**Air Conditioning Mechanic Occupations**

**Labor Market Information Report**

**Foothill College**

Prepared by the San Francisco Bay Center of Excellence

for Labor Market Research

March 2020

# Recommendation

Based on all available data, there appears to be an undersupply of Air Conditioning Mechanic workers compared to the demand for this cluster of occupations in the Bay region and in the Silicon Valley sub-region (Santa Clara County). There is a projected annual gap of about 908 students in the Bay region and 249 students in the Silicon Valley Sub-Region.

This report also provides student outcomes data on employment and earnings for programs on TOP 09460.00 - Environmental Control Technology 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 colleges in the state and region, as well as to outcomes across all CTE programs at Foothill College and in the region.

# Introduction

This report profiles Air Conditioning Mechanic Occupations in the 12 county Bay region and in the Silicon Valley sub-region for Foothill College.

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| --- |
| * **Heating, Air Conditioning, and Refrigeration Mechanics and Installers (SOC 49-9021**): Install or repair heating, central air conditioning, or refrigeration systems, including oil burners, hot-air furnaces, and heating stoves. |
| Entry-Level Educational Requirement: Postsecondary nondegree *award* |
| Training Requirement: Long-term *on-the-job training* |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 42% |

# Occupational Demand

**Table 1. Employment Outlook for Air Conditioning Mechanic Occupations in Bay Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation | 2018 Jobs | 2023 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Average Annual Open-ings | 25% Hourly Wage | Median Hourly Wage |
| Heating, Air Conditioning, and Refrigeration Mechanics and Installers | 8,012 | 9,046 | 1,034 | 13% | 5,192 | 1,038 | $20.36 | $27.98 |

*Source: EMSI 2019.4*

**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 Air Conditioning Mechanic Occupations in Silicon Valley Sub-Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation | 2018 Jobs | 2023 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Average Annual Open-ings | 25% Hourly Wage | Median Hourly Wage |
| Heating, Air Conditioning, and Refrigeration Mechanics and Installers | 2,321 | 2,697 | 376 | 16% | 1,597 | 319 | $19.37 | $30.10 |

*Source: EMSI 2019.4*

**Silicon Valley Sub-Region** includes Santa Clara County

### Job Postings in Bay Region and Silicon Valley Sub-Region

**Table 3. Number of Job Postings by Occupation for latest 12 months (March 2019 - February 2020)**

| Occupation | Bay Region | Silicon Valley |
| --- | --- | --- |
| Heating and Air Conditioning Mechanics and Installers | 2,164 | 705 |
| Refrigeration Mechanics and Installers | 209 | 40 |
| **TOTAL** | **2,373** | **745** |

*Source: Burning Glass*

**Table 4a. Top Job Titles for Air Conditioning Mechanic Occupations for latest 12 months (March 2019 - February 2020) Bay Region**

|  |  |  |  |
| --- | --- | --- | --- |
| Common Title | Bay | Common Title | Bay |
| Service Technician | 381 | Journeyman | 19 |
| HVAC Technician | 263 | HVAC Foreman | 14 |
| HVAC Installer | 222 | Lead Installer | 13 |
| HVAC Service Technician | 205 | Entry Level HVAC | 13 |
| Refrigeration Technician | 149 | HVAC Foreman, Commercial | 12 |
| HVAC Journeyman | 127 | Residential Installer | 11 |
| Mechanic | 85 | Dispatcher | 11 |
| Technician | 65 | HVACR Technician | 10 |
| Estimator | 65 | HVAC Commercial Foreman | 10 |
| Appliance Repair Technician | 54 | Senior Technician, General | 9 |
| Installer | 39 | Operations Technician | 9 |
| HVAC Mechanic | 38 | Lead Technician | 8 |
| HVAC Project Manager | 34 | Field Controls Integration Technician | 8 |
| Maintenance Technician | 23 | Equipment Mechanic | 8 |

**Table 4b. Top Job Titles for Air Conditioning Mechanic Occupations for latest 12 months (March 2019 - February 2020) Silicon Valley Sub-Region**

|  |  |  |  |
| --- | --- | --- | --- |
| Common Title | Silicon Valley | Common Title | Silicon Valley |
| Service Technician | 146 | Residential Installer | 5 |
| HVAC Technician | 106 | Project Estimator | 5 |
| HVAC Service Technician | 73 | Journeyman | 5 |
| HVAC Installer | 55 | Entry Level HVAC | 5 |
| HVAC Journeyman | 39 | Sign - On | 4 |
| Technician | 33 | Maintenance Technician | 4 |
| Mechanic | 33 | Installer | 4 |
| Refrigeration Technician | 28 | HVAC Technical Support | 4 |
| Estimator | 24 | Utility Technician | 3 |
| HVAC Mechanic | 16 | Technician Supervisor | 3 |
| Appliance Repair Technician | 11 | Plumbing HVAC Project Manager | 3 |
| HVAC Project Manager | 9 | Lead Technician | 3 |
| Dispatcher | 8 | Lead Installer | 3 |
| Operations Technician | 6 | HVACR Technician | 3 |

*Source: Burning Glass*

# Industry Concentration

**Table 5. Industries hiring Air Conditioning Mechanic Workers in Bay Region**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Industry – 6 Digit NAICS (No. American Industry Classification) Codes | Jobs in Industry (2018) | Jobs in Industry (2022) | % Change (2018-22) | % in Industry (2018) |
| Plumbing, Heating, and Air-Conditioning Contractors (238220) | 5,562 | 6,451 | 16% | 69% |
| Residential Remodelers (236118) | 221 | 252 | 14% | 3% |
| Electrical Contractors and Other Wiring Installation Contractors (238210) | 162 | 180 | 11% | 2% |
| Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance (811310) | 100 | 108 | 8% | 1% |
| All Other Specialty Trade Contractors (238990) | 101 | 108 | 7% | 1% |
| New Single-Family Housing Construction (except For-Sale Builders) (236115) | 96 | 97 | 1% | 1% |
| Local Government, Excluding Education and Hospitals (903999) | 92 | 98 | 7% | 1% |

*Source: EMSI 2019.4*

**Table 6. Top Employers Posting Air Conditioning Mechanic Occupations in Bay Region and Silicon Valley Sub-Region (March 2019 - February 2020)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Employer | Bay | Employer | Bay | Employer | Silicon Valley |
| Blue Mountain Air Inc. | 239 | Multiband Corporation | 12 | Blue Mountain Air Inc | 60 |
| Sears | 148 | Bellows Plumbing Inc | 12 | Sears | 32 |
| Alliance Residential Company | 46 | American Technologies Inc | 12 | Emcor Group | 20 |
| Service Champions | 37 | ABM Industries | 12 | Alliance Residential Co | 18 |
| Emcor Group | 37 | Lennox | 11 | Service Champions | 15 |
| Sunbelt Rentals Incorporated | 33 | FedEx | 11 | Sunbelt Rentals Inc | 14 |
| Legacy Air | 26 | Cushman & Wakefield | 11 | Jones Lang Lasalle Inc | 12 |
| Jones Lang Lasalle Inc | 26 | Service Experts Llc | 10 | Cushman & Wakefield | 11 |
| Alliance Residential | 26 | Legacy Air Hvac | 10 | Alliance Residential | 11 |
| Gulfstream Strategic Placements | 22 | Ais Heating & Air Conditioning | 10 | Legacy Air | 10 |
| General Electric Company | 22 | Service Experts Inc | 9 | Gulfstream Strategic Placements | 10 |
| Semper Solaris | 20 | Fidelitone | 9 | Ars Rescue Rooter | 9 |
| Best Buy | 20 | Ars Rescue Rooter | 9 | American Wheatley Hvac Products | 9 |
| Johnson Controls Incorporated | 17 | American Wheatley Hvac Products | 9 | Stanford University | 8 |
| Kdc Service & Maintenance | 16 | University California | 8 | Jacobs Engineering Group Incorporated | 8 |
| Workyard | 13 | Stanford University | 8 | Semper Solaris | 7 |
| United Rentals | 12 | Service Experts | 8 | Lennox | 7 |

*Source: Burning Glass*

# Educational Supply

There are three (3) community colleges in the Bay Region issuing 130 awards on average annually (last 3 years) on TOP 09460.00 - Environmental Control Technology. There is one college (San Jose City College) in the Silicon Valley Sub-Region issuing 70 awards on average annually (last 3 years) on this TOP code.

**Table 7. Awards on TOP 09460.00 - Environmental Control Technology in Bay Region**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| College | Sub-Region | Associates | Certificate 18+ Units | Certificate Low Unit | Total |
| City College of San Francisco | Mid-Peninsula |  |  | 12 | 12 |
| Laney College | East Bay | 12 | 33 | 3 | 48 |
| San Jose City College | Silicon Valley | 7 | 63 |  | 70 |
| **Total Bay Region** | | **19** | **96** | **15** | **130** |
| **Total Silicon Valley Sub-Region** | | **7** | **63** | **0** | **70** |

# *Source: Data Mart*

Note: The annual average for awards is 2015-16 to 2017-18.

# Gap Analysis

Based on the data included in this report, there is a labor market gap in the Bay region with 1,038 annual openings for the Air Conditioning Mechanic occupational cluster and 130 annual (3-year average) awards for an annual undersupply of 908 students. In the Silicon Valley Sub-Region, there is also a gap with 319 annual openings and 70 annual (3-year average) awards for an annual undersupply of 249 students.

# Student Outcomes

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

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2015-16 | Bay  (All CTE Programs) | Foothill College (All CTE Programs) | State (0946.00) | Bay (0946.00) | Silicon Valley (0946.00) | Foothill College (0946.00) |
| % Employed Four Quarters After Exit | 74% | 77% | 75% | 75% | 79% | 100% |
| Median Quarterly Earnings Two Quarters After Exit | $10,550 | $15,301 | $10,505 | $13,526 | $15,089 | n/a |
| Median % Change in Earnings | 46% | 82% | 45% | 54% | 58% | 71% |
| % of Students Earning a Living Wage | 63% | 76% | 72% | 78% | 72% | n/a |

*Source: Launchboard Pipeline (version available on 3/4/20)*

# Skills, Certifications and Education

**Table 9. Top Skills for Air Conditioning Mechanic Occupations in Bay Region (March 2019 - February 2020)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Skill | Postings | Skill | Postings | Skill | Postings |
| HVAC | 2,167 | Sales | 173 | Project Management | 111 |
| Repair | 1,494 | Carpentry | 168 | Condensers | 110 |
| Plumbing | 666 | Budgeting | 164 | Motor Vehicle Operation | 107 |
| Customer Service | 554 | Customer Contact | 151 | Wiring Diagrams | 102 |
| Hand Tools | 395 | Drywall | 140 | System Operation | 99 |
| Predictive / Preventative Maintenance | 373 | Cleaning | 137 | Vimeo | 92 |
| Ventilation | 335 | Brazing | 134 | Welding | 92 |
| Lifting Ability | 302 | Product Sales | 130 | Basic Mathematics | 91 |
| Power Tools | 278 | Painting | 129 | Estimating | 90 |
| Appliance Repair | 241 | Schematic Diagrams | 129 | Machinery | 87 |
| Boilers | 238 | Electrical Systems | 127 | Hazardous Material Handling | 85 |
| Duct Work | 225 | New Construction | 124 | Oil Changes | 81 |
| Scheduling | 221 | Test Equipment | 117 | Equipment Inventory | 76 |
| Wiring | 210 | Roofing | 113 | Pipe Cutters | 76 |
| Occupational Health and Safety | 183 | Retrofitting | 112 | Recruiting | 75 |

*Source: Burning Glass*

**Table 10. Certifications for Air Conditioning Mechanic Occupations in Bay Region (March 2019 - February 2020)**

Note: 47% of records have been excluded because they do not include a certification. As a result, the chart below may not be representative of the full sample.

|  |  |  |  |
| --- | --- | --- | --- |
| Certification | Postings | Certification | Postings |
| Driver's License | 953 | Commercial Food Equipment Service Association (CFESA) | 14 |
| Environmental Protection Agency Certification | 355 | Certified A+ Technician | 14 |
| EPA CFC/HCFC Certification | 163 | CDL Class C | 13 |
| North American Technician Excellence (NATE) | 70 | Good Conduct | 11 |
| Occupational Safety and Health Administration Certification | 41 | Hazwoper | 9 |
| EPA 608 | 40 | CDL Class B | 9 |
| Automotive Service Excellence (ASE) Certification | 35 | CompTIA Network+ | 8 |
| Air Conditioning (AC) Certification | 24 | Contractors License | 6 |
| Forklift Operator Certification | 23 | Security Clearance | 5 |
| Certified Pool/Spa Operator | 21 | Engineer in Training Certification | 5 |
| Appliance Repair Certificate | 21 | Certified Medical Assistant | 5 |
| First Aid CPR AED | 14 | Boiler Operator License | 5 |

*Source: Burning Glass*

**Table 11. Education Requirements for Air Conditioning Mechanic Occupations in Bay Region**

Note: 58% of records have been excluded because they do not include a degree level. As a result, the chart below may not be representative of the full sample.

|  |  |  |
| --- | --- | --- |
| Education (minimum advertised) | Latest 12 Mos. Postings | Percent 12 Mos. Postings |
| High school or vocational training | 951 | 96% |
| Associate Degree | 37 | 4% |
| Bachelor’s Degree or Higher | 0 | 0% |

*Source: Burning Glass*

# Methodology

Occupations for this report were identified by use of skills listed in O\*Net descriptions and job descriptions in Burning Glass. Labor demand data is sourced from Economic Modeling Specialists International (EMSI) occupation data and Burning Glass job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CTE Launchboard and CCCCO Data Mart.

# Sources

O\*Net Online

Labor Insight/Jobs (Burning Glass)

Economic Modeling Specialists International (EMSI)

CTE LaunchBoard [www.calpassplus.org/Launchboard/](http://www.calpassplus.org/Launchboard/)

Statewide CTE Outcomes Survey

Employment Development Department Unemployment Insurance Dataset

Living Insight Center for Community Economic Development

Chancellor’s Office MIS system

# Contacts

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