

## Summary

Identification of five gaps in HVAC installer and technician certifications. Suggested actions by state and local government, utilities, educators, contractors, technicians, associations, and other stakeholders.

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## Use of this Document

*This document provides gaps in HVAC workforce certifications and recommendations.*

*It is based on an official [WHPA Work Product](#) of January 15, 2014, titled “Certification Working Group Gaps Report.” This Work Product was developed by the WHPA Certification Working Group (Workforce Education & Training Committee).*

*This document, and also the WHPA Work Product, may be used in part or whole at no charge. Attribution to the Western HVAC Performance Alliance is requested.*

*We would also ask that you inform the WHPA through [info@performancealliance.org](mailto:info@performancealliance.org) if you have made use of either document, so that we can inform and encourage the hundreds of volunteers who donate their time to providing expert HVAC advice in order to support energy efficiency objectives.*

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## Gaps in HVAC Workforce Certifications and Recommendations

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## Background

According to the California Workforce Education and Training Needs Assessment, impediments to the California Public Utility Commission's (CPUC's) goals include the high incidence of poor quality HVAC installation.<sup>1</sup>

This issue is most dramatic in the residential sector where studies have reported that 30 to 50 percent of new installations and up to 85 percent of replacement systems are installed incorrectly.<sup>2</sup> Poor installation techniques that include improperly sized equipment and ductwork, air duct leakage, and refrigerant line pressure drops have profound negative effects on the equipment operation and efficiency.

Improper installation and/or poor maintenance may cancel out the benefits of high air conditioner SEER rating or high furnace efficiency, depriving consumers of any added value from their investment in HVAC improvements.

<sup>1</sup> DONALD VIAL CENTER ON EMPLOYMENT IN THE GREEN ECONOMY (2011). CALIFORNIA WORKFORCE EDUCATION AND TRAINING NEEDS ASSESSMENT: FOR ENERGY EFFICIENCY, DISTRIBUTED GENERATION AND DEMAND RESPONSE: UNIVERSITY OF CALIFORNIA BERKELEY.

<sup>2</sup> MESSENGER, M. (2008). STRATEGIC PLAN TO REDUCE THE ENERGY IMPACT OF AIR CONDITIONERS. CALIFORNIA ENERGY COMMISSION STAFF REPORT. CEC-400-2008-010. P.31

Less than 10 percent of HVAC systems obtain legally required pre-installation local building permits and 30-50 percent of new central air conditioning systems are not being properly installed. As a result, Californians pay a large price for the lack of quality installation and maintenance, with commensurate poor performance."<sup>3</sup>

<sup>3</sup> CALIFORNIA ENERGY EFFICIENCY STRATEGIC PLAN, JANUARY 2011 UPDATE, P. 53

To reframe the objective of the Working Group as a driving question, "What are the gaps between where our HVAC workforce is today and where it needs to be by 2020 and how can we remove those gaps?" The five gaps described in detail and solutions recommended by the Working Group are presented below.

## **Gap 1: No Career Lattice for the HVACR Industry**

- A career lattice for the HVACR industry should be established identifying milestones via competency based professional certification and criteria for maintaining those credentials.

### **Recommendations:**

- Residential and commercial panels. Convene two panels (Residential & Commercial) to identify common competencies to be certified by all Certification bodies offering professional personnel certifications to California's HVAC technicians in the residential and commercial sectors.
- Representation on panels. The panels will consist of one individual from each of the organizations listed below:

NATE	NEBB	HVAC Excellence	TABB
RSES	BPI	UA	Green Mechanical Council
ASHRAE	AHRI	AABC	IFMAAEE NCI

The Panel should consist of knowledgeable and experienced individuals from each of the personnel certification agencies with a neutral moderator not engaged with the certification agencies.

- Panel functions and authority. The panel will identify the minimum core competencies for the various tiers of the lattice for the Progressive Levels of Certification or stackable credentials that allow technicians to identify their knowledge and skill level at each stage of their career, and understand the next step necessary for career level advancement. The panel may also identify minimum exam requirements (e.g., written exams, field practical exams, virtual reality exams) and minimum certification maintenance and recertification requirements (e.g., continuing education, recertification time frame, re-examination requirements) commonly required and considered sufficient.
- Interim approval of certification body. The list of personnel Certification Bodies listed above shall be conditionally approved as authorized Certification Providers if they meet the eligibility requirements (if any) established by this committee within 12 months of the date said requirements may be established.

## **Gap 2: No Statewide Technician Certification Database**

- No central system exists that counts the number of HVAC technicians holding competency-based personnel certifications duplicated by multiple organizations. Nor is there a central location to verify an individual's certification status.

### **Recommendations:**

- Annual certification reporting. Personnel Certification bodies will provide the WHPA with an annual report containing the number of currently certified professionals nationally and in California as well as the number of certifications by type in the State of California.
- On-line certification data. Personnel Certification bodies will provide links to their certification verification list or verification request forms to ensure up-to-date information is readily obtainable from each certification body. At this time, the following organizations provide links where verification of individual certification can be obtained, as these links may be updated from time-to-time. The personnel certification bodies will provide link updates to the appropriate entity (to be identified) and WHPA as necessary. Examples:
  - HVAC Excellence <http://www.hvacexcellence.org/Verification/Login.aspx>
  - NATE [http://www.natetesting.com/NATE\\_Lookup.htm](http://www.natetesting.com/NATE_Lookup.htm)
  - BPI [http://www.bpi.org/individual\\_locator.aspx](http://www.bpi.org/individual_locator.aspx)
  - UA Star  
<https://nationalitc.net/map/stateCerts.html;jsessionid=E423ED29DE119B416C3FE8CC13AAA0B6>
  - NEBB <http://www.nebb.org/directory/professional/>

## **Gap 3: Lack of Contractor Support for Technicians' Certifications**

- A large number of contractors are not motivated to require certification of their field technicians.

### **Recommendations:**

- Utility support for certification. The investor owned utilities could help establish the higher value and consumer benefits of industry-recognized knowledge-based personnel certifications by promoting such certifications and showcasing them in program, incentive, and rebate promotional collateral. The purpose will be to educate and assist residential and commercial consumers in identifying the benefit of high quality installation and maintenance procedures while providing them with a resource for verification and listing of contractors that meet these requirements. Consumer awareness of certifications could be established by the following:
- Utilities could provide and publish on the IOU websites a list containing the names of contractor companies that employ a minimum threshold of certified professionals and the certifications they hold.
- Utilities could provide resources to HVAC contractors that meet and exceed the minimum established threshold of certified professionals and who provide information on the certifications they hold to perform efficiency assessment, inspection, installation, service, maintenance, commissioning, and/or acceptance testing.
- Customers could receive a financial incentive when they agree to a three-year maintenance contract that is performed by the certified staff of a participating contractor with personnel certifications aligned to appropriate performance and maintenance standards.

## **Gap 4: Shortage of Certified HVACR Instructors**

- Most HVACR instructors and educators are not participating in instructor certification.

### **Recommendations:**

- Encourage instructors to become certified in the disciplines that they teach as either a professional technician or as certified subject matter educator.
- Set a 100% goal that HVAC instructors working within a training program should be certified in the discipline they are teaching.

## **Gap 5: Shortage of Accredited HVACR Instructional Programs**

- Many HVACR instructional programs are not accredited.

### **Recommendations:**

- Encourage program accreditation. HVACR instructional programs should be encouraged to obtain accreditation.