



Labor Market Analysis for Program Recommendation HVAC/ACR Occupations Santa Cruz and Monterey Subregion

Prepared by the Bay Region Center of Excellence for Labor Market Research

Associate Program

April 2026

Recommendation Based on Labor Market Data: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> With Reservations <input type="checkbox"/> No		
	Earning Wage Meets Living Wage	Meets Demand
Bay Region	Entry Level Hourly Wage- \$27 Mid-Career Hourly Wage- \$35 Mid-Career Hourly Wage at or above the Bay Living Wage (\$27)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Demand: 764 Supply: 280 (37% of Demand is Met) Gap: 484 In-Demand? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Santa Cruz and Monterey Subregion	Entry Level Hourly Wage- \$24 Mid-Career Hourly Wage-\$32 Mid-Career Hourly Wage at or above the Subregion Living Wage (\$27)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Demand: 57 Supply: 0 (0% of Demand is Met) Gap: 57 In-Demand? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Note: An occupation is considered to provide a living wage if the mid-career wage is at or above the amount required for a single adult to be economically self-sufficient within a specified region. As a rule of thumb, an occupation will be considered **in-demand** when the supply is less than 75% of the demand **and** the labor market gap exceeds 40 openings (a reasonable regional threshold for starting a new program), but this approach may not apply in all cases. For definitions of demand, supply, and living wage, please scroll to the bottom of the report under **Definitions**.

Recommendation

Based on the labor market data, we recommend this proposed program. The occupations meet both the Bay Region and Santa Cruz and Monterey subregion living wage at the entry and mid-career levels. An additional 484 students are needed in the Bay Region and 57 students in the Santa Cruz and Monterey subregion to complete their program. Lastly, only 37% of labor market demand is being met in the Bay Region, and 0% of demand is being met in the Santa Cruz and Monterey subregion overall.

Introduction

This report provides student outcomes data on employment and earnings for TOP 0946.00 - Environmental Control Technology programs in the state and region. It is recommended that these data be reviewed to better understand how outcomes for students taking courses on this TOP code compare to potentially similar programs at subregion in the state and region.

This report profiles HVAC/ACR Occupations in the 12 county Bay Region and in the Santa Cruz and Monterey subregion. The occupations classified as middle-skill occupations require a certificate, or an associate degree, or it may require a bachelor's degree, but 33% or fewer of current workers in these roles hold one.

- Heating, Air Conditioning, and Refrigeration Mechanics and Installers (49-9021):** Install or repair heating, central air conditioning, HVAC, or refrigeration systems, including oil burners, hot-air furnaces, and heating stoves.
 - Typical Entry-Level Educational: Postsecondary nondegree award
 - Skill Level: Middle-Skill
 - Work Experience Required: None
 - Percentage of individuals 25+ with an associate degree, certificate, or some postsecondary coursework as their highest level of education attainment: 42%

Occupational Demand

Table 1. Employment Outlook for HVAC/ACR Occupations in the Bay Region

Occupation	2024 Jobs	2029 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	Entry Level Hourly	Mid-Career Hourly Wage
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	8,395	8,587	191	2%	3,818	764	\$27	\$35
Total	8,395	8,587	192	2%	3,818	764	\$27	\$35

Source: Lightcast 2026.1

The Bay Region includes: Alameda, Contra Costa, Marin, Monterey, Napa, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano and Sonoma Counties

Table 2. Employment Outlook for HVAC/ACR Occupations in the Santa Cruz and Monterey Subregion

Occupation	2024 Jobs	2029 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	Entry Level Hourly	Mid-Career Hourly Wage
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	575	608	33	6%	285	57	\$24	\$32
Total	575	608	33	6%	285	57	\$24	\$32

Source: Lightcast 2026.1

Santa Cruz and Monterey Subregion includes: Monterey, San Benito, Santa Cruz Counties

Job Postings in the Bay Region and Santa Cruz and Monterey Subregion

Table 3. Number of Job Postings by Occupation for the latest 12 months

Occupation	Bay Region	Santa Cruz and Monterey
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	1,316	90

Source: Lightcast 2026.1; "Job Posting Analytics." Apr. 2025 - Mar. 2026

Table 4a. Top Job Titles in Job Postings for HVAC/ACR Occupations in the Bay Region

Title	Bay	Title	Bay
HVAC Technicians	147	Commercial HVAC Service Technicians	23
HVAC Service Technicians	122	Lead HVAC Technicians	23
HVAC Installers	81	HVAC Refrigeration Technicians	22
Commercial Refrigeration Service Technicians	61	Facilities Technicians	19
Refrigeration Technicians	50	Residential HVAC Service Technicians	17
Heating and Air Conditioning Technicians	34	Lead HVAC Service Technicians	16
HVAC Mechanics	29	Facility Engineering Refrigeration/HVAC Technicians	16
HVAC Lead Installers	27	Installation Helpers	15
Commercial HVAC Technicians	27	Journeyman HVAC Technicians	15

Source: Lightcast 2026.1; "Job Posting Analytics." Apr. 2025 - Mar. 2026

Table 4b. Top Job Titles in Job Posting for HVAC/ACR Occupations in the Santa Cruz and Monterey Subregion

Title	Santa Cruz and Monterey	Title	Santa Cruz and Monterey
HVAC Technicians	11	HVAC Service Technicians/Installers	4
Refrigeration Technicians	7	Ammonia Refrigeration Technicians	4
Commercial Refrigeration Service Technicians	6	Residential HVAC Installers	3
HVAC Service Technicians	6	HVAC Maintenance Technicians	2
HVAC Installers	5	Facilities Technicians	2
HVAC Mechanics	5	Refrigeration Managers	2
HVAC Installers Apprentice	5	Heating and Air Conditioning Technicians	2
Journeyman HVAC Installers	4	Plumbing Apprentices	1
HVAC/Refrigeration Service Technicians	4	Professional Service Technicians	1

Source: Lightcast 2026.1; "Job Posting Analytics." Apr. 2025 - Mar. 2026

Industry Concentration

Table 5. Industries Hiring for HVAC/ACR Occupations in the Bay Region

Industry - 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2024)	Jobs in Industry (2029)	% Change (2024-29)	% Occupation Group in Industry (2024)
Plumbing, Heating, and Air-Conditioning Contractors	5,677	5,829	3%	68%
Residential Remodelers	280	306	9%	3%
Electrical Contractors and Other Wiring Installation Contractors	213	207	-3%	2%
New Single-Family Housing Construction (except For-Sale Builders)	113	113	0%	1%
Local Government, Excluding Education and Hospitals	94	100	7%	1%
All Other Specialty Trade Contractors	95	88	-7%	1%
Natural Gas Distribution	83	91	9%	1%
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	87	79	-9%	1%
Facilities Support Services	81	117	45%	1%
Colleges, Universities, and Professional Schools (State Government)	78	78	0%	1%

Source: Lightcast 2026.1

Table 6. Top Employers Posting HVAC/ACR Occupations in the Bay Region and the Santa Cruz and Monterey Subregion

Employer	Bay	Employer	Santa Cruz and Monterey
GPAC	50	Cargill	5
Service Experts Heating And Air Conditioning	27	Blue Mountain Enterprises	5
CBRE	24	University of California-Santa Cruz	4
Aerotek	22	Nextech Sarl	4
Blue Mountain Enterprises	21	Coolsys	4
Ars Corporation Ltd	18	Refrigeration Systems Construction & Service Company	3

Source: Lightcast 2026.1; "Job Posting Analytics." Apr. 2025 - Mar. 2026

Educational Supply

There are five community colleges in the Bay Region issuing 106 awards on average annually (last 3 years ending 2023-24) on TOP 0946.00 - Environmental Control Technology. In the Santa Cruz and Monterey subregion, there are no community colleges that issued awards on average annually (last 3 years) on this TOP code.

There are three other CTE educational institutions in the Bay Region issuing 174 awards on average annually (last 3 years ending 2022-23) on CIP 47.0201- Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician.

Table 7a. Community College Awards on TOP 0946.00 - Environmental Control Technology in the Bay Region

College	Subregion	Associate Degree	High unit Certificate	Low unit Certificate	Total
Foothill	Silicon Valley	1	27	0	28
Gavilan	Silicon Valley	2	0	4	6
Laney	East Bay	5	3	13	21
San Francisco	Mid-Peninsula	0	0	6	6
San Jose City	Silicon Valley	9	11	25	45
Total	-	17	41	48	106

Source: Data Mart

Note: The annual average for awards is 2021-22 to 2023-24.

Table 7b. Other CTE Institutions Awards on CIP 47.0201- Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician. in the Bay Region

College	Subregion	Certificates of at least 1 but less than 2 years	Certificates of less than 1 year	Total
CET-San Jose	Silicon Valley	15	0	15
Institute for Business and Technology	Silicon Valley	0	134	134
InterCoast Colleges-Fairfield	North Bay	0	25	25
Total	-	15	159	174

Source: Data Mart

Note: The annual average for awards is 2020-21 to 2022-23.

Gap Analysis

Based on the data included in this report, there is a labor market gap in the Bay Region with 764 annual openings for the HVAC/ACR occupational cluster and 280 annual (3-year average) awards for an annual undersupply of 484 students. In the Santa Cruz and Monterey subregion, there is also a gap with 57 annual openings and no annual (3-year average) awards for an annual undersupply of 57 students.

Student Outcomes

Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0946.00 - Environmental Control Technology

Metric Outcomes	Bay All CTE Program	State 0946.00	Bay 0946.00
Students with a Job Closely Related to Their Field of Study	75%	73%	90%

Metric Outcomes	Bay All CTE Program	State 0946.00	Bay 0946.00
Median Annual Earnings for SWP Exiting Students	\$58,379	\$51,577	\$69,332
Median Change in Earnings for SWP Exiting Students	31%	32%	50%
Exiting Students Who Attained the Living Wage	50%	53%	59%

Source: DataVista Program Median of 2020 to 2022.

Skills, Certifications and Education

Table 9. Top Skills in Job Postings for HVAC/ACR Occupations in the Bay Region

Skill	Posting	Skill	Posting
HVAC	1,155	Mechanical Aptitude	151
Good Driving Record	398	Safety Standards	139
Preventive Maintenance	274	R (Programming Language)	125
Lifting Ability	247	Furnaces	124
Ventilation	242	Equipment Repair	99
Refrigerant	212	Blueprinting	97
Boilers	203	Construction	87
Refrigeration	174	Power Tool Operation	83
Plumbing	173	Building Management System	82
Hand Tools	153	Brazing (Metal Work)	81

Source: Lightcast 2026.1; "Job Posting Analytics." Apr. 2025 - Mar. 2026

Table 10. Certifications in Job Postings for HVAC/ACR Occupations in the Bay Region

Certification	Posting	Certification	Posting
Valid Driver's License	605	EPA Type II Certification	8
EPA 608 Technician Certification	276	Cardiopulmonary Resuscitation (CPR) Certification	8
EPA Universal Certification	147	First Aid Certification	8
HVAC Certification	41	Commercial Driver's License (CDL)	8
NATE Certification (North American Technician Excellence)	32	EPA Type I Certification	7
EPA Section 608 Technician Certification	24	Journeyman Plumber	6
10-Hour OSHA General Industry Card	19	Transportation Worker Identification Credential (TWIC) Card	6

Certification	Posting	Certification	Posting
Forklift Certification	19	OSHA Certification	4
CDL Class C License	17	HVAC Excellence Certification	3
30-Hour OSHA General Industry Card	11	Contractor License	3

Source: Lightcast 2026.1; "Job Posting Analytics." Apr. 2025 - Mar. 2026

Table 11. Education Requirements for HVAC/ACR Occupations in the Bay Region

Education Level	Job Postings	% of Total
High school or GED	421	86%
Associate degree	37	8%
Bachelor's degree & higher	29	6%

Source: Lightcast 2026.1; "Job Posting Analytics." Apr. 2025 - Mar. 2026

Note: 65% of records have been excluded because they do not include a degree level. As a result, the chart above may not be representative of the full sample.

Methodology

Occupations for this report were identified by use of job descriptions and skills listed in O*Net. Labor demand data is sourced from Lightcast occupation and job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CCCC Data Mart and CTE Launchboard.

Definitions

Demand refers to average annual openings which includes a combination of both [new jobs and replacement jobs](#) between 2024 to 2029. New jobs represent the total number of additional workers required in an occupation, calculated as the difference between the current number of workers and the projected number of unfilled positions. Replacements are jobs that will need to be filled by [new hires](#) due to existing workers leaving the occupation. The average annual openings figure is derived by dividing total openings (2024 to 2029) by five years.

Supply refers to the average number of [graduates](#) between academic years 2021–2022 and 2023–2024. Graduates include students from community colleges, other two-year private and public institutions, as well as four-year institutions.

Living wage refers to the amount of income required for working families to meet basic needs at a minimally adequate level, considering family composition, ages of children, and geographic differences in costs based on the Self-Sufficiency Standard methodology.

Entry-level wages are the hourly earnings paid to workers who are newly entering an occupation.

Mid-career wages are the hourly earnings paid to workers who have accumulated several years of experience in an occupation, reflecting increased productivity, skill proficiency, and responsibility beyond entry-level roles but short of late-career or senior positions.

Sources

O*Net Online

Lightcast

CTE LaunchBoard www.calpassplus.org

Statewide CTE Outcomes Survey

Employment Development Department Unemployment Insurance Dataset

CCCCO Data Mart

Contacts

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