of this segment of the energy retrofit market appears to be based on inadequate information. Restructuring existing programs that have function successfully for over 20 years based on the conclusions stated would have little effect on increasing energy savings and improving access to "good" jobs. These programs have already added hundreds of workers at all levels from clerical to managerial to the State's job force.

3. Page 103

> *"The main policy instruments aimed at achieving residential energy efficiency goals in the state are direct-install weatherization programs for low-income households, and incentive programs for homeowners. In addition, Titles 20 and 24 of the California Code of Regulations set minimum standards for appliances and work specifications for home remodels. As mentioned above, these codes were recently updated to require more stringent energy efficiency measures and third-party inspections. However, in many cases remodeling and retrofit work in the residential sector is done without the required permits, so the work is never inspected to ensure it is compliant with these codes."*

Comments:
The authors fail to understand that most weatherization work does not require permits in most jurisdictions. Energy efficiency retrofits also do not require Title 24 analysis, with the recent exception of HVAC system replacement. Installing insulation, water saving devices, caulking, weather stripping, energy-efficient lamps, and other energy measures (tuning up a heating and/or air conditioning system) do not require permits. In many communities, energy efficient window retrofits (which are not part of the LIEE/ESA low-income program) also do not require a permit.

In California, the LIEE/ESA and DOE/LIHEAP programs utilize program-specific Weatherization Installation Standards (WIS), internal QA inspections, and third-party QA/QC inspections. The WIS addresses installation issues that may not be covered by building codes to ensure a quality installation. Each crew has their own WIS Manual in their vehicles to refer to while on the job-site. Third-party inspectors utilize the same WIS manual to inspect Wx contractors' jobs for proper installation. All the low-income programs in the State (LIHEAP, DOE WAP, and LIEE/ESA) require that all HVAC work goes through the permitting, inspection, and signing off process. This is not the same in the private sector where the permit process can be easily avoided.

In PG&E's service territory during the first part of 2011 the "All Contractor Pass Rate" as of April showed that there was a 94.9% pass rate among PG&E's Wx contractors and a 97.8% Contractor Performance Index for installed measures for the first quarter of the year. Measures and/or homes that did not "pass" are corrected after the inspections. Contractors are required to maintain a 90% minimum pass rate in the All Contractor Pass Rate category and a 95% pass rate for the Contractor Performance Index. So while the report is correct that work is never inspected to the building code, it fails to recognize that most weatherization activities are not regulated under building codes and that the quality of weatherization work is determined by standards developed and enforced by the IOUs.

Weatherization work utilizing DOE and LIHEAP funds is also conducted using weatherization installation standards, third-party inspections, and corrective action. When

problems are identified in the field by the QA/QC inspectors, the State's WAP program provides additional in-field training and technical assistance to help poor-performing agencies improve their installation practices to deliver a quality product.

Unlike weatherization measures installed under a State or IOU weatherization program, in the non-low income programs there are no installation standards or third-party inspections of the work to ensure a quality installation.

4. Page 107-108

> *"...WAP and most LIEE workers, including installation workers, are required to attend short-term trainings at approved training facilities (such as PG&E's Energy Training Center in Stockton) before starting work. These training programs provide certificates of completion to workers, which are the only certificates that were identified for the weatherization installer job category in California. PG&E and SCE have established specific training standards and courses; these courses follow a specific set of training standards established by the utilities. However, the other two IOUs do not require their contractors to follow specific standards."*

Each LIEE/ESA weatherization program requires workers to be trained (see the discussion on the first page); however, only PG&E has a formalized weatherization training facility. SDG&E and the SoCal Gas Company require their contractors to train weatherization workers in-house. Gas combustion appliance safety training happens through at the Community Action Partnership of San Bernardino County's Weatherization Training Center.

In SDG&E's case, the program is too small to operate a full-fledged training program. The Wx contractors, who have been successfully (based on QA/QC inspections) working on the program for over ten years train their employees in-house. Two of SDG&E's Wx contractors are also State WAP contractors who have had their workers put through formal Wx training.

SoCal Gas's basic Wx training is provided by a Gas Company employee at the request of the contractor and is held at the contractor's facility.

5. Page 107

> *"Though the WAP and LIEE programs are very similar, the training requirements differ, so that a worker trained for a WAP contractor is required to undergo new training to be eligible to work for a LIEE contractor. The DOE is now funding efforts to align all the major trainings and link them as much as possible to their new voluntary guidelines for skill standards and training, discussed below."*

Comments:
Training requirements are different (see discussion of the training below) between the utility company and State Wx programs. This reflects the amount and type of work to be performed that is based on the funds available. IOU programs were not developed to address every energy issue in every home and yet they have been effective in reducing energy consumption.

DOE has no regulatory authority over IOU weatherization program training requirements, so while it could be developing a set of training standards, its aim is to make training consistent throughout the U.S. for its program (WAP).

Required training for low-income weatherization programs funded by the CPUC (LIEE/ESA) is limited to a series of courses provided by the utility companies (except SDG&E and SoCal Gas Company):

- Basic Weatherization (5 days)
- NGAT or combustion appliance safety (5 days)
- Energy Specialist (8 days)
- Duct Testing and Sealing (1 day)

Required training for Federally-funded LIHEAP, and DOE Wx programs managed by the State (CSD) are required for the following job classification: Assessors/Auditors, Weatherization Installers, and Quality Assurance Inspectors and include the following training:

- Pre-Weatherization Training: Measurement, Energy Basics, Tool Types and Uses, Construction Nomenclature
- Basic Weatherization
- Health and Safety (Basic Workplace Safety (OSHA); Ladders; Slips, Trips & Falls; Heat Exposure; Vermin; and Customer Issues)
- Environmental Hazards (lead, asbestos, mold, etc. awareness training)
- Lead-Safe Weatherization Practices
- Combustion Appliance Safety
- Duct Blaster/Blower Door Diagnostics
- Advanced Weatherization (optional)
- Energy Audit Software training (optional)
- Field Assessment Training (Assessors only)
- Inspector Field Training (QA Inspectors only)

Informal training, AKA apprenticeship, mentoring, on-site training, on-the-job training (OJT), or in-field training, was not discussed in this document. Informal training is the most important aspect of a person's skilled learning path in any technical training program. Formal training provides the knowledge base for activity and information training provides the skill base a worker needs to develop competency. The weatherization training programs rely heavily on the apprenticing and OJT of newly trained crewmembers by "older" crewmembers. SDG&E does not provide basic weatherization training, as their program is too small to warrant the expenditure of a training facility; however, the contractors providing weatherization services have been the same contractors for over twelve years who provide all their training to crewmembers on-site. A couple SDG&E's ESA contractors are also CSD Wx agencies that have received formal training.

With regard to career pathways for weatherization workers to HVAC technician or energy auditor or beyond, it is unlikely to be a straight path process from the low-income weatherization field as most weatherization in the State is done without an energy audit. In these cases, the career pathway typically proceeds from to entry-level position to installer, NGAT technician, Crew Leader, Inspector, Field Foreman, Supervisor, and even Project Manager. At each step employee wages and benefits increase and create the "higher road" opportunities within the industry. While the need for energy auditors is small, the skill set is also very different as energy audits are done with computers and there is a need for a different type of technical training – computer skills and typing for potential energy auditors. This simple lesson of supply and demand was missed by community college administrators who obtained grant funding to train hundreds of energy auditors, who graduated to a market with little demand for their services.

The low to high-skill technical pathway in weatherization also does not exist for many weatherization workers where the higher paying opportunities are from supervisory and management positions. Higher-skilled technical work such as HVAC repair in State-run WAP programs is often "subbed out". A number of agencies and contractors have skilled and trained personnel with HVAC skills and do their own limited HVAC work; however, many do not have HVAC technicians on staff and end up hiring HVAC contractors to do this work. In some cases a weatherization installer with experience sealing ducts could cross over to another company in the HVAC sector. The LIEE/ESA program contracts much of its low-income repair and replacement (R&R) HVAC work to licensed HVAC contractors and is not included as part of the weatherization program.

Community colleges and some four-year colleges jumped into weatherization training in 2009 without talking to weatherization contractors or agencies. If they had, they would have found out that WAP agencies needed to ramp up immediately to meet the additional unit goals and could not wait for students to attend one to three semesters of training. Furthermore, graduates from these programs would still have to complete the State-certified Wx courses to work on its program.

The ARRA funding created an opportunity for hiring more weatherization workers; however, the "ramp-up" for training individuals happened at the same time as the need

for getting units weatherized, so weatherization agencies needed to hire all available workers, trained or untrained, and could not wait for the two-year community college training program to produced trained, unskilled workers. Untrained workers were hired and trained in the industry-training model – short specific technical classes and on-the-job training under the supervision of a more knowledgeable crew person.

6. Page 108

> *"In residential retrofit, the quality issues that surfaced in our interviews included concerns about safety, loss of immediate potential energy savings, and slowing down the expansion of the market for retrofits. Safety concerns were focused mostly sharply on the necessity of testing for appliance combustion safety in order to avoid dangerous buildup of toxic gases inside the building as a consequence of envelope sealing. In terms of immediate energy savings, interviewees identified both single measure quality issues, such as improper installation of insulation, and the more sophisticated diagnostics and workmanship needed for whole house retrofits. Finally, interviewees also emphasized the importance of consumer satisfaction for market expansion. Since growing the market for homeowner investments in energy efficiency retrofits depends in large measure on word-of-mouth advertising and other social marketing, consumer dissatisfaction resulting from inadequate work quality can significantly undermine sector growth.*
>
> *Traditionally IOU incentive programs and low-income weatherization programs have relied primarily on post- installation inspections of a sample of dwellings. This method only captures a fraction of the work that is done, and when poor quality is found, often requires expensive reworking. Though certainly part of any quality assurance package, back-end inspections have not rid programs of quality concerns."*

Comments:
In many cases in the non-low income sector, single measure installations such as ceiling insulation, wall insulation, and appliance replacement are performed by individuals without training, installation standards, and the benefit of building codes. There is no quality assurance or control for these installations and often the only verification is to ensure that the item was installed before a rebate is issued.

Single measure installations should not be confused with LIEE/ESA programs. In these programs, installers are trained and monitored through third-party quality assurance and follow-up post inspections, which can result in consequences to the contractors. Even IOU rebate programs have a "back-end" quality inspection program.

Back-end inspections will never rid programs of quality concerns; however, it is impossible to conduct "front-end" inspections and "upfront contractor requirements, including licensure, permitting, a standard agreement, and a mandated orientation course" or hiring only individuals and companies sporting "certificates." These requirements are

encouraged; yet do not guarantee quality installations, especially in a cost-competitive market where contractors underbid each other and to cut cost by cutting corners and hiring "low-road" workers to make a profit for their efforts.

The author does not discuss what "loss of immediate potential energy savings" and why this is an installation and training issue.

7. Page 109

> *"The "Recovery through Retrofit Workforce Working Group," convened by the Obama administration to scale up the residential retrofit market, identified the lack of a skilled and credentialed workforce as a key obstacle to the industry's growth. As a result, the U.S. Department of Energy (DOE) has developed a set of industry guidelines for worker certifications and training program accreditation for the four main field job categories: Installer/ Technician, Crew Chief, Energy Auditor, and Quality Assurance Inspector.45 These guidelines were created through rigorous technical analyses of job tasks and minimum technical requirements, standard work specifications, and essential knowledge and skills for workers in each job category. The development of these guidelines followed well-known protocols that included substantive feedback from industry and educators. They provide the first standard for the entry level job category of weatherization installer/technician, which can be used to ensure workers are prepared to do quality work. Now, BPI, WAP, and training programs around the country are working with DOE to align their standards with these basic guidelines. Los Angeles Trade–Technical College (LATTC) is one of the training centers funded by DOE and is working to align the WAP, LIEE, and other curricula. The DOE is encouraging these voluntary standards, and it remains to be seen whether these guidelines will be adopted as mandatory certification requirements by any major state or local retrofit program."*

Comments

The author fails to credit the State's WP and LIEE/ESA programs with the programs set up to train weatherization workers, energy specialists, energy auditors, assessors, and quality assurance inspectors which have been in place for years. The effort that DOE is undertaking in developing standardized training and installation guidelines is aimed at states and organizations that have never provided training to their weatherization workers or have even provided weatherization services to low-income households. California has been a national leader in weatherization since 1978 and most training programs and installation standards used by DOE WAP programs were derived from California's weatherization training and standards.

While LATTC is trying to "align" WAP, LIEE/ESA, and other weatherization and energy retrofit curricula, they are basically the same training materials (for WAP and LIEE/ESA), written by the same person (James E. O'Bannon of RHA). Aligning training

or developing a "one training fits all" approach will not necessarily work until program delivery and standards are standardized and aligned.

8. Page 109

> *"The challenge LATTC articulates is that in order for certification to actually lead to strong career pathways with higher skills and higher wages, there must be adequate floors on wages and wide acceptance of the value of certification within the industry, so that employers are willing to pay certified workers more. It is not clear yet whether the residential market can offer these conditions."*

Comments:
The authors fail to point out that while it would be nice to have "floors on wages and acceptance of the value of certification," contracts are awarded to weatherization providers based on price of services delivered. When the Request for Proposals (RFP) is announced by a utility company or the CPUC for LIEE/ESA programs, winning bidders have to provide the greatest number of units served at the lowest cost. Over the years, successive bidding cycles demand that proposers increase the number of units to be served and measures to be installed at lower costs. This funding deflation works against labor and material cost inflation and the CPUC and utilities require competitive companies to provide "more for less" it forces the price contractors can pay for labor down. In other words, the bidding process drives the "low-road" response regardless of the certifications and skills of the workforce.

At the State level, DOE and LIHEAP ARRA funding had the opposite effect on labor costs. The Davis-Bacon requirement for minimum labor rates drove up the cost of labor, which benefitted workers. The Davis-Bacon labor rates came directly from the DOE and LIHEAP funded weatherization programs, which are typically higher than other construction rates in most counties due to the nature of the agencies with Wx programs. However, funding is provided from the Federal government to pay for these labor rates and measures must meet a cost-effectiveness criterion that covers these costs. This cost-effectiveness requirement is significantly different from the CPUC's cost-effectiveness criteria, which is continually ratcheted downward while the federal criteria only covers the direct cost-to-install and the actual cost of the measure. Administrative and other costs are ignored in the DOE cost-effectiveness calculation, making cost-effectiveness a very relative term.