

# Online HVACR Workforce Education Programs

Presentation:

**Chris Compton, CEO & Founder  
HVACRedu.net**



CMHE: Certified Master HVACR Educator



## **The Main Points:**

- **What HVACRedu.net does**
- **Online Technical Education in SoCal**
- **Lessons Learned in that Project to Date**
- **New Lessons Being Learned as a Result**
- **Actions Underway**
- **Strategies for Everyone to Work On**

# California Project: The Q

**Provide supporting WE&T to Southern California Edison & San Diego Gas & Electric Efficiency Programs**

- RQM & RQI
  - Residential Quality Installation & Quality Maintenance
- CQM
  - Commercial Quality Maintenance
- ADEC/DCV
  - Advanced Digital Economizer Control / Demand Control Ventilation

## **Key Supporting Elements provided**

- ItsAboutQ.net
  - Online HVACR / Building Performance technician program
- SoCal Liaison
  - On the ground support in the SoCal area.



# Other Utility Projects:

- Xcel Energy
  - QI Qualification
- Alabama Power
  - CEU Support
- Great River Energy
  - QI Qualification
- Con Edison Chicago
  - Clear Results RTU CQM
- KEMA

# Other Projects:

- Spanish CORE HVACR
- Comfort Systems USA Corp. Campus
- BAS Overhaul & Relaunch
- HVAC Apprenticeships of various flavors
- CEU Support Texas PHCC
- CEU Support NEBB
- CEU Support KAMC
- Blended Programs
  - Knox Training Center
  - Brownson Tech
  - Lincoln Tech
  - FET RMEC/RRCC
- Wholesale Distributor Programs



# Lessons Learned in HVACR Industry Education and What We (You, Me & Anyone Else) Need to Do

## Lessons Learned

- Entry level students are a “Piece of Cake”
  - Start here and go there
    - Gotta Pass the Program & They Do
- The Existing Workforce is a Totally Different Dessert! (It Ain't Cake)
  - They don't know where they are
  - We don't know where they are --BUT--
    - We can find out



# What We Found Out About the Existing Workforce and their Foundation (This isn't Just California Data)

CORE TOPIC	COMPOSITE AVERAGE
Safety	71.68
HVACR Applied Physics	58.72
DC Electrical	62.76
AC Electrical	59.86
HVAC Common Electrical Components	54.12
Electric Motors	48.83
Air	42.14
Refrigeration Cycle	64.65

The “Good to Go” or PASSING level is 75%-80% for most HVACR industry technical certifications like:  
HVAC Excellence, NATE, BPI

# So Now We Know!

Is This Good?

Is This OK?

Is This Not So Good?

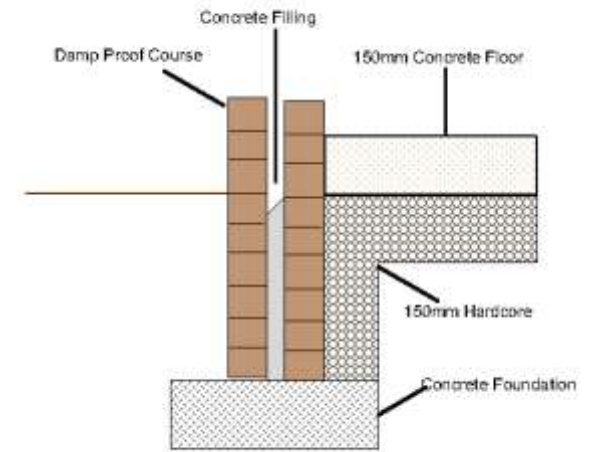
Is This Terrible?



Audience Input? Don't be Bashful!

# Have You Ever Built a Foundation? What Goes Down First?

The Correct Answer is “Footing”  
or in this case  
Fundamental Knowledge and Skills



Where does the footing for the Workforce happen?

At the Apprenticeship Program  
At the Community College Program  
At the Proprietary School Program



# Nobody Knows the Trouble I See.....

The HVACR industry is facing a workforce shortage unlike anything it has seen in the past.

- The BLS estimates 34% industry growth in next decade, creating new jobs
- 31% of the HVACR workforce is expected to retire and need to be replaced in next decade
- 65% of HVACR workforce in ten years will be people not in the industry today
- 56% of the seats in HVACR programs remain empty
- 50% of the HVACR instructors surveyed stated they will retire within seven years
- HVACR instructors need professional development
- The majority of HVACR programs are not accredited and follow no national standards

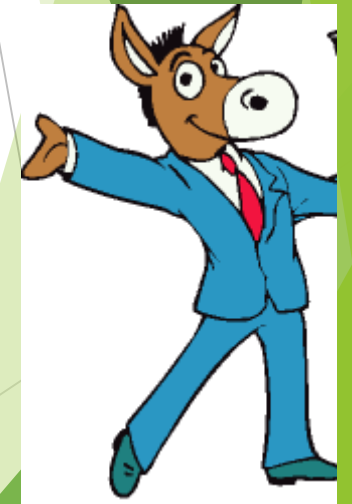


# To Fix the Problem . . .

*We must all be part of the solution* by Uniting the Industry Around Education in helping instructors grow their programs. Regardless of one's role in the HVACR industry, everyone's success is tied to the success of HVACR educational and apprenticeship programs. Everyone can get involved by attending the program advisory meeting of a local program.

# A Definition of Insanity: Doing the same thing time after time expecting different results!

Isn't It Ironic? Most energy efficiency programs emphasize state of the art techniques and procedures **assuming** that the workforce is well based in the foundational knowledge and well exercised in performing the tasks associated with best practices.



We all know what Assume Means. *ASS – U - ME*

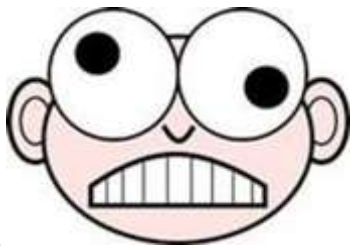
## A Solution Proposed . . .

By assessment of the existing workforce we find that the largest holes are in the foundational knowledge base. Without those holes backfilled we can't move them higher.

Do we need a well trained workforce to achieve energy efficiency?



**Yes? Then we need to do something different!**



No? No problem, we'll just keep doing the same thing.

# *Industry Transformation*

## INSTRUCTORS' EDUCATION

High School or  
Associates Degree



51%

Bachelor's Degree



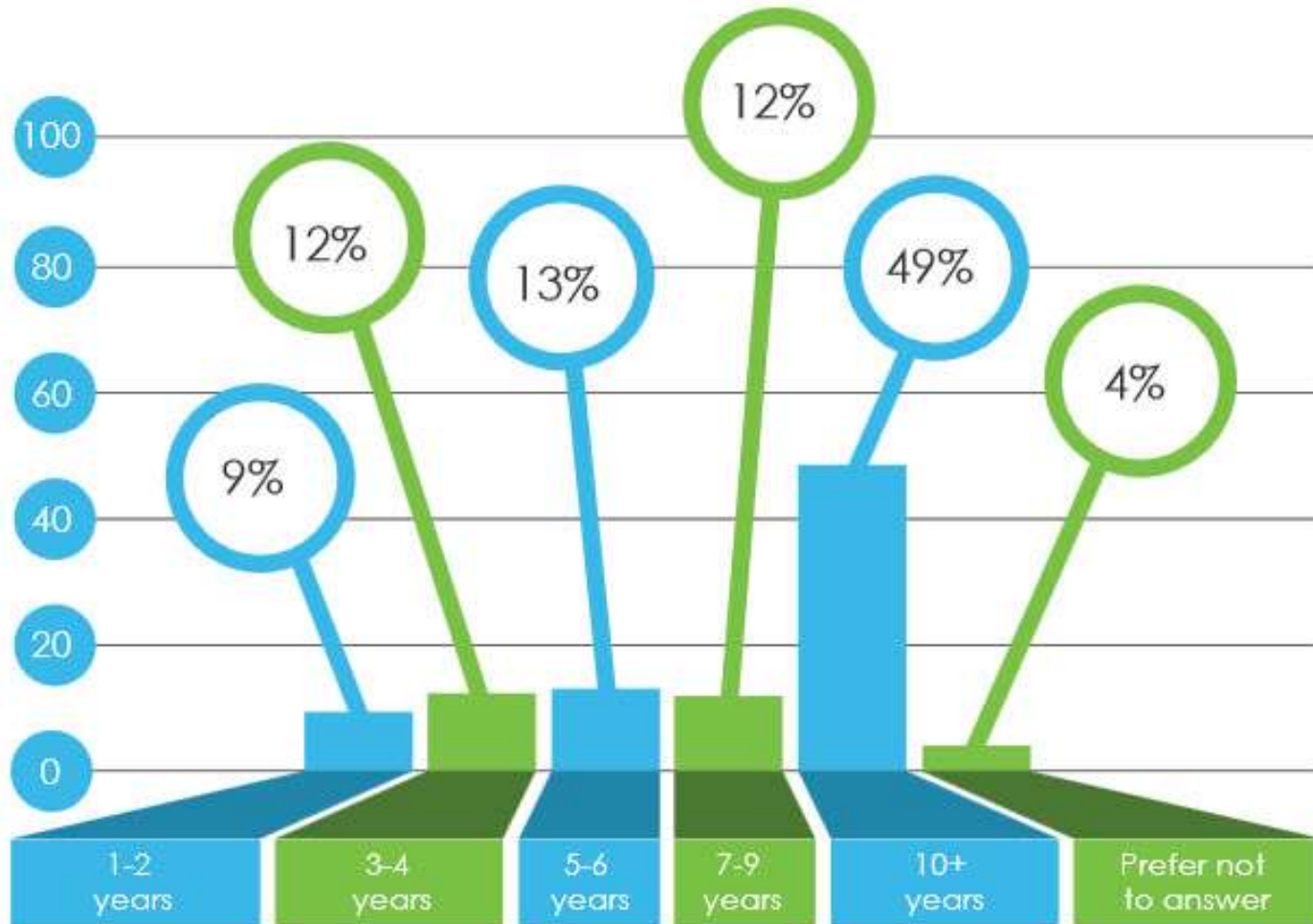
32%

Master's or  
Doctoral Degree



17%

## HOW MANY YEARS UNTIL YOUR ANTICIPATED RETIREMENT?



RESPONSES HOVERING AT  
APPROXIMATELY  
**50%** INDICATE  
FOR PROGRAM IMPROVEMENT A NEED

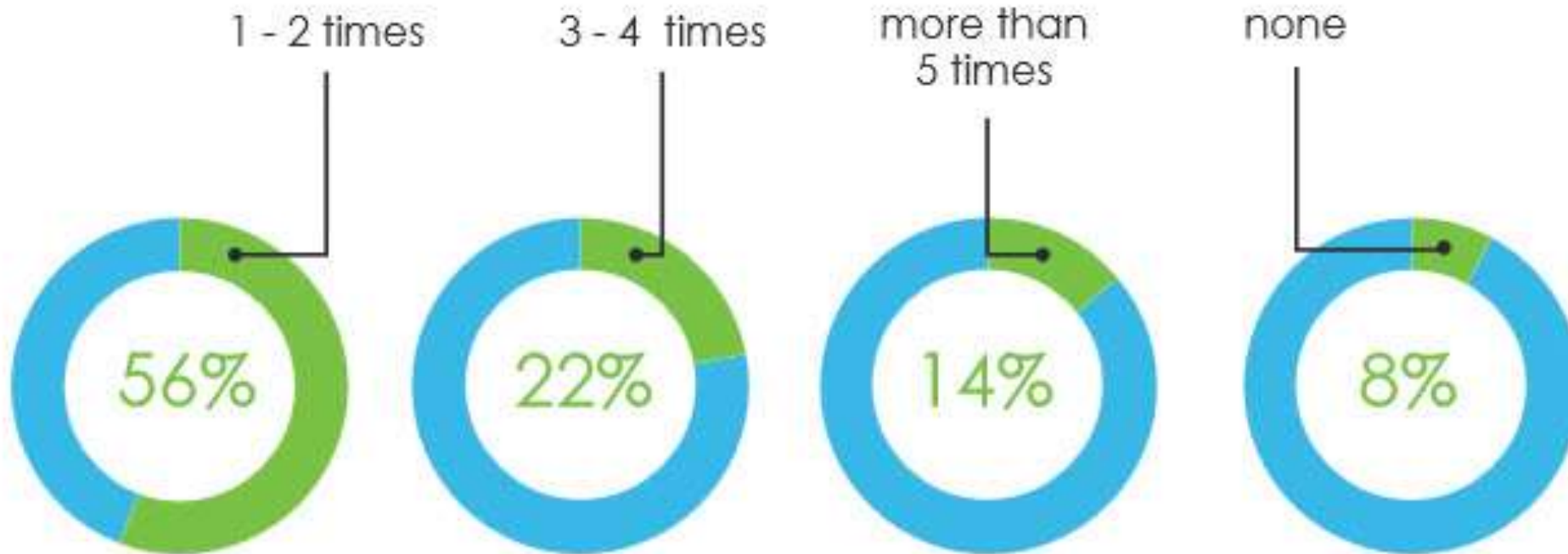


LESS THAN **HALF**  
OF RESPONDENTS  
**INDICATED THEY**  
WORKED IN ACCREDITED PROGRAMS

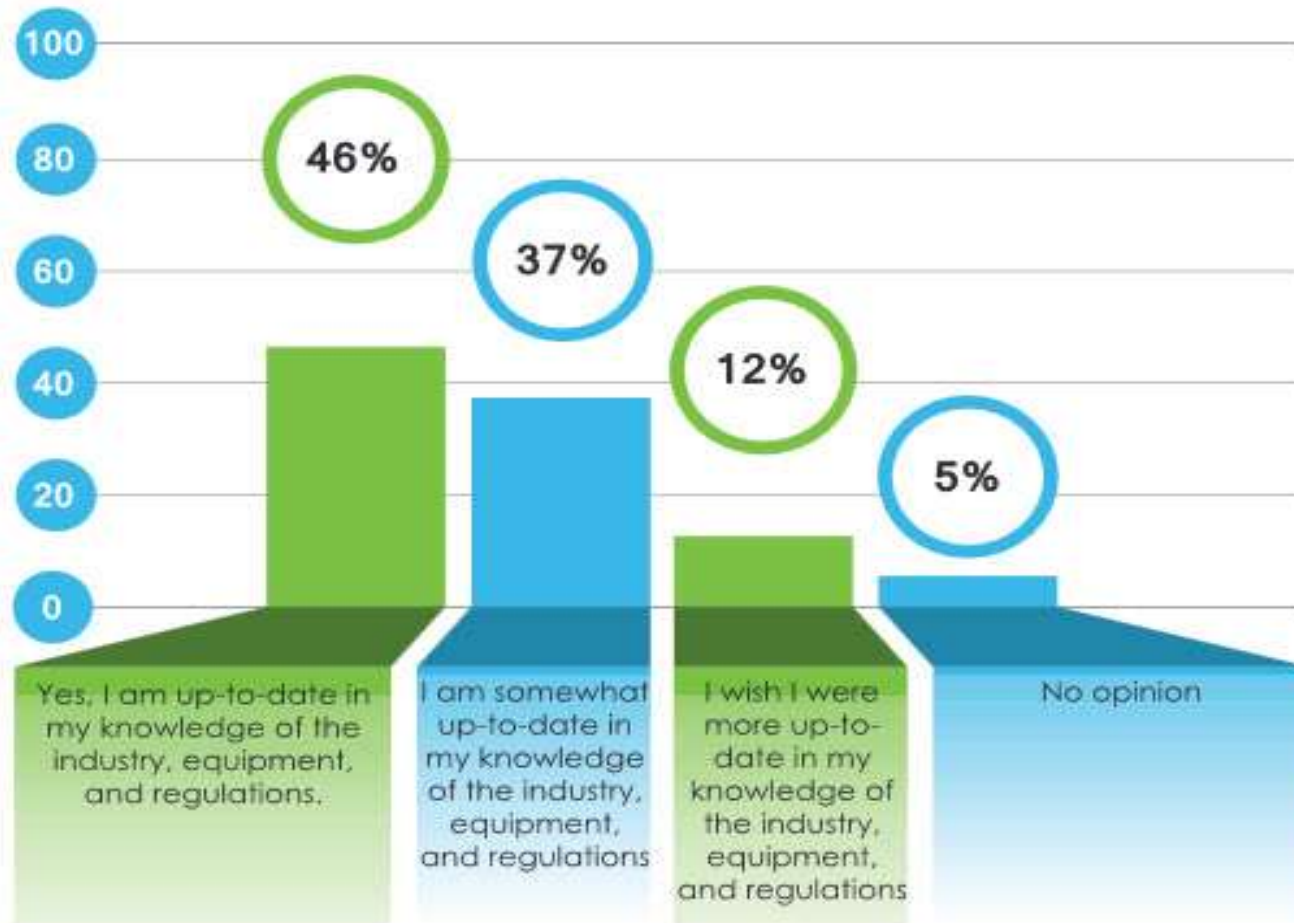




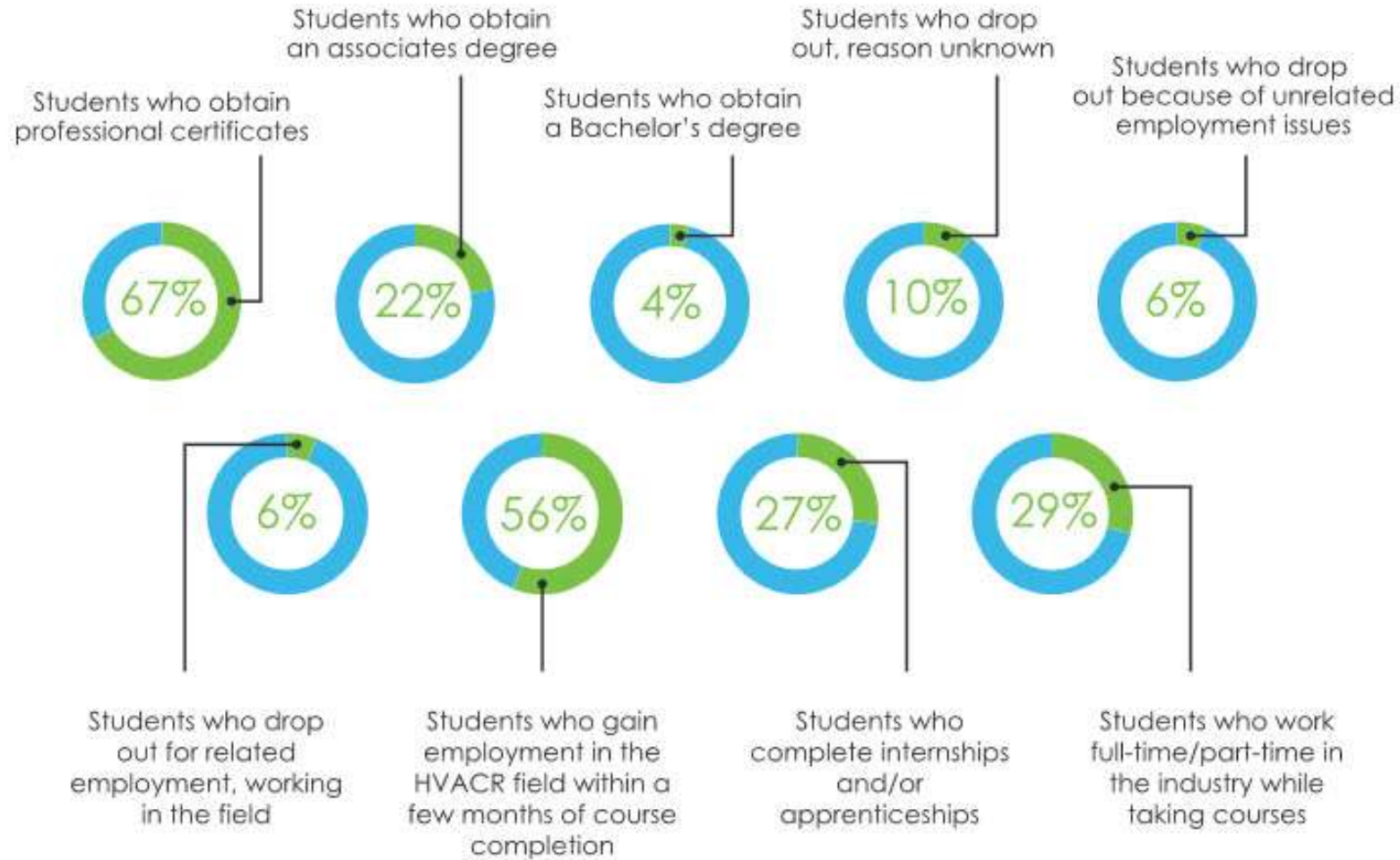
## ANNUAL PARTICIPATION IN PROFESSIONAL DEVELOPMENT



OVERALL, THE HVACR PROFESSIONAL DEVELOPMENT I RECEIVE IS RELEVANT AND HELPFUL TO MY ONGOING TEACHING.



## STUDENTS' OUTCOMES IN HVACR TRAINING PROGRAMS



# The Shortage of Skilled Trades Workers in the U.S.

An Examination of this Severe & Growing Crisis



Only 6% of students consider a career in the trades!

20%

job growth in PHCE industry over the next 10 years.

Department of Labor  
www.onetonline.org

58

average age of an electrician in Boston.

Workforce Investment Center  
Salem, Massachusetts

60%

turnover of employees in the next ten years.

Department of Labor  
www.onetonline.org

## The "College for All" Rhetoric

66% of high school students enroll in higher education, but only 33% of future jobs will require a 4-year+ degree<sup>2</sup>



## 1:2:7 True Ratio of Jobs in Our Economy<sup>2</sup>



For every **1 occupation** requiring a Master's Degree or more



there are **2 professional jobs** requiring a University Degree.



and **7 jobs** requiring a one-year certificate or two-year degree

## The Alarming Shortage Figures

In 2014, ManpowerGroup spoke to over 27,000 employers in 42 countries to look at the extent to which they are having difficulty finding the right talent and what jobs are most difficult to fill.<sup>3</sup>

### Top 3 Jobs Employers Having Difficulty Filling



### Difficulty Filling Jobs



36% of all employees report difficulty filling jobs

54% of those experience a medium-to-high impact on their ability to meet the needs of clients

## About Us!

Our Explore the Trades program provides employment prospects for young people, ages 15 to 25 in the PHCE industry.



Our Troops to Trades program offers career placement, training and grants for military veterans who are looking for a career in the PHCE industry.

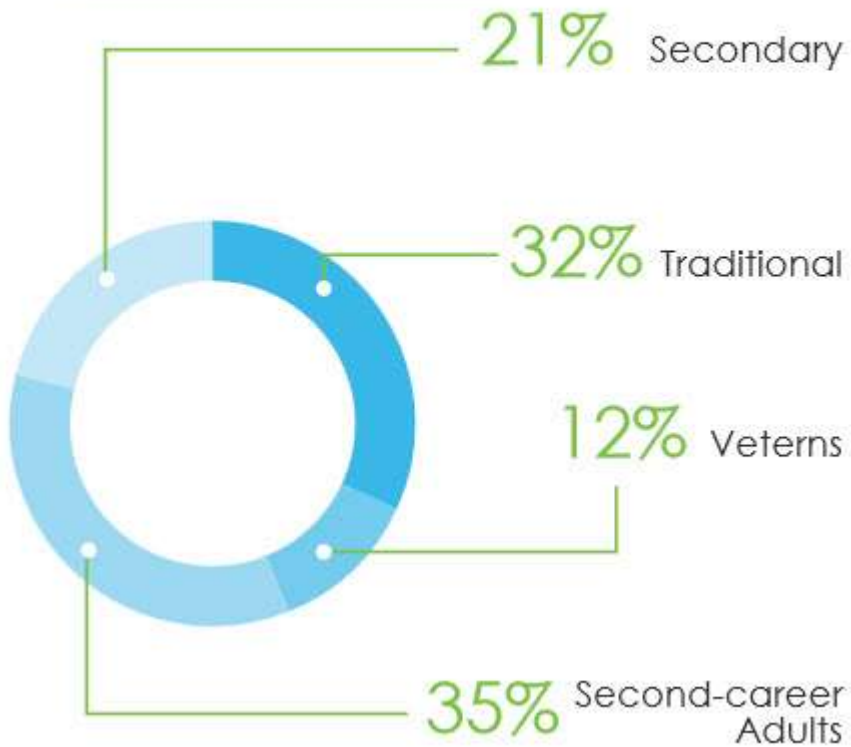


<sup>1</sup> RIDGD Survey, 2009

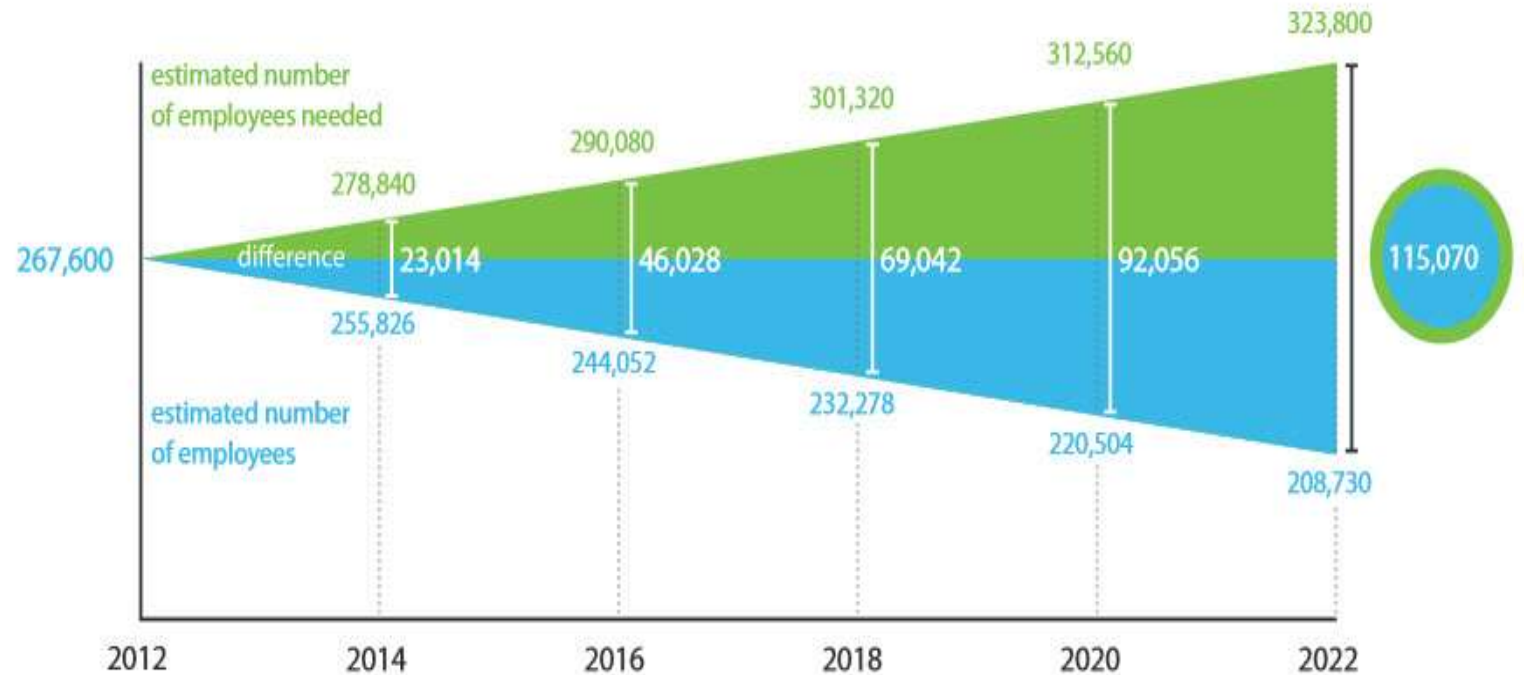
<sup>2</sup> Fleming, K (2013). Success in the New Economy; <http://www.febases.com>

<sup>3</sup> Manpower Group (2014). 2014 Talent Shortage Survey.

## MAKE UP OF STUDENTS



## PROJECTED WORKFORCE GAP FOR HVACR TECHNICIANS BY 2022



# With All Of That What's the Plan?

Due to the issues recognized California has been working on some solutions.

- WHPA Whole Building HVAC Education Committee
- CCCCCO HVAC Collaboration

## Some Moves Need to Be Made

- **Programs Achieve Programmatic Accreditation**
  - Not by the regional accrediting agency
- **Instructional Faculty Achieves Certified Instructor Status**
- **A National Competency Index is Created**
  - Knowledge
  - Skills
- **Demonstration of Competency Becomes the Final Outcome**
  - Demonstrate Competency Project

# Are Utilities Interested in EE from the HVACR workforce?

The definition of insanity is doing the same thing over and over expecting different results!

**If utilities have expectations of satisfactory EE performance by the HVAC Workforce the most effective action to take is to get involved with the local program or multiple programs in large service areas.**

**Bring to them a National Competency Index and promote adoption.**

**Insist that the program undertakes a programmatic accreditation process.**

**Promote faculty credentialing.**

**Continue to participate and monitor the agenda.**

**It won't happen overnight.**

# **Does Your Utility Have A Voice at The Local HVACR Program?**

The Program Advisory Committee is the Most Powerful Tool Available for Change. Please get involved, your voice is very loud at the local level!



# Chris Compton



PO Box 77

Heron, MT 59844

888-655-4822

[info@hvacredu.net](mailto:info@hvacredu.net)

[ccompton@hvacredu.net](mailto:ccompton@hvacredu.net)

[www.hvacredu.net](http://www.hvacredu.net)