



Education  
Advisory  
Board

Community College Forum

# Apprenticeship Programs at Community Colleges

Training a Labor Force while Awarding College Credit



Research Brief

[eab.com](http://eab.com)

# Community College Forum

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# 1) Executive Overview

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## Key Observations

**Local industries or unions with labor shortages initiate successful apprenticeship programs.** The high cost of operating an apprenticeship program and the low revenue margins generated per apprenticeship graduate makes institutions dependent on a high volume of students. Industries and unions supply a high volume of students only when employers recognize a labor shortage and initiate partnerships. Otherwise, institutions struggle to recruit enough apprenticeship participants to sustain the program financially.

**Institutions award academic credit for apprenticeship programs.** Academic credit enables apprenticeship students to complete associate's degrees. However, the overwhelming majority of apprenticeship participants do not complete associate's degrees. Journeyman certificates, awarded upon apprenticeship completion, suffice for entry into apprentices' desired fields. If institutions partner with local unions, the unions insist institutions award credit; if a student drops out of the apprenticeship program, at least that student would exit the program on the road to earning an associate's degree.

**Contacts anticipate an increase in demand for unionized ironworkers.** In the upcoming decade, the San Francisco area will undertake three major public works projects: a new football stadium, an extension of the BART public transit line, and a new basketball stadium. These construction projects will require a considerable amount of iron and thousands of metal worker hours. In nearby Silicon Valley, Apple and Google will begin construction on industrial campuses in the near future. Other programs with high employer demand include automotive technician preparation and programs to learn carpentry, plumbing, and HVAC skills.

**New program development leaders convene advisory committees composed of local employers and industry representatives to ensure alignment with industry needs and guide program learning outcomes and curriculum.** Program directors also leverage advisory committees to provide real-time feedback on industry trends and satisfaction with program graduates, which encourages program responsiveness and increases longevity. Administrators shorten program review processes through special policies for new programs and ad hoc reviews to encourage program reform and minimize financial losses. When institutions partner with unions, unions submit proposed curriculum to institutions' curriculum review committees for approval or modification. Unions with national organizations include education departments that design apprenticeship program curricula.

**Campus workforce development departments assign faculty, secure course space, and provide in-person student services such as interviewing practice.** Campus deans and occupational program directors organize daily operations. Align credit degree content with non-credit corporate training coursework to create program overlap among apprenticeship programs and related academic credentials. Sharing facilities between credit and non-credit classes ensures efficient use of space and machinery; common coursework also motivates non-credit students to begin "stackable" certificate and associate's degree completion.

## 2) Apprenticeship Program Structures

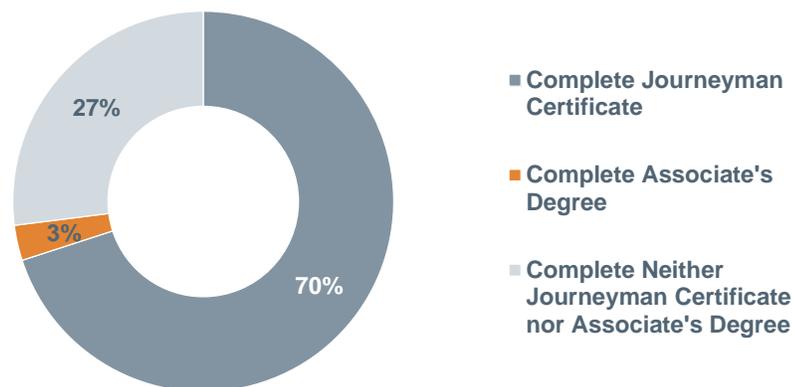
### Credit

#### ***Offer Academic Credit for Apprenticeship Programs but Expect Few Students Will Complete an Associate's Degree***

Institutions offer apprenticeship program participants credit to encourage students to return to the institution and complete an associate's degree. Apprenticeship students returning to complete an associate's degree increases institutional enrollment and revenue. Unions partnering with institutions require that program participants earn credit; in the event that a student does not complete the apprenticeship, that student will at least accrue college credit.

Students that complete the apprenticeship program earn a journeyman certificate. Contacts report that the electrician journeyman certification remains the most desirable certification due to the high starting salary. Associate's degrees do not offer students additional benefits when entering trades.

#### **Distribution of Certificate and Degree Completion**



### Resources

#### ***Union Contributions and State Funds from the Employment and Training Administration Support Apprenticeship Programs***

Unions withhold a fraction of every apprentices' paycheck to develop and maintain apprenticeship programs. The electricians' union that partners with **Diablo Valley College** withholds 25 percent of program participants' wages. Institutions also receive per student compensation from the California Department of Apprenticeship Standards and the Department of Labor Employment and Training Administration.

The California Department of Apprenticeship Standards awards institutions \$4.86 per a student per an hour; funds come from state legislature and the Department of Labor. Unions or industry groups only gain access to state funds that support apprenticeship programs through partnerships with institutions.

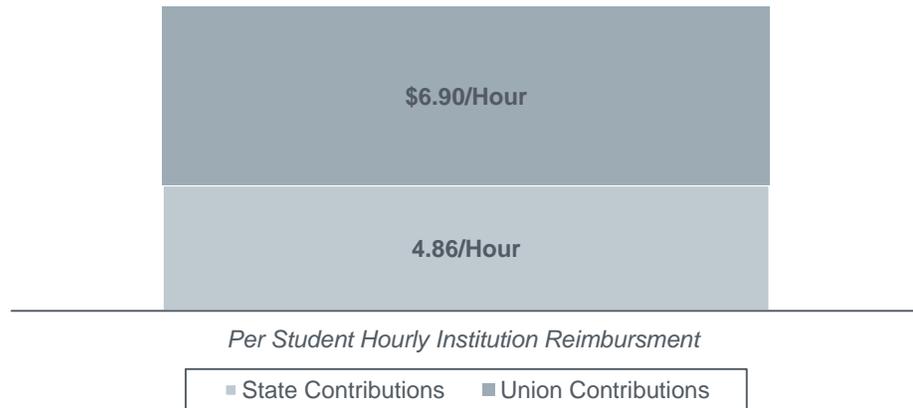


### Hourly Reimbursement

# \$11.76

American River College receives \$11.76 for each apprentice hour taught.

## Hourly Reimbursement Rates at *American River College* for Ironworker Apprenticeship

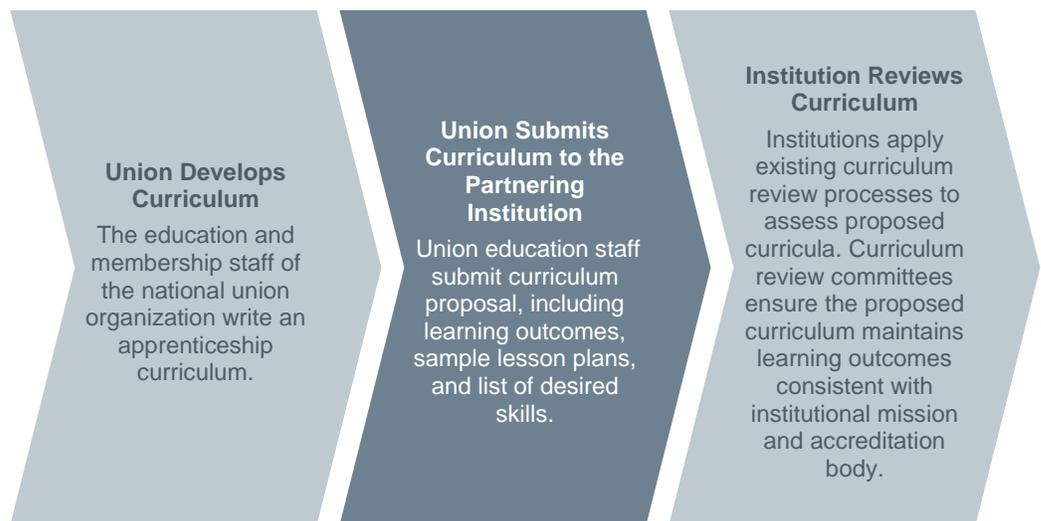


## Curriculum

### *Institutions Partnering with Unions Review the Union-Designed Curriculum*

National unions maintain offices responsible for education and membership development. The education staff at national union headquarters design apprenticeship programs and local staff submit the curriculum to institutions' curriculum review boards for approval. Curriculum review boards evaluate apprenticeship curricula by the same criteria as other academic programs (e.g., learning outcomes merit academic credit).

### Curriculum Approval Process for Apprenticeship Program Partnerships between Unions and Institutions



#### Union Develops Curriculum

The education and membership staff of the national union organization write an apprenticeship curriculum.

#### Union Submits Curriculum to the Partnering Institution

Union education staff submit curriculum proposal, including learning outcomes, sample lesson plans, and list of desired skills.

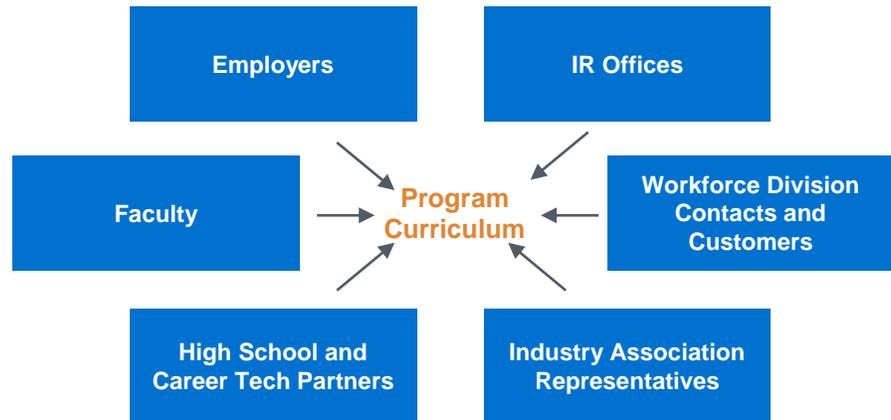
#### Institution Reviews Curriculum

Institutions apply existing curriculum review processes to assess proposed curricula. Curriculum review committees ensure the proposed curriculum maintains learning outcomes consistent with institutional mission and accreditation body.

## ***Institutions Partnering with Industry Associations Create Advisory Boards to Develop Apprenticeship Curriculum***

Institutions that partner with industry associations (e.g., International Society of Certified Electronics Technicians, Air Conditioning Contractors of America) form advisory boards of faculty members, institutional administrators, and industry leaders. Advisory boards meet annually to review the apprenticeship program curriculum. Curriculum review ensures participants learn the most relevant and in-demand skills.

### **Apprenticeship Advisory Board Members Collaborate on Program Curriculum**



## 3) Apprenticeship Partnerships

### Employer Partnerships

#### ***Industries and Unions Initiate Successful Apprenticeship Programs***

The low revenue margins generated from each apprenticeship program participant mean institutions depend on high volumes of students enrolling. Partnering with an industry organization or union guarantees consistently high enrollment and ensures apprenticeship programs' financial viability. Industry organizations and unions prefer apprenticeship programs with union- or employer-developed curricula. Institutions govern academic credit and coordinate program operations, but do not contribute as actively to apprenticeship programs as to other academic programs.

#### **Institutional Revenue Calculation for Apprenticeship Programs**



Union or industry group ensures a pipeline of **students** in apprenticeship programs.

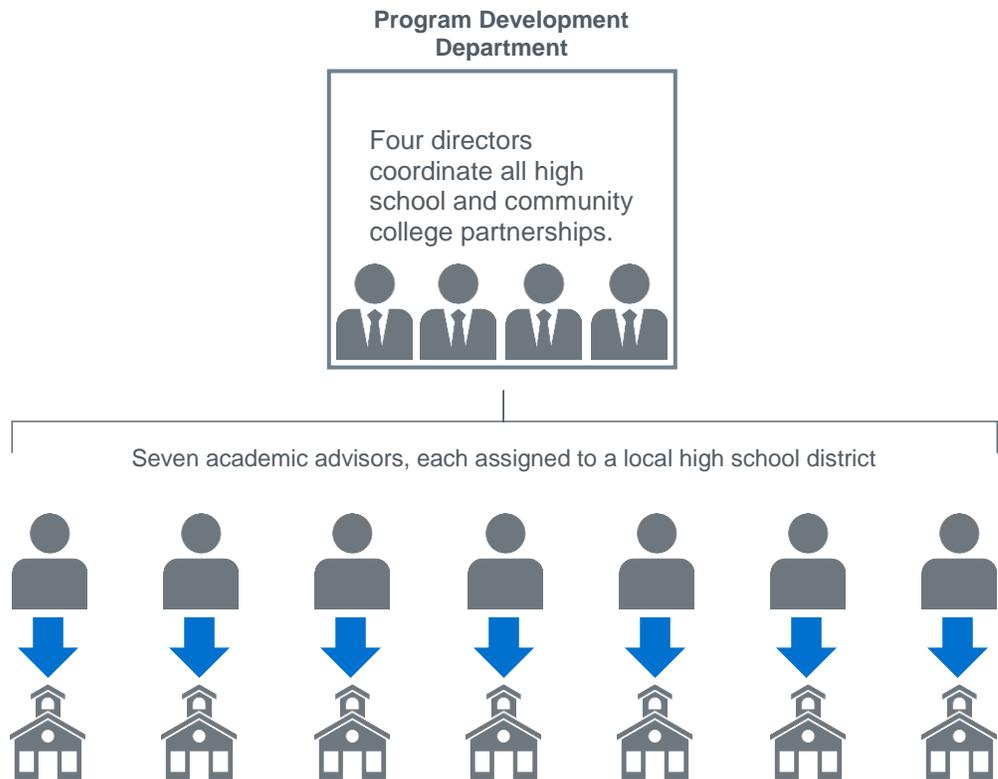
Unions or industry groups provide **funding** in concert with state offices to partnering institutions.

## ***Determine High School Interest and Industry Demand Prior to Apprenticeship Program Implementation***

Successful high school and institution apprenticeship partnerships implement programs following explicit demand by local high schools and employers for career and technical education programs. Apprenticeship directors survey:

- High school principals and guidance counselors to estimate high school demand for apprenticeship opportunities, and
- Local employers to estimate employer demand for potential programs.

### **Program Development Governance Structure**



Advisors work individually with apprenticeship students to facilitate positive student outcomes:

- Enrollment in community college
- Enrollment in a four-year institution
- Employment

## 4) Potential Apprenticeship Programs

### Employer Demand by Position

#### ***Auto Technician Titles Experienced More Demand than Next Three Titles Combined***

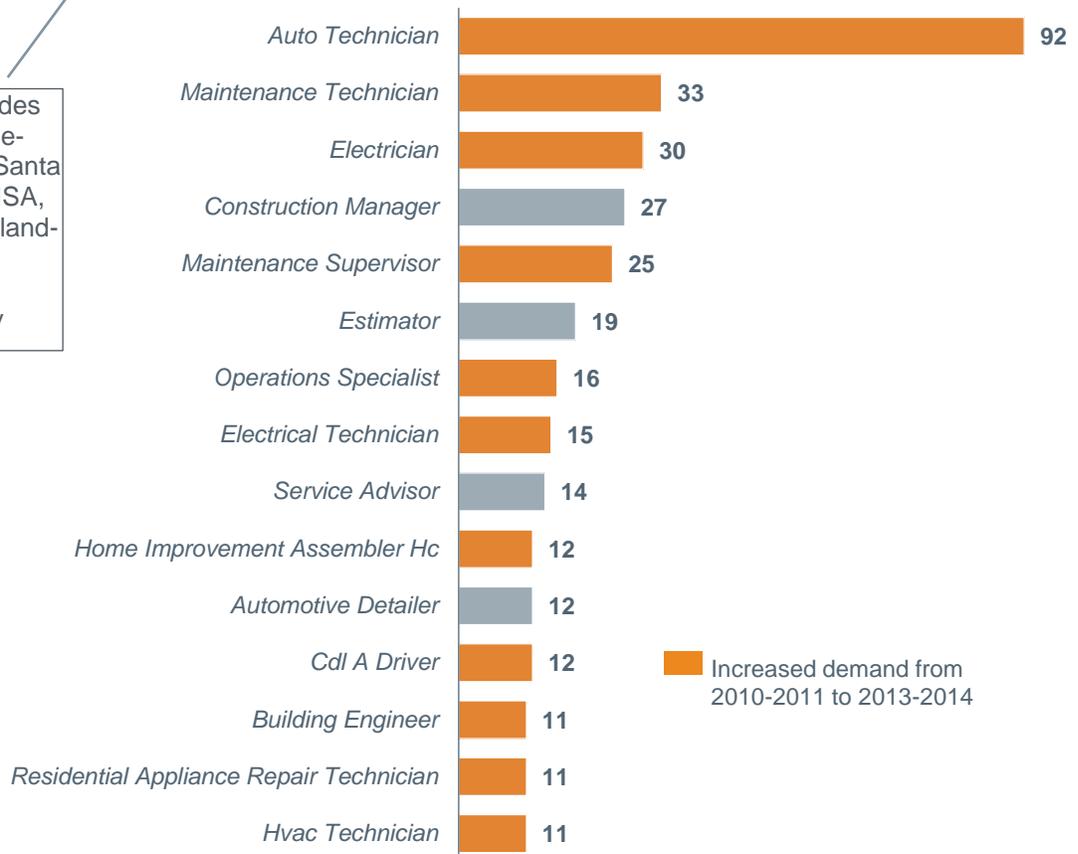
Auto technician positions experienced three times the demand as the next most commonly sought title. Demand for auto technician jobs increased over 400 percent from 2010 to 2014. Auto technician journeyman certificates usually take four years to complete, and require 144 classroom hours in addition to 2,000 hours of apprenticeship experience.

Maintenance supervisor positions experienced the greatest overall increase in demand, growing 497 percent from 2010 to 2014. However, supervisor positions typically require years of work experience and therefore are not suitable for an apprenticeship program.

#### **Top Titles in Construction-Related Industries**

*Regional Data, No Degree Required, July 2013 to June 2014*

Regional data includes San Jose-Sunnyvale-Santa Clara MSA, Santa Cruz-Watsonville MSA, San Francisco-Oakland-Fremont MSA, San Benito County, and Santa Clara County



n = 1,231, 0 unspecified  
Source: Burning Glass Labor/Insight™

## Change in Demand for **Titles** in Construction-Related Industries

Regional Data, No Degree Required, July 2013 to June 2014

Skill	Percent of Job Openings (2010-2011)	Percent of Job Openings (2013-2014)	Percent Change
Operations Specialist	0	1.30%	N/A
Electrical Technician	0	1.22%	N/A
Home Improvement Assembler Hc	0	0.97%	N/A
Residential Appliance Repair Technician	0	0.89%	N/A
Maintenance Supervisor	0.34%	2.03%	497.06%
Auto Technician	1.48%	7.47%	404.73%
CDL A Driver	0.34%	0.97%	185.29%
Building Engineer	0.46%	0.89%	93.48%
HVAC Technician	0.34%	0.65%	91.17%
Maintenance Technician	1.48%	2.68%	81.08%
Electrician	2.05%	2.44%	19.02%
Construction Manager	2.39%	2.19%	-8.36%
Service Advisor	2.28%	1.14%	-50%
Automotive Detailer	1.82%	0.97%	-46.71%

n= 3.896 with 378 unspecified

Source: Burning Glass Labor/Insight™

\*Data collected for H2 2013 and after is not directly comparable to data collected before H2 2013 due to improvements in Burning Glass Labor/Insight's web spidering technology.

## Employer Demand by Skills

### ***Carpentry, Plumbing, and HVAC Skills Experienced the Greatest Increase in Demand***

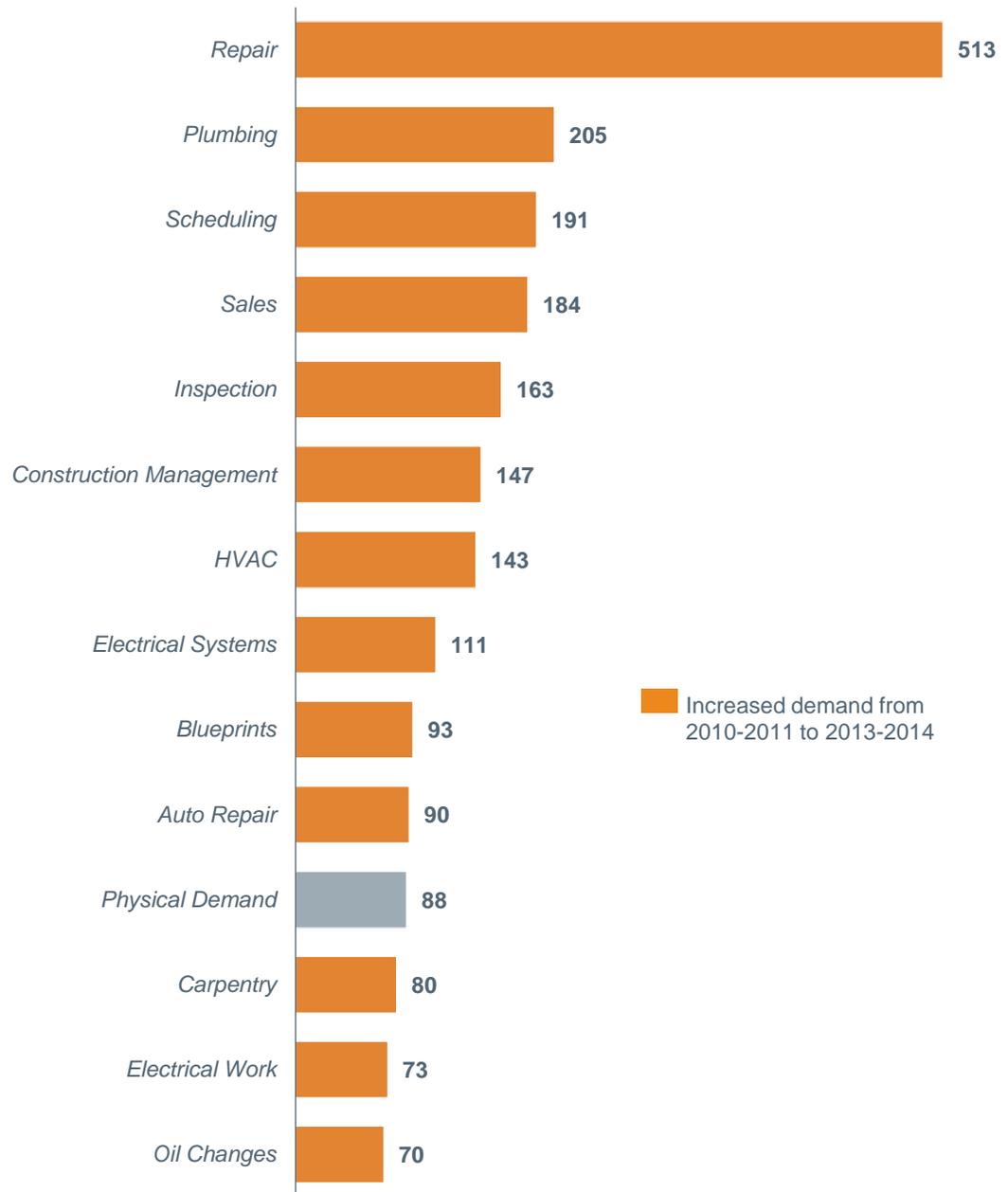
Repair skills experienced the most overall demand from 2013 to 2014. However, demand for repair skills increased less than four percent from 2010 to 2014. Demand for carpentry, plumbing, HVAC, and construction management skills doubled or more from 2010 to 2014.

The Bureau of Labor Statistics predicts a 22 percent increase in demand for HVAC repairmen in the next decade as cities move to retrofit older buildings with new energy efficient HVAC units<sup>1</sup>.

1) U.S. Bureau of Labor Statistics. "Heating, Air Conditioning, and Refrigeration Mechanics and Installers." U.S. Bureau of Labor Statistics. (accessed July 13, 2014).

## Top Skills in Construction-Related Industries

Regional Data, No Degree Required, July 2013 to June 2014



n = 1,231, 110 unspecified  
Source: Burning Glass Labor/Insight™

## Change in Demand for Skills in Construction-Related Industries

Regional Data, No Degree Required, July 2013 to June 2014

Skill	Percent of Job Openings (2010-2011)	Percent of Job Openings (2013-2014)	Percent Change
Sales	2.39%	16.41%	586.61%
Carpentry	1.66%	7.14%	330.12%
Plumbing	6.52%	18.29%	180.52%
HVAC	5.12%	12.76%	149.22%
Construction Management	5.88%	13.11%	122.96%
Blueprints	4.48%	8.30%	85.27%
Electrical Systems	5.58%	9.91%	77.61%
Electrical Work	3.96%	6.51%	64.39%
Scheduling	10.49%	17.04%	62.44%
Auto Repair	4.99%	8.03%	60.92%
Inspection	9.85%	14.54%	47.61%
Oil Changes	5.37%	6.24%	16.20%
Repair	44.12%	45.76%	3.72%
Physical Demand	8.31%	7.85%	-5.54%

n = 3,896 with 378 unspecified

Source: Burning Glass Labor/Insight™

\*Data collected for H2 2013 and after is not directly comparable to data collected before H2 2013 due to improvements in Burning Glass Labor/Insight's web spidering technology.

## 5) Research Methodology

### Project Challenge

Leadership at a member institution approached the Forum with the following questions:

- What type of credentials do students seek in apprenticeship programs?
- How many students earn a certificate or an associate's degree?
- What compensation do students receive from apprenticeships?
- What sources provide the resources to develop an apprenticeship program?
- How do contacts work with unions/professional organizations/employers to develop an apprenticeship curriculum?
- To what extent do contacts award academic credit for apprenticeship programs?
- Why do contacts prefer credit or non-credit apprenticeship programs?

### Project Sources

The Forum consulted the following sources for this report:

- EAB's internal and online research libraries (eab.com)
- The Chronicle of Higher Education (<http://chronicle.com>)
- National Center for Education Statistics (NCES) (<http://nces.ed.gov/>)
- U.S. Bureau of Labor Statistics. "Heating, Air Conditioning, and Refrigeration Mechanics and Installers." U.S. Bureau of Labor Statistics. (accessed July 13, 2014).

### Research Parameters

The Forum interviewed directors of apprenticeship programs at community colleges, primarily in California.

#### A Guide to Institutions Profiled in this Brief

Institution	Location	Approximate Institutional Enrollment [Total (undergraduate)]	Classification
<b>American River College</b>	Pacific West	31,088 (all undergraduate)	Associate's--Public Urban-serving Multicampus
<b>Des Moines Area Community College</b>	Midwest	23,685 (all undergraduate)	Associate's--Public Rural-serving Large
<b>Diablo Valley College</b>	Pacific West	20,329 (all undergraduate)	Associate's--Public Suburban-serving Multicampus
<b>Palomar College</b>	Pacific West	24,626 (all undergraduate)	Associate's--Public Suburban-serving Multicampus

Source: National Center for Education Statistics

### Burning Glass Labor/Insight™

#### Burning Glass – The Education Advisory Board's Partner for Real-Time Labor Market Data

Part of the data included in this report is made possible through our partnership with Burning Glass, a Boston-based firm specializing in use of web spidering technology and Artificial Intelligence engines to mine more than 80 million online job postings for real-time employer demand data. Under the partnership, the Education Advisory Board may use certain features of Burning Glass's proprietary tool called Labor/Insight™ to answer common member questions about employer demand for specific educational requirements, job titles, and competencies over time and by geography. A fuller

description of the tool is available at <http://www.burning-glass.com/products/laborinsight-market-analysis/>.

### **Learn about Burning Glass and Labor/Insight™**

Many Education Advisory Board member institutions subscribe to the Labor/Insight™ tool, to provide program directors and marketers desktop access to the tool's full suite of features. Burning Glass is pleased to provide Labor/Insight™ to our members at a substantial discount. For more information about the service, please contact Kelly Bailey, Business Development Manager, [kbailey@burning-glass.com](mailto:kbailey@burning-glass.com) or 732-800-2484.

### **Definition of Terms**

The total number of "unspecified" job postings included in a data sample is indicated below all charts and graphs in this report. Job postings are considered "unspecified" for a skill, industry, employer, geography, certification, education requirement, or major when the job posting did not advertise for one of these particular job characteristics and therefore should be subtracted from the total number (n value) of job postings analyzed in the query. Capital cities may be overrepresented in instances where job postings do not specify a location within a state.

## Networking Contacts

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### American River College

Staci Teegarden  
*Apprenticeship Programs and SETA Liaison*  
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### Diablo Valley College

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### Palomar College

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