

## 0946.00 – Environmental Control Technology (HVAC)

### *Heating, Ventilation, and Air Conditioning (HVAC) Technician*

**August 2018**

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#### **Research Summary**

The Los Angeles/Orange County Center of Excellence (COE) compiled this report to provide regional labor market supply and demand data related to **environmental control technology**.

The following list summarizes key findings from this data brief:

- The number of jobs for HVAC-related occupations is expected to increase by 12% through 2022, resulting in over **1,300 annual openings** due to new job growth and replacement need (e.g., retirements).
- In 2017, there were **95 employer job ads** for HVAC-related occupations.
- Between 2014 and 2017, community colleges conferred an average of **404 awards** (associate degrees and certificates) in related training programs.
- Of employers including a minimum education requirement, nearly all (98%) listed high school or vocational training.
- Between 38% and 44% of the current workforce has some postsecondary coursework training.

## Occupation Codes and Descriptions

Currently, there are two occupations in the standard occupational classification (SOC) system that align with the Taxonomy of Program (TOP) code for Environmental Control Technology (HVAC) (0946.00). The occupation titles and descriptions, as well as reported job titles are included in Exhibit 1.

**Exhibit 1 – Occupations, descriptions, and sample job titles**

SOC Code	Title	Description	Sample of Reported Job Titles
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	Install or repair heating, central air conditioning, or refrigeration systems, including oil burners, hot-air furnaces, and heating stoves.	Refer to the emerging occupations below for sample of reported job titles: <b>49-9021.01 - Heating and Air Conditioning Mechanics and Installers:</b> A/C Tech (Air Conditioning Technician); HVAC Installer (Heating, Ventilation, Air Conditioning Installer); HVAC Mechanic (Heating, Ventilation, Air Conditioning Mechanic); HVAC Service Tech (Heating, Ventilation, Air Conditioning Service Technician); HVAC Service Technician (Heating, Ventilation, Air Conditioning Service Technician); HVAC Specialist (Heating, Ventilation, and Air Conditioning Specialist); HVAC Technician (Heating, Ventilation, Air Conditioning Technician); HVAC Technician (Heating, Ventilation, and Air Conditioning Technician); Service Technician; Systems Mechanic <b>49-9021.02 - Refrigeration Mechanics and Installers:</b> Ammonia Refrigeration Technician; Heating, Ventilation, Air Conditioning / Refrigeration Technician (HVAC / R Technician); Heating, Ventilation, Air Conditioning Service Technician (HVAC Service Technician); Heating, Ventilation, Air Conditioning Technician (HVAC Technician); HVAC/R Service Technician (Heating, Ventilation, and Air Conditioning/Refrigeration Service Technician); Refrigeration Mechanic; Refrigeration Operator; Refrigeration Technician; Service Technician; Transportation Refrigeration Technician
49-9031	Home Appliance Repairers	Repair, adjust, or install all types of electric or gas household appliances, such as refrigerators, washers, dryers, and ovens.	Appliance Mechanic, Appliance Repair Mechanic, Appliance Repair Technician (Appliance Repair Tech), Appliance Service Technician, Appliance Technician (Appliance Tech), Installer, Repair Man, Repair Technician, Service Technician (Service Tech), Vacuum Repairer

Source: O\*NET Online

## Current and Future Employment

In Los Angeles and Orange Counties, the number of jobs for occupations related to HVAC is expected to increase by 12% over the next five years. More than 1,300 job opportunities will be available annually for this occupation group through 2022 due to new job growth and replacement need (e.g., retirements). Exhibit 2 contains detailed employment projections data for the occupation group.

**Exhibit 2 – Five-year projections for HVAC-related occupations**

SOC	Occupation	2017 Jobs	2022 Jobs	2017 - 2022 Change	2017 - 2022 % Change	Annual Openings
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	9,663	10,977	1,314	14%	1,240
49-9031	Home Appliance Repairers	1,273	1,240	(33)	(3%)	117
	<b>Total</b>	<b>10,936</b>	<b>12,217</b>	<b>1,281</b>	<b>12%</b>	<b>1,357</b>

Source: EMSI 2018.3 – QCEW, non-QCEW, Self-Employed.

## Earnings

In Los Angeles and Orange Counties, the entry-level average wage for the occupations of interest is between \$12.00 and \$14.24 per hour. The entry-level hourly wage of home appliance repairers is below the MIT Living Wage<sup>1</sup> estimates of \$13.54 and \$15.31 per hour for a single adult in Los Angeles and Orange Counties. The average annual earnings for the occupations in the region is between \$37,000 and \$55,000 per year, assuming full-time employment.

Exhibit 3 contains hourly wages and annual average earnings for the occupation group studied in this report. Entry-level hourly earnings is represented by the 10<sup>th</sup> percentile of wages, median hourly earnings is represented by the 50<sup>th</sup> percentile of wages, and experienced hourly earnings is represented by the 90<sup>th</sup> percentile of wages, demonstrating various levels of employment.

**Exhibit 3 – Earnings for HVAC-related occupations**

SOC	Occupation	Entry-Level Hourly Earnings	Median Hourly Earnings	Experienced Hourly Earnings	Average Annual Earnings
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	\$14.24	\$25.50	\$43.03	\$55,431
49-9031	Home Appliance Repairers	\$12.00	\$14.56	\$29.15	\$37,651

<sup>1</sup> MIT Living Wage Calculator. <http://livingwage.mit.edu/>

Source: EMSI 2018.3 – QCEW, non-QCEW, Self-Employed.

## Employer Job Postings

In this research brief, real-time labor market information is used to provide a more nuanced view of the current job market, as it captures job advertisements for occupations relevant to the field of study. Employer job postings are consulted to understand who is employing in the field of HVAC, and what they are looking for in potential candidates. To identify job postings related to HVAC, the SOC codes in Exhibit 1 were used.

### Top Titles

The most common job titles for HVAC-related jobs are listed in Exhibit 4. HVAC technician was mentioned in 33% of all relevant job postings (31 out of 95 postings).

**Exhibit 4 –Job titles (n=95)**

Title	Job Postings, Last 12 Months
HVAC Technician	31
HVAC Installer	11
Refrigeration Technician	9
Repair Technician	8
Service Technician	8
Senior Technician	6
Appliance Repair Technician	3

Source: Labor Insight/Jobs (Burning Glass)

### Top Employers

Exhibit 5 lists the major employers hiring professionals in the field of HVAC. Top employers postings job ads included American Mechanical Service, Best Buy, and Extron Electronics. The top worksite cities in the region for these occupations were: Los Angeles, Fullerton, Anaheim, Mission Viejo, and Downey.

**Exhibit 5 – Top employers (n=80)**

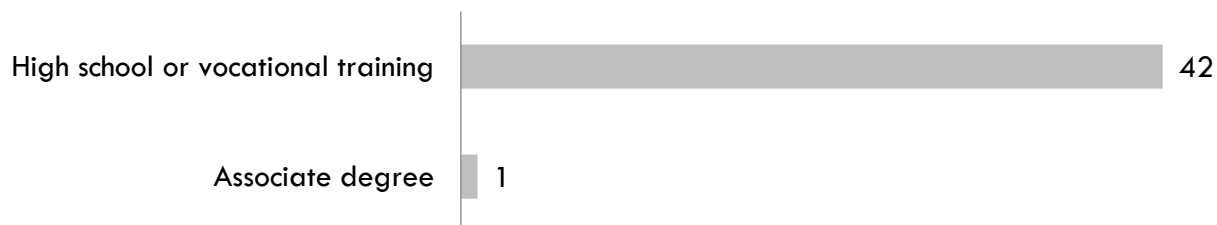
Employer	Job Postings, Last 12 Months
American Mechanical Service	14
Best Buy	6
Extron Electronics	5
Shire	5
American Residential Services	4
Elite Line Services, LLC	3
General Atomics	3

Source: Labor Insight/Jobs (Burning Glass)

### Advertised Education Levels

Exhibit 6 displays the education level requested by employers in online job ads. The majority of employers were looking for a candidate with high school or vocational training. Approximately 55% of job postings did not specify a level of education.

**Exhibit 6 – Advertised education requirements for HVAC-related occupations (n=43)**



Source: Labor Insight/Jobs (Burning Glass)

### Education and Training

Exhibit 7 shows the typical entry-level education requirement for the occupations of interest, along with the typical on-the-job training, and percentage of workers in the field who hold a community college award or have completed some postsecondary courses. Between 38% and 44% of the workforce has completed some community college education as their highest level of education.

**Exhibit 7 – Education and training requirements**

SOC	Occupation	Typical entry-level education	Typical on-the-job training	% of Community College Award Holders or Some Postsecondary Coursework
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	Postsecondary nondegree award	Long-term	44%
49-9031	Home Appliance Repairers	HS diploma/equivalent	Moderate-term	38%

Source: EMSI, Bureau of Labor Statistics Employment Projections (Educational Attainment)

In Los Angeles and Orange Counties, eight community colleges have conferred awards in programs that train students for HVAC. Between 2014 and 2017, there was an average of 404 community college awards conferred annually across relevant programs. It is important to note that an award is not equivalent to a single person in search of a job opening, since a student may earn more than one award (e.g. an associate degree and a certificate).

**Exhibit 8 – CCC Student Awards (by TOP and College)**

TOP Code	Program	College	2014-15 Awards	2015-16 Awards	2016-2017 Awards	3-Year Award Average
0946.00	Environmental Control Technology (HVAC)	Citrus	2	8	14	8
		Compton	38	75	84	66
		Cypress	111	44	106	87
		El Camino	63	68	55	62
		LA Trade	111	100	98	103
		Long Beach	1	N/A	N/A	1
		Mt San Antonio	40	38	33	37
		Orange Coast	37	46	40	41
<b>Subtotal/Average</b>			<b>403</b>	<b>379</b>	<b>430</b>	<b>404</b>

Source: California Community Colleges Chancellor’s Office MIS Data Mart

**Student Outcomes**

The CTE LaunchBoard provides student outcome data on the effectiveness of CTE programs. The following student outcome information was collected from exiters of the Environmental Control Technology (HVAC) Taxonomy of Program (TOP) code (0946.00) in Los Angeles and Orange Counties for the 2015-16 academic year.

- Median earnings in the second fiscal quarter after program completion is \$10,719
- 70% of students are earning a living wage
- 76% of students are employed within six months after completing a program

Source: CTE LaunchBoard

## Sources

O\*Net Online, Labor Insight/Jobs (Burning Glass), Economic Modeling Specialists International (EMSI), MIT Living Wage Calculator, Bureau of Labor Statistics (BLS) Education Attainment, California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart, CTE LaunchBoard, Statewide CTE Outcomes Survey, Employment Development Department Unemployment Insurance Dataset

## Notes

Data included in this analysis represents the labor market demand for positions most closely related to HVAC. Standard occupational classification (SOC) codes were chosen based on the national education level required for employment (associate degree and postsecondary certificate) as well as the proportion of current workers who hold a community college award or have had some community college training. This selection process narrows the labor market analysis to the most relevant employment opportunities for students with community college education and/or training.

Traditional labor market information was used to show current and projected employment based on data trends, as well as annual average awards granted by regional community colleges. Real-time labor market information captures job post advertisements for occupations relevant to the field of study and should not be used to establish current job openings, because the numbers may include duplicate job postings or postings intended to gather a pool of applicants. Real-time labor market information can signal demand and show what employers are looking for in potential employees, but is not a perfect measure of the quantity of open positions.