










Environmental Control Technology

Labor Market Analysis for San Diego College of Continuing Education

September 2021

Summary

NEW PROGRAM RECOMMENDATION?	EVIDENCE OF A SUPPLY GAP?	AT OR ABOVE THE LIVING WAGE?	EXPECTED LEVEL OF EDUCATION
 <p>Proceed with New Program</p>	 	 	<ul style="list-style-type: none"> <input type="checkbox"/> Bachelor's Degree+ <input type="checkbox"/> Associate Degree <input checked="" type="checkbox"/> Some College or Certificate <input type="checkbox"/> HS Diploma or Equivalent <input type="checkbox"/> Less than a HS Diploma <input type="checkbox"/> Apprenticeship
SUPPORT FOR PROGRAM MODIFICATION?	NUMBER OF INSTITUTIONS THAT PROVIDE TRAINING	NUMBER OF ANNUAL JOB OPENINGS	
 	<p style="text-align: center;">LOW</p> 	<p style="text-align: center;">MEDIUM</p> 	

This report provides labor market information for an occupation selected by San Diego College of Continuing Education for its *Environmental Control Technology* program. The training provided by this program is likely to lead to employment as *Heating, Air Conditioning, and Refrigeration Mechanics and Installers*. According to available labor market information, *Heating, Air Conditioning, and Refrigeration Mechanics and Installers* in San Diego County have a labor market demand of 270 annual job openings (while average demand for a single occupation in San Diego County is 242 annual job openings). On average, two institutions supply 31 for-credit awards and one institution supplies 52 noncredit awards in San Diego County for this occupation. In short, the region supplies 83 for-credit and noncredit awards for 270 annual job openings, suggesting that there is a supply gap in the labor market. Entry-level and median wages are above the living wage for this occupation. This brief recommends proceeding with developing a new program or a program modification because 1) there is a supply gap; and 2) entry-level and median wages are above the living wage.

Introduction

This report provides labor market information in San Diego County for an occupation related to the six-digit Taxonomy of Programs (TOP)¹ code, Environmental Control Technology (TOP 0946.00). The purpose of this brief is to assist noncredit program providers in the region, such as San Diego College of Continuing Education (SDCCE), with program development and review. SDCCE identified one occupation from the Standard Occupational Classification (SOC)² system for *Environmental Control Technology*, which will be the focus of this report:

Heating, Air Conditioning, and Refrigeration Mechanics and Installers (SOC 49-9021): Install or repair heating, central air conditioning, HVAC, or refrigeration systems, including oil burners, hot-air furnaces, and heating stoves. Sample reported job titles include:

- Refrigeration Mechanic
- Mechanic
- HVAC Installer
- Transportation Refrigeration Technician
- Service Technician (Service Tech)
- HVAC Technician
- Refrigeration Technician
- VRT Mechanic
- Technician

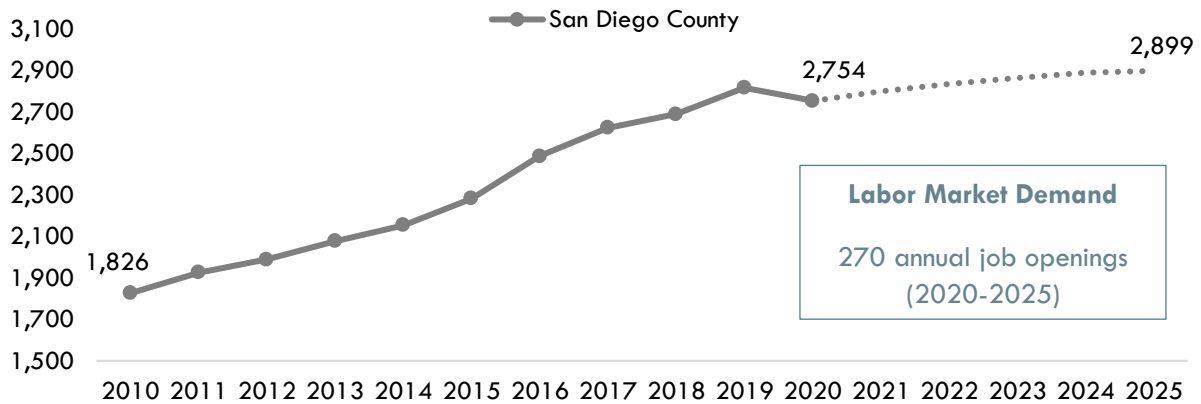
¹ Taxonomy of Programs (TOP) is a system of codes used by the California Community Colleges for the purpose of collecting, calculating, or disseminating data about similar training programs.

² The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating or disseminating data. [bls.gov/soc](https://www.bls.gov/soc).

Projected Occupational Demand

Between 2020 and 2025, *Heating, Air Conditioning, and Refrigeration Mechanics and Installers* is projected to increase by 145 net jobs or five percent (Exhibit 1). Employers in San Diego County will need to hire 270 workers annually to fill new jobs and backfill jobs due to attrition caused by turnover and retirement, for example.

Exhibit 1: Number of Jobs for Heating, Air Conditioning, and Refrigeration Mechanics and Installers (2010-2025)³

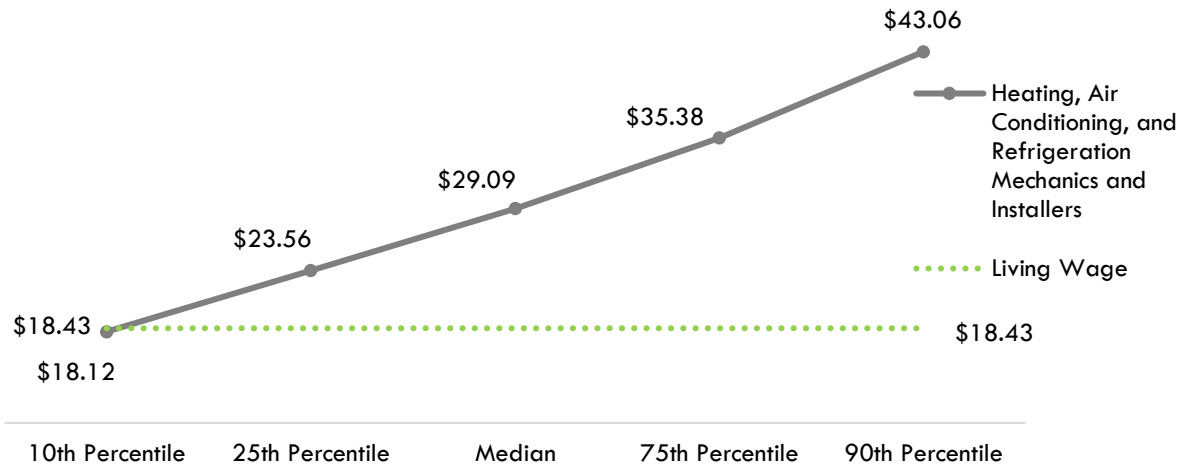


³ EMSI 2021.2; QCEW, Non-QCEW, Self-Employed.

Earnings

Heating, Air Conditioning, and Refrigeration Mechanics and Installers receive entry-level hourly earnings of \$23.56; this is more than the living wage for a single adult in San Diego County, which is \$18.43 per hour (Exhibit 2).⁴

Exhibit 2: Hourly Earnings⁵ for Heating, Air Conditioning, and Refrigeration Mechanics and Installers in San Diego County⁶



⁴ "Family Needs Calculator (formerly the California Family Needs Calculator)," Insight: Center for Community Economic Development, last updated 2021. insightccd.org/family-needs-calculator/.

⁵ 10th and 25th percentiles could be considered entry-level wages, and 75th and 90th percentiles could be considered experienced wages for individuals who may have been in the occupation longer, received more training than others, etc.

⁶ EMSI 2021.2; QCEW, Non-QCEW, Self-Employed.

Educational Supply

Educational supply for an occupation can be estimated by analyzing the number of awards in related Taxonomy of Programs (TOP) or Classification of Instructional Programs (CIP) codes.⁷ According to TOP and CIP⁸ data, two community colleges supply the region with for-credit awards for Environmental Control Technology (TOP 0946.00): [Grossmont College](#) and [Southwestern College](#) (Exhibit 3a).

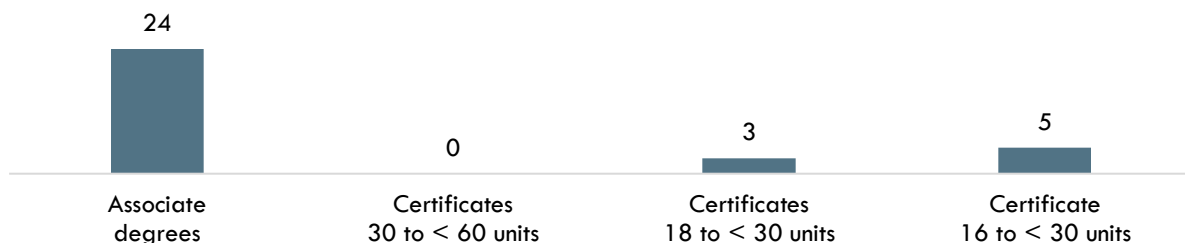
Exhibit 3a: Number of For-Credit Awards (Certificates and Degrees) Conferred by Postsecondary Institutions (Program Years 2017-18 through 2019-20)

College	Award Type	PY 17-18	PY 18-19	PY 19-20	3-Yr Total Average
Grossmont	Associate Degree	27	19	22	23
	Certificate 30 to < 60 units	1	0	0	0
	Certificate 16 to < 30 units	5	5	1	4
	Total	33	24	23	27
Southwestern	Associate Degree	0	2	0	1
	Certificate 18 to < 30 units	5	3	0	3
	Certificate 16 to < 30 units	0	1	1	1
	Total	5	6	1	4*
Total		38	30	24	31

Note: The numbers may not add up exactly due to rounding.

By award type, the colleges supplied the most awards for [associate degrees](#) based on the three-year average (program years 2017-18 through 2019-20) (Exhibit 3b).

Exhibit 3b: Total Number of For-credit Awards by Type for Environmental Control Technology (TOP 0946.00) in San Diego County (3-Yr Average)



⁷ TOP data comes from the California Community Colleges Chancellor's Office MIS Data Mart (datamart.cccco.edu) and CIP data comes from the Integrated Postsecondary Education Data System (nces.ed.gov/ipeds/use-the-data).

⁸ There are three CIP codes related to Environmental Control Technology (TOP 0946.00): Automation Engineer Technology/Technician (CIP 15.0406), Heating, Ventilation, Air Conditioning and Refrigeration Engineering Technology/Technician (CIP 15.0501), and Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician (CIP 47.0201).

In terms of noncredit awards, only San Diego College of Continuing Education provides noncredit awards for Environmental Control Technology (TOP 0946.00), with a three-year average of 52 noncredit awards (program years 2017-18 through 2019-20) (Exhibit 4).

**Exhibit 4: Number of Noncredit Awards Conferred by SDCCE
(Program Years 2017-18 through 2019-20)**

Program Title	Award Type	PY 17-18	PY 18-19	PY 19-20	3-Yr Total Average
Air Conditioning/Heating	Noncredit	59	0	97	52

Demand vs. Supply

Comparing labor demand (annual openings) with labor supply⁹ suggests that there is a **supply gap** in San Diego County, with 270 annual openings and 83 for-credit and noncredit awards supplied by the region (Exhibit 5).

Exhibit 5: Labor Demand (Annual Openings) Compared with Labor Supply (Average Annual Awards)

TOP6 Program	Demand (Annual Openings)	Supply (Total Annual Average Supply)		Supply Gap or Oversupply
		Noncredit	For-Credit	
Environmental Control Technology (TOP 0946.00)	270	52	31	187

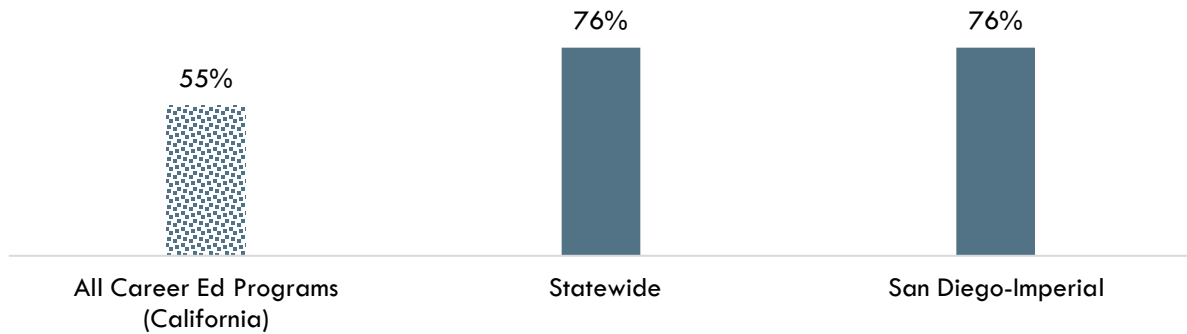
Please note: This is a basic analysis of supply and demand of labor. The data does not include workers currently in the labor force who could fill these positions or workers who are not captured by publicly available data. This data should be used to discuss the potential gaps or oversupply of workers; however, it should not be the only basis for determining whether or not a program should be developed.

⁹ Labor supply can be found from two different sources: EMSI or the California Community Colleges Chancellor's Office MIS Data Mart. EMSI uses CIP codes while MIS uses TOP codes. Different coding systems result in differences in the supply numbers.

Student Outcomes and Regional Comparisons

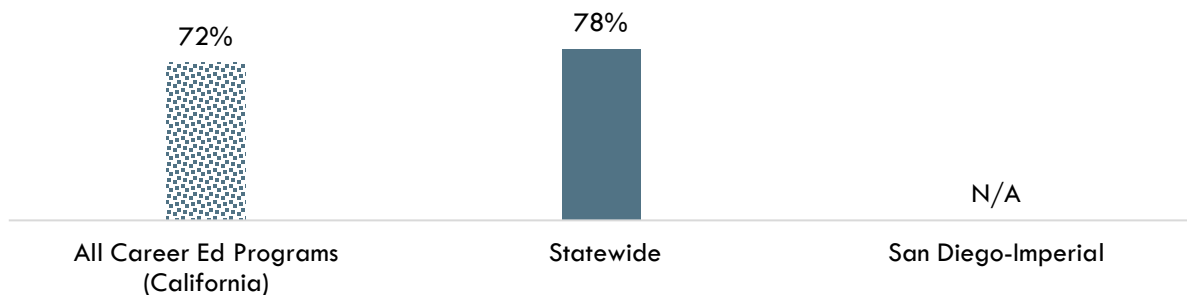
According to the California Community Colleges LaunchBoard, 76 percent of students in the San Diego-Imperial region earned a living wage after completing an Environmental Control Technology (0946.00) program, compared to 76 percent statewide and 55 percent of students in Career Education programs in general across the state (Exhibit 6a).¹⁰

**Exhibit 6a: Percentage of Students Who Earned a Living Wage by Program
(Environmental Control Technology, PY 2017-18)¹¹**



According to the California Community Colleges LaunchBoard, 78 percent of students statewide obtained a job closely related to their field of study after completing an Environmental Control Technology (0946.00) program, compared to 72 percent of students in Career Education programs in general across the state (Exhibit 6b).¹²

**Exhibit 6b: Percentage of Students in a Job Closely Related to Field of Study by Program
(Environmental Control Technology, PY 2016-17)¹³**



"N/A" indicates insufficient data

¹⁰ "California Community Colleges Strong Workforce Program," California Community Colleges, calpassplus.org/LaunchBoard/SWP.aspx.

¹¹ Among completers and skills builders who exited, the proportion of students who attained a living wage.

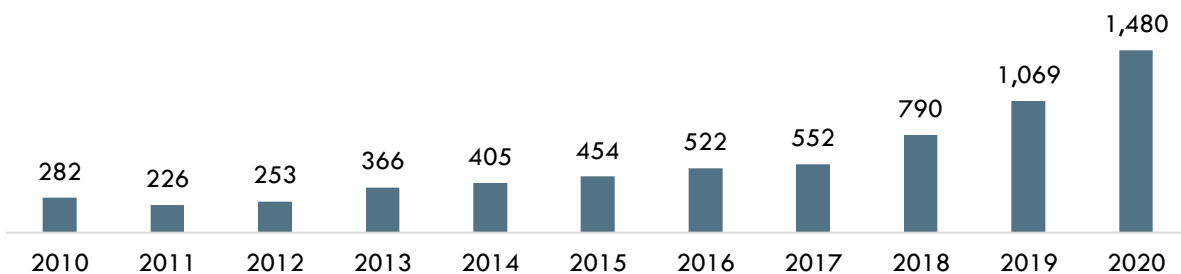
¹² "California Community Colleges Strong Workforce Program," California Community Colleges, calpassplus.org/LaunchBoard/SWP.aspx.

¹³ Most recent year with available data is Program Year 2016-17. Percentage of Students in a Job Closely Related to Field of Study: Among students who responded to the CTEOS, the percentage reporting employment in the same or similar field as their program of study.

Online Job Postings

This report analyzes not only historical and projected (traditional LMI) data, but also recent data from online job postings (real-time LMI). Online job postings may provide additional insight about recent changes in the labor market that are not captured by historical data. Between 2010 and 2020, there was an average of 582 online job postings per year for *Heating, Air Conditioning, and Refrigeration Mechanics and Installers* in San Diego County (Exhibit 7). Please note that online job postings do **not** equal labor market demand; demand is represented by annual job openings (see Exhibit 1). Employers may post a position multiple times for various reasons, such as increasing the pool of applicants, for example.

Exhibit 7: Number of Online Job Postings for Heating, Air Conditioning, and Refrigeration Mechanics and Installers in San Diego County (2010-2020)¹⁴



Top Employers

Between January 1, 2018 and December 31, 2020, the top five employers in San Diego County for this occupation were [Sears](#), [Lincoln Property Company](#), [Alliance Residential Company](#), [John Stevenson Plumbing & Mechanical](#) and [Sherlock Heating And Air Conditioning](#) based on online job postings (Exhibit 8).

Exhibit 8: Top Employers for Heating, Air Conditioning, and Refrigeration Mechanics and Installers in San Diego County¹⁵

Top Employers	
<ul style="list-style-type: none"> • Sears • Lincoln Property Company • Alliance Residential Company • John Stevenson Plumbing & Mechanical, Inc. • Sherlock Heating And Air Conditioning, Inc. 	<ul style="list-style-type: none"> • BAE Systems • Atlas Technologies • NCR Corporation • Cisco Systems Incorporated • Viasat

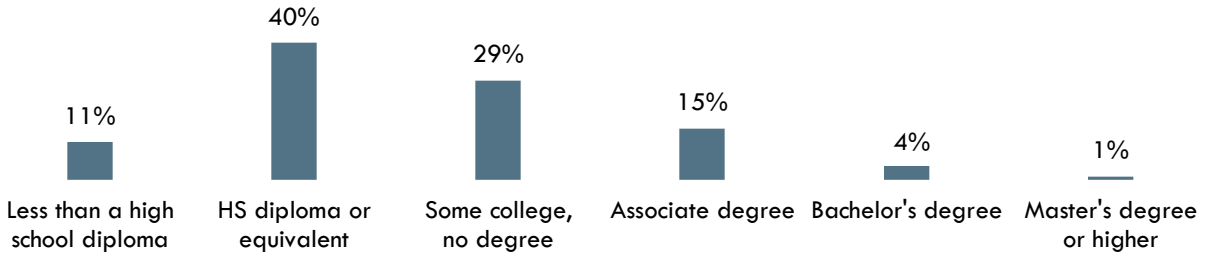
¹⁴ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2010-2020.

¹⁵ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2018-2020.

Education, Skills, and Certifications

Exhibit 9 indicates the educational attainment for this occupation found currently in the national labor force. The typical entry-level education is a [postsecondary non-degree award](#).¹⁶

Exhibit 9: National Educational Attainment of Heating, Air Conditioning, and Refrigeration Mechanics and Installers¹⁷



*may not total 100 percent due to rounding

¹⁶ EMSI 2021.2; QCEW, Non-QCEW, Self-Employed.

¹⁷ "Educational Attainment for Workers 25 Years and Older by Detailed Occupation," Bureau of Labor Statistics, last modified April 4, 2021. bls.gov/emp/tables/educational-attainment.htm.

Exhibit 10 lists the top specialized, soft, and software skills that appeared in online job postings between January 1, 2018 and December 31, 2020.

**Exhibit 10: Top Skills for Heating, Air Conditioning, and Refrigeration Mechanics and Installers
in San Diego County¹⁸**

Specialized Skills	Soft Skills	Software Skills
<ul style="list-style-type: none"> • HVAC • Repair • Plumbing • Predictive / Preventative Maintenance • Ventilation • Customer Service • Power Tools • Boilers • Occupational Health and Safety • Hand Tools • Appliance Repair • Carpentry • Painting • Sales • Cleaning 	<ul style="list-style-type: none"> • Preventive Maintenance • Troubleshooting • Physical Abilities • Communication Skills • Problem Solving • Organizational Skills • Computer Literacy • English • Teamwork / Collaboration • Detail-Oriented • Writing • Time Management • Work Area Maintenance • Written Communication • Building Effective Relationships 	<ul style="list-style-type: none"> • Microsoft Excel • Vimeo • Microsoft Word • Yardi Software • Microsoft Outlook • Salesforce • Lotus Applications • Lotus Notes • Database Software • Solaris • Microsoft PowerPoint • Customer Relationship Management • Microsoft Access • Facebook • Microsoft Project

¹⁸ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2018-2020.

Exhibit 11 lists the top certifications that appeared in online job postings between January 1, 2018 and December 31, 2020.

**Exhibit 11: Top Certifications for Heating, Air Conditioning, and Refrigeration Mechanics and Installers
in San Diego County¹⁹**

Top Certifications in Online Job Postings

1. Environmental Protection Agency Certification
 2. EPA CFC/HCFC Certification
 3. North American Technician Excellence (NATE)
 4. Appliance Repair Certificate
 5. Security Clearance
 6. Air Conditioning (AC) Certification
 7. EPG 608
 8. OSHA Safety 30 Hour
 9. Automotive Service Excellence (ASE) Certification
 10. CDL Class C
 11. Occupational Safety and Health Administration Certification
 12. Carpentry Certification
 13. R-410A
 14. Electrician Certification
 15. OSHA Forklift Certification
-

¹⁹ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2018-2020.

Prepared by:

Tina Ngo Bartel, Director (tngobartel@miracosta.edu)

John Edwards, Research Analyst (jedwards@miracosta.edu)

Priscilla Fernandez, Research Analyst (pfernandez@miracosta.edu)

San Diego County-San Diego Center of Excellence for Labor Market Research



Important Disclaimers

All representations included in this report have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. This study examines the most recent data available at the time of the analysis; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and the report findings; however, neither the Centers of Excellence for Labor Market Research (COE), COE host district, nor California Community Colleges Chancellor's Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.

This workforce demand report uses state and federal job projection data that was developed before the economic impact of COVID-19. The COE is monitoring the situation and will provide more information as it becomes available. Please consult with local employers to understand their current employment needs.