



Environmental Control Technology (TOP 0946.00)

March 2023

Prepared by the South Central Coast Center of Excellence for
Labor Market Research

Program Recommendation

This report was compiled by the South Central Coast¹ Center of Excellence to provide regional labor market data for the program recommendation – Environmental Control Technology. This report can help determine whether there is demand in the local labor market that is not being met by the supply from programs of study (CCC and non-CCC) that align with this occupation group.

Key Findings

- In the South Central Coast region, **the number of jobs related to Environmental Control Technology are expected to increase** for Heating, Air Conditioning, and Refrigeration Mechanics and Installers.
- Environmental Control Technology is anticipated to experience a **high risk of automation** for Heating, Air Conditioning, and Refrigeration Mechanics and Installers.
- In 2021 there were 67 regional completions in programs related to the occupation identified as aligned with Environmental Control Technology and 226 openings, indicating an **undersupply**.
- Typical entry-level education includes a **postsecondary nondegree award** for Heating, Air Conditioning, and Refrigeration Mechanics and Installers.
- Completers of Environmental Control Technology programs from the 2019-2020 academic year in the South Central Coast region had a **median annual wage upon completion of \$43,028**.
- 65% of students are **employed within a year** after completing a program.
- 63% of students **attained a living wage** within a year of completion.
- Completers experienced an average of +18% **change in earnings after exiting**.
- 86% of students were **part-time**, 22% **skill builders**, 56% **first-generation**, and 75% **economically disadvantaged**.

¹ The South Central Coast Region consists of San Luis Obispo County, Santa Barbara County, Ventura County, and the following cities from North Los Angeles County: Canyon Country, Castaic, Lake Hughes, Lancaster, Littlerock, Llano, Newhall, Palmdale, Pearblossom, Santa Clarita, Stevenson Ranch, and Valencia.

Occupation Codes and Descriptions

There is one occupation in the standard occupational classification (SOC) system that was identified as related to Environmental Control Technology for this analysis. The occupation title and description, as well as reported job titles, are included in Exhibit 1.

Exhibit 1 – Occupation, Description, 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, HVAC, or refrigeration systems, including oil burners, hot-air furnaces, and heating stoves.	A/C Tech (Air Conditioning Technician), HVAC Installer (Heating, Ventilation, and Air Conditioning Installer), HVAC Mechanic (Heating, Ventilation, and Air Conditioning Mechanic), HVAC Service Tech (Heating, Ventilation, and Air Conditioning Service Technician), HVAC Specialist (Heating, Ventilation, and Air Conditioning Specialist), HVAC Tech (Heating, Ventilation, and Air Conditioning Technician), Refrigeration Mechanic, Refrigeration Operator, Refrigeration Technician, (Refrigeration Tech), Service Technician (Service Tech)

Source: O*NET Online

Current and Future Employment

In the South Central Coast region, the number of jobs related to Environmental Control Technology are expected to increase for Heating, Air Conditioning, and Refrigeration Mechanics and Installers.

Exhibit 2 – Five-Year Projections for Environmental Control Technology in the South Central Coast Region

SOC	Occupation	2022 Jobs	2027 Jobs	2022-2027 Change	2022-2027 % Change
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	1,999	2,115	116	6%

Source: Economic Modeling Specialists International (EMSI)

Earnings

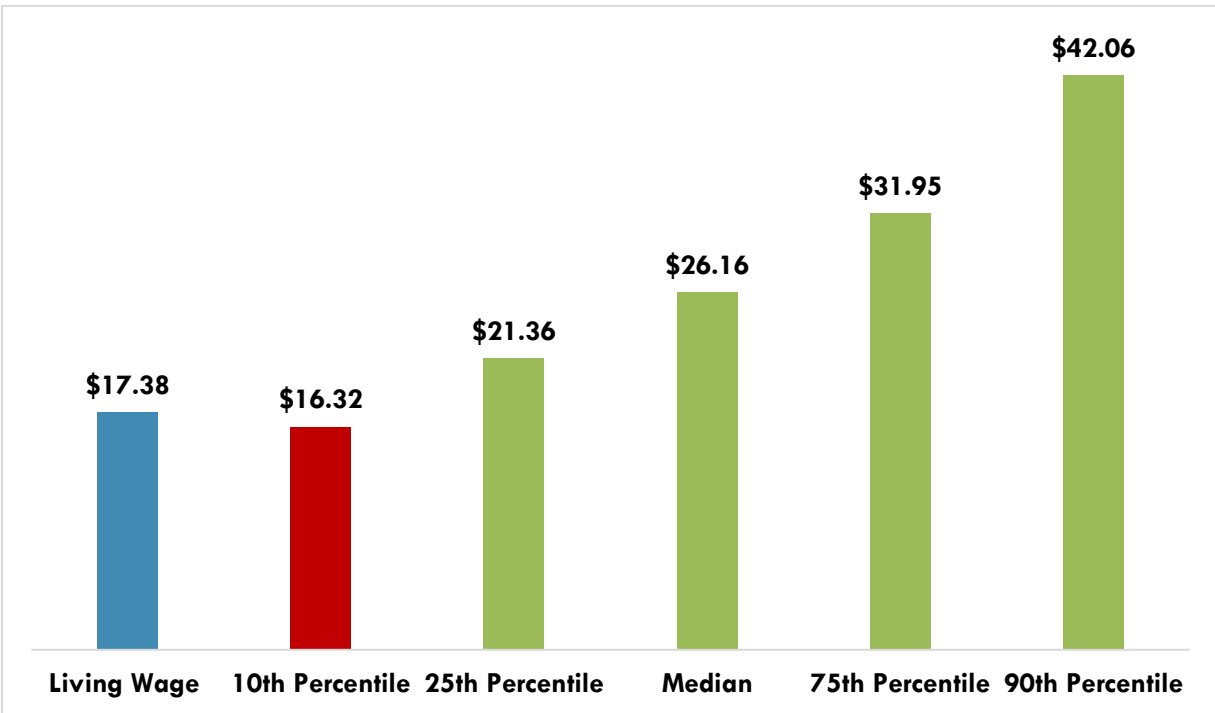
Exhibit 3 contains hourly wages and annual average earnings for this occupation. Entry-level hourly earnings are represented by the 25th percentile of wages, median hourly earnings are represented by the 50th percentile of wages, and experienced hourly earnings are represented by the 75th percentile of wages, demonstrating various levels of employment.

Exhibit 3 – Earnings for Environmental Control Technology in the South Central Coast Region

SOC	Occupation	Entry-Level Hourly Earnings	Median Hourly Earnings	Experienced Hourly Earnings
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	\$21.36	\$26.16	\$31.95

Source: Economic Modeling Specialists International (EMSI)

Exhibit 3b – Earnings for Environmental Control Technology in the South Central Coast Region



Source: Family Needs Calculator (Living wage is based on Single Adult households with no children); Economic Modeling Specialists International (EMSI)

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 the occupation relevant to the field of study. Employer job postings are consulted to understand who is looking to hire, and what they are looking for in potential candidates. To identify job postings related to Environmental Control Technology the following standard occupational classification was used:

49-9021 Heating, Air Conditioning, and Refrigeration Mechanics and Installers

Top Occupations

In 2022, there were 707 employer postings for the occupation related to Environmental Control Technology.

Exhibit 4 – Top Occupations by Job Postings

SOC Code	Occupation	Job Postings, Full Year 2022
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	707

Source: Labor Insight/Jobs (Burning Glass)

Exhibit 4b – Top Occupations and Risk of Automation

SOC Code	Occupation	Risk of Automation
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	High

Source: Labor Insight/Jobs (Burning Glass)

Top Titles

The top job titles for employers posting ads for jobs related to Environmental Control Technology are listed in Exhibit 5. HVAC Technicians is mentioned as the job title in 18% of all relevant job postings (111 postings).

Exhibit 5 – Job Titles

Title	Job Postings, Full Year 2022
HVAC Technicians	111
HVAC Service Technicians	54
HVAC Installers	53
Commercial Refrigeration Service Technicians	33
Ammonia Refrigeration Technicians	28

Source: Labor Insight/Jobs (Burning Glass)

Top Employers

Exhibit 6 lists the major employers hiring professionals in the Environmental Control Technology field. The top employer posting job ads was Sears. The top worksite cities for this occupation were Ventura, Simi Valley, Santa Clarita, Oxnard, and Santa Maria.

Exhibit 6 – Top Employers (n= 421)

Employer	Job Postings, Full Year 2022
Sears	36
Wire	32
GPAC	29
Sysco	29
Coolsys	17

Source: Labor Insight/Jobs (Burning Glass)

Skills

The tables in Exhibit 7 list employers' most commonly requested skills in job postings related to Environmental Control Technology. HVAC is the most sought-after specialized skill for employers, followed by Preventative Maintenance and Plumbing. Communications, Customer Service, and Troubleshooting were the most requested baseline skills. Microsoft Excel, Microsoft Outlook, and Operating Systems were the most commonly requested software and programming skills.

Exhibit 7 – Specialized Skills (n= 2,942)

Skills	Job Postings, Full Year 2022
HVAC	610
Preventive Maintenance	135
Plumbing	107
Ventilation	99
Refrigeration	93
Boilers	74
Condensers	65
Furnaces	65
Electrical Systems	55
Appliance Repair	53
Electrical Wiring	52
Refrigerant	52
Oil And Gas	50
Carpentry	50
Control Systems	44

Source: Labor Insight/Jobs (Burning Glass)

Exhibit 7b – Baseline Skills (n= 2,429)

Skills	Job Postings, Full Year 2022
Communications	296
Customer Service	252
Troubleshooting	207
Good Driving Record	143
Lifting Ability	129
Management	128
Operations	123
Problem Solving	71
Writing	62
Computer Literacy	56

Source: Labor Insight/Jobs (Burning Glass)

Exhibit 7c – Software and Programming Skills (n= 358)

Skills	Job Postings, Full Year 2022
Microsoft Excel	47
Microsoft Outlook	43
Operating Systems	27
Spreadsheets	25
Microsoft Word	23
Microsoft Visio	23
Unix	22
Linux	22
Airflow	22
Microsoft Office	19

Source: Labor Insight/Jobs (Burning Glass)

Industry Concentration

Exhibit 8 shows the industries with the most Environmental Control Technology postings in the South Central Coast region. Note: 37% of records have been excluded because they do not include an industry. As a result, the chart below may not be representative of the full sample.

Exhibit 8 – Industries Employing the Most in the Environmental Control Technology Field, 2022

Industry	Occupation Group Jobs in Industry	% of Occupation Group in Industry
Administrative and Support and Waste Management and Remediation Services	102	23%
Construction	97	22%
Professional, Scientific, and Technical Services	46	10%
Wholesale Trade	45	10%
Retail Trade	42	9%

Source: Labor Insight/Jobs (Burning Glass)

Certifications

Exhibit 9 lists the most in-demand certifications in the Environmental Control Technology field. The top requested certification in job postings was Valid Driver’s License.

Exhibit 9 – Certifications (n= 657)

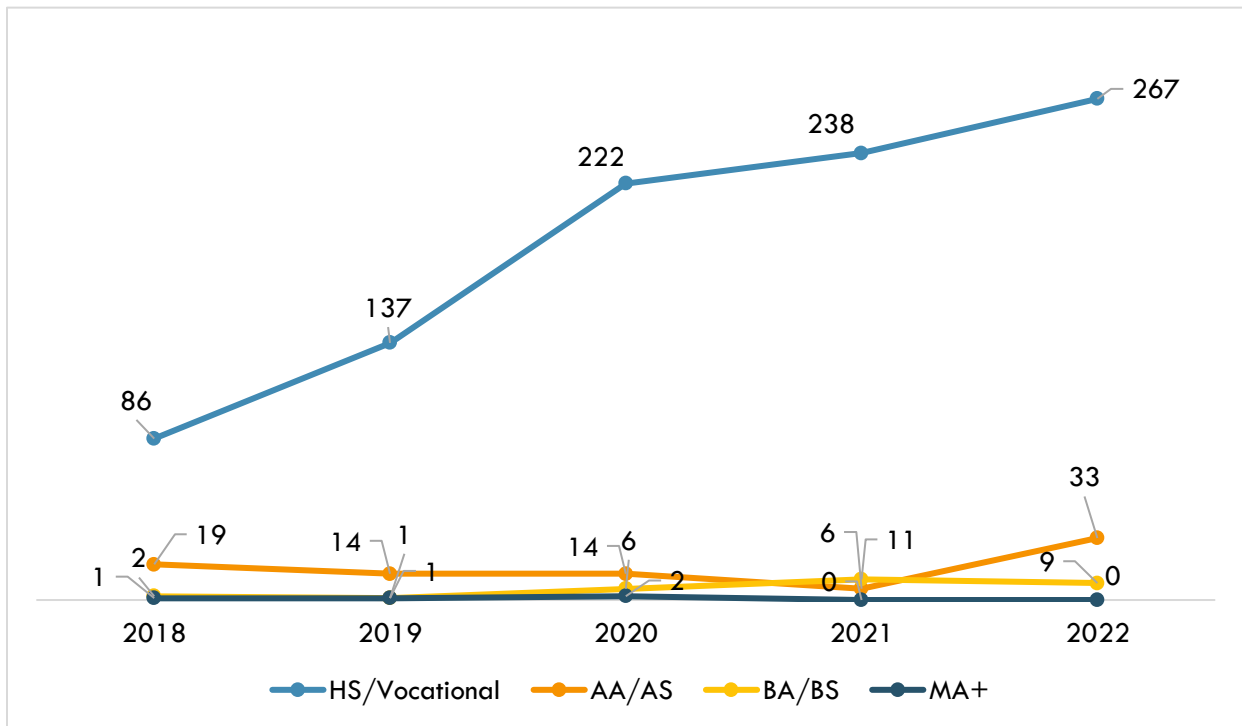
Certifications	Job Postings, Full Year 2022
Valid Driver’s License	299
EPA 608 Technician Certification	138
EPA Universal Certification	63
NATE Certification (North American Technician Excellence)	25
Certified Industrial Refrigeration Operator (CIRO) Certification	24

Source: Labor Insight/Jobs (Burning Glass)

Job Postings - Minimum Educational Attainment Over Time

Exhibit 10 displays the change in job advertisements over the last five years for Environmental Control Technology, according to the minimum advertised education. In 2022, there were 309 total job ads posted with a minimum advertised education, with 267 of them requiring a high school diploma or equivalent.

Exhibit 10 – Educational Demand, Minimum Advertised



Source: Labor Insight / Jobs (Burning Glass)

Job Postings – Proportion of Job Postings by Minimum Educational Attainment Required

To gauge employer preference for candidates with particular education levels, the proportion of job postings by minimum advertised education appears in Exhibit 11. Employers posting job ads for Environmental Control Technology have frequently sought candidates with a high school diploma or vocational training.

Exhibit 11 – Occupational Demand by Education, Minimum Advertised

Minimum Education Requirement	2018	2019	2020	2021	2022
HS Diploma / Vocational Training	80%	90%	91%	93%	86%
Associate Degree	18%	9%	6%	2%	11%
Bachelor’s Degree	2%	<1%	2%	4%	3%
Graduate Degree	<1%	<1%	1%	0%	0%

Source: Labor Insight/Jobs (Burning Glass)

Education and Training

Exhibit 12 shows the typical entry-level education requirement for the occupation of interest, along with the typical on-the-job training needed to attain competency in the occupation.

Exhibit 12 – Education and Training Requirements

SOC	Occupation	Typical entry-level education	Typical on-the-job training
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	Postsecondary Nondegree Award	Long-term on-the-job training

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

Regional Completions and Openings

There were 67 regional completions (2021) and 226 regional openings (2021) in the South Central Coast region aligned with programs related to the occupation in this report.

Exhibit 13 – Completions and Openings

5 Regional Institutions had Related Programs (2021)	67 Regional Completions (2021)	226 Annual Openings (2021)
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Source: Economic Modeling Specialists International (EMSI)

Related Programs

CIP Code	Program	Completions (2021)
15.0501	Heating, Ventilation, Air Conditioning, and Refrigeration Engineering Technology/Technician	49
47.0201	Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician	18

Source: Economic Modeling Specialists International (EMSI)

CCC and Non-CCC Awards

Exhibit 14 lists the number of completers from programs related to Environmental Control Technology in the South Central Coast region.

Exhibit 14 – CCC and Non-CCC Awards the South Central Coast, 2021

CCC Programs	Completers
Antelope Valley College	41
Oxnard College	8
Non-CCC Programs	Completers
San Joaquin Valley College – Lancaster	18
Charter College – Canyon Country	0
Santa Barbara Business College – Santa Maria	0

Source: Economic Modeling Specialists International (EMSI)

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 regional Environmental Control Technology Programs (TOP: 0946.00) for the 2019-2020 academic year.

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- 65% of students are **employed within a year** after completing a program.
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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 represent the labor market demand for relevant positions most closely related to Environmental Control Technology. 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 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. All representations have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. The most recent data available at the time of the analysis was examined; 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 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.