

Heating, Air Conditioning, and Refrigeration Mechanics and Installers

Labor Market Analysis: San Diego County

December 2018

Summary

According to available labor market information, there is demand for *Heating, Air Conditioning, and Refrigeration Mechanics and Installers*. *Heating, Air Conditioning, and Refrigeration Mechanics and Installers* have a labor market demand of 357 annual job openings. (For comparison, the average regional demand for an occupation is 275 job openings.) This occupation's entry-level and median wages are higher than the Self-Sufficiency Standard, suggesting that students who successfully complete a program and obtain employment may earn living wages. Two community colleges in San Diego County have programs related to this occupation, providing 306 awards — the majority of which are noncredit awards from San Diego Continuing Education. The San Diego region could benefit from more awards. The minimum education and training levels for this occupation are a postsecondary non-degree and long-term on-the-job training.

The following list summarizes findings from the labor market analysis for *Heating, Air Conditioning, and Refrigeration Mechanics and Installers*:

- Between 2017 and 2022, *Heating, Air Conditioning, and Refrigeration Mechanics and Installers* are projected to increase by 337 jobs or 12 percent.
- Employers in San Diego County will need to hire 357 workers annually to fill new jobs and backfill jobs due to attrition such as retirement or turnover.
- Between 2010 and 2017, there was an average of 337 online job postings per year for *Heating, Air Conditioning, and Refrigeration Mechanics and Installers*.
- *Heating, Air Conditioning, and Refrigeration Mechanics and Installers* earn median hourly earnings of \$25.02; this is more than the Self-Sufficiency Standard for a single adult in San Diego County, which is \$15.99 per hour.
- There are two TOP codes associated with this occupation: Environmental Control Technology (094600) and Energy Systems Technology (094610). There are five related CIP codes.
- According to TOP and CIP data, two community colleges supply the region with awards for this occupation: San Diego City College and San Diego Continuing Education.

- Comparing labor demand (annual openings) with labor supply suggests that there is a supply gap for this occupation in San Diego County, with 357 annual openings and 306 awards. Comparatively, there are 3,797 annual openings in California and 2,114 completions.
- Between January 1, 2015 and December 31, 2017, the top five employers in San Diego County for this occupation were Lincoln Military Housing, Sears, John Stevenson Plumbing & Mechanical, Johnson Controls Incorporated, and Alliance Residential Company.
- The typical on-the-job training for this profession is long-term on-the-job training. The typical entry-level education is a postsecondary non-degree award.

Introduction

This report provides labor market information in San Diego County for the following occupational code in the Standard Occupational Classification (SOC)¹ system:

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. Sample reported job titles include:

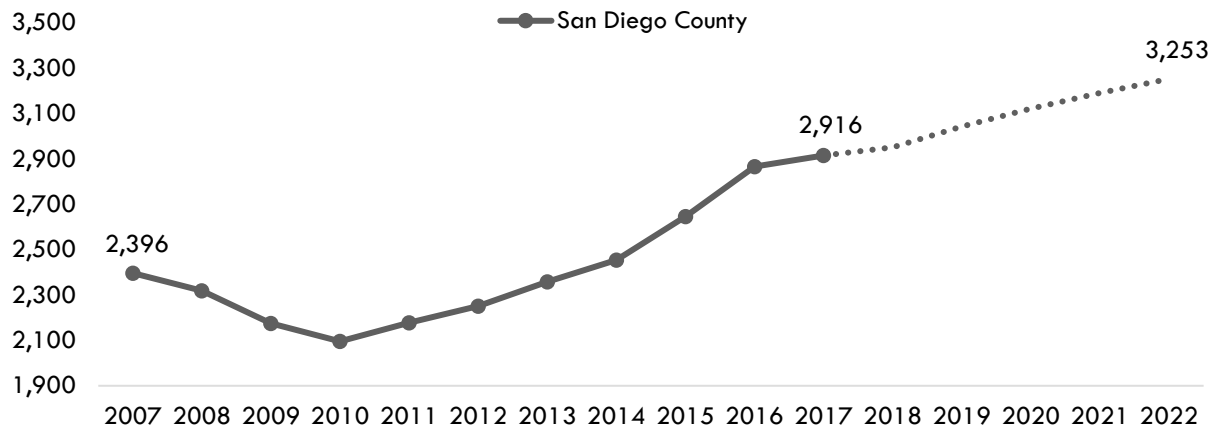
- Refrigeration Mechanic
- Service Technician
- Mechanic
- HVAC Technician (Heating, Ventilation, and Air Conditioning Technician)
- HVAC Installer
- VRT Mechanic (Variable Retention Time Mechanic)
- Transportation Refrigeration Technician

Projected Occupational Demand

Between 2017 and 2022, *Heating, Air Conditioning, and Refrigeration Mechanics and Installers* are projected to increase by 337 jobs or 12 percent (Exhibit 1). Employers in San Diego County will need to hire 357 workers annually to fill new jobs and backfill jobs due to attrition such as retirement or turnover.

¹ 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.

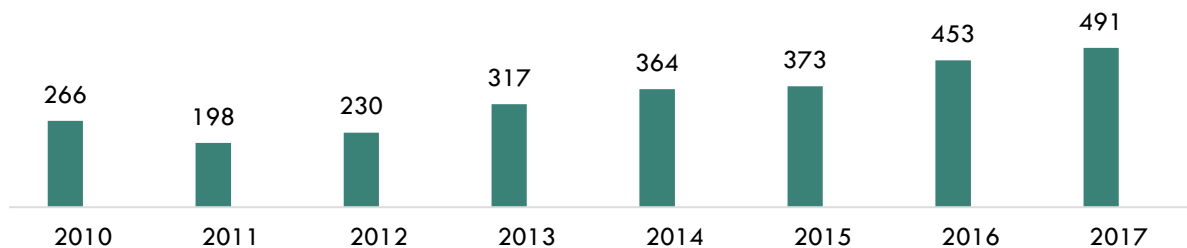
Exhibit 1: Number of Jobs for Heating, Air Conditioning, and Refrigeration Mechanics and Installers (2007-2022)²



Online Job Postings

Between 2010 and 2017, there was an average of **337** online job postings per year for *Heating, Air Conditioning, and Refrigeration Mechanics and Installers* (Exhibit 2).

Exhibit 2: Number of Online Job Postings for Heating, Air Conditioning, and Refrigeration Mechanics and Installers in San Diego County (2010-2017)³



Earnings

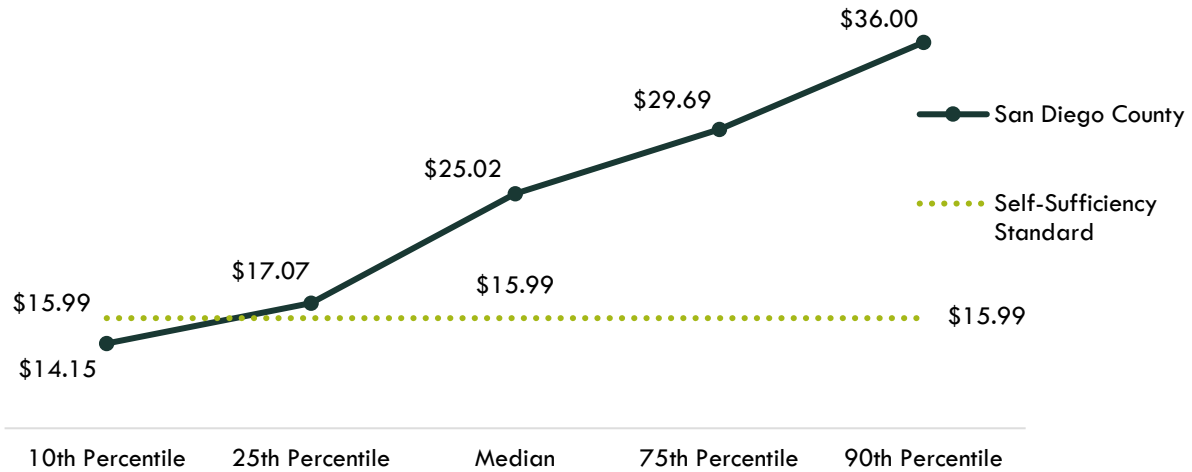
Heating, Air Conditioning, and Refrigeration Mechanics and Installers earn median hourly earnings of **\$25.02**; this is more than the Self-Sufficiency Standard for a single adult in San Diego County, which is **\$15.99** per hour (Exhibit 3).⁴

² Economic Modeling Specialists, Int'l. (EMSI). San Diego (6073). 2018.04 Class of Worker. QCEW + Non-QCEW + Self-Employed. 2007-2022.

³ Labor Insight Jobs. Burning Glass Technologies. San Diego, CA. Full years 2010-2017.

⁴ The self-sufficiency wage in San Diego for one adult is \$15.99 (<https://insightcced.org/2018-self-sufficiency-standard>).

Exhibit 3: Hourly Earnings for Heating, Air Conditioning, and Refrigeration Mechanics and Installers in San Diego County⁵



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.⁶ There are **two** TOP codes associated with this occupation: Environmental Control Technology (094600) and Energy Systems Technology (094610). There are **five** related CIP codes (Exhibit 4).

Exhibit 4: Related TOP and CIP Codes in San Diego County

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

TOP 094600: Environmental Control Technology

TOP 094610: Energy Systems Technology

CIP 15.0406: Automation Engineer Technology/Technician

CIP 15.0501: Heating, Ventilation, Air Conditioning and Refrigeration Engineering Technology/Tech

CIP 15.0503: Energy Management and Systems Technology/Technician

CIP 15.0505: Solar Energy Technology/Technician

CIP 47.0201: Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Tech

⁵ EMSI. San Diego (6073). 2018.04 Class of Worker. QCEW + Non-QCEW + Self-Employed. 2017-2022.

⁶ 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).

According to TOP and CIP data, two community colleges supply the region with awards for this occupation: San Diego City College and San Diego Continuing Education (Exhibit 5).

Exhibit 5: Number of Awards (Certificates and Degrees) Conferred by Postsecondary Institutions (Program Year 2013-14 through PY2016-17 Average)

TOP6 or CIP	TOP6 or CIP Title	3-Yr Annual Average CC Awards (PY14-15 to PY16-17)	Other Educational Institutions 3-Yr Annual Average Awards (PY13-14 to PY15-16)	3-Yr Total Average Supply (PY13-14 to PY16-17)
094600	Environmental Control Technology	306	0	306
	• San Diego Continuing Ed	237	0	
	• San Diego City	69	0	
094610	Energy Systems Technology	0	0	0
15.0406	Automation Engineer Technology/Technician	0	0	0
47.0201	Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Tech	0	0	0
			Total	306

Demand vs. Supply

Comparing labor demand (annual openings) with labor supply⁷ suggests that there is a supply gap for this occupation in San Diego County, with 357 annual openings and 306 awards. Comparatively, there are 3,797 annual openings in California and 2,114 completions⁸ (Exhibit 6).

Exhibit 6: Labor Demand (Annual Openings) Compared to Labor Supply (Average Annual Awards)

Community Colleges and Other Postsecondary Educational Institutions	Demand (Annual Openings)	Supply (Total Annual Average Supply)	Supply Gap or Oversupply
San Diego	357	306	51
California	3,797	2,114	1,683

⁷ 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.

⁸ EMSI. San Diego (6073). 2018.04 Class of Worker. QCEW + Non-QCEW + Self-Employed. 2017-2022.

Please note: This is a basic analysis of supply and demand of labor. 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. Additionally, the data does not include workers who are currently in the labor force who could fill these positions or workers who are not captured by publicly available data.

Student Outcomes

Based on the information available in the CTE LaunchBoard, students who took courses in the related TOP codes exhibited the following outcomes (Exhibit 7).

Exhibit 7: Strong Workforce Program Metrics for TOP 094600: Environmental Control Technology San Diego-Imperial Region vs. California (PY2015-16)

Metric	San Diego-Imperial	California
Number of course enrollments ⁹	1,215	11,070
Completed 12+ CTE units in one year ¹⁰	70	1,458
Completed 48+ CTE contact hours in one year ¹¹	69	131
Number of students who got a degree or certificate ¹²	104	627
Number of students who transferred ¹³	N/A	48
Employed in the second fiscal quarter after exit ¹⁴	71%	76%
Employed in the fourth fiscal quarter after exit ¹⁵	68%	74%
Job closely related to field of study ¹⁶	N/A	N/A
Median earnings in the second fiscal quarter after exit ¹⁷	\$9,786	\$10,505
Median change in earnings ¹⁸	27%	45%
Attained a living wage ¹⁹	76%	72%

⁹ The number of enrollments in courses assigned to the TOP code in the selected year.

¹⁰ The number of students who completed 12 or more credit CTE units.

¹¹ The number of students who completed 48 or more noncredit CTE instructional contact hours.

¹² The number of unduplicated students who earned a locally-issued certificate, Chancellor's Office approved certificate, associate degree, and/or California Community Colleges bachelor's degree in the selected TOP code.

¹³ Students who took non-introductory courses or completed a California Community Colleges Chancellor's Office award in the selected TOP code in selected year who subsequently enrolled for the first time in a four-year institution the following year.

¹⁴ Among all exiters with a valid SSN, the percentage who were employed two quarters after exiting California Community Colleges.

¹⁵ Among exiting students with a valid SSN, the percentage who were employed four quarters after exiting California Community Colleges.

¹⁶ Among students who responded to the CTEOS, the percentage reporting employment in the same or similar field as their program of study.

¹⁷ Among exiting students, the median second-quarter earnings one year after the year in which they exited California Community Colleges.

¹⁸ Among exiting students with a valid SSN, the percentage change in earnings one year before and one year after exiting California Community Colleges.

¹⁹ Among completers and skills builders who exited, the proportion of students who attained a living wage.

Top Employers and Work Locations

Between January 1, 2015 and December 31, 2017, the top five employers in San Diego County for this occupation were [Lincoln Military Housing](#), [Sears](#), [John Stevenson Plumbing & Mechanical](#), [Johnson Controls Incorporated](#), and [Alliance Residential Company](#) (Exhibit 8).

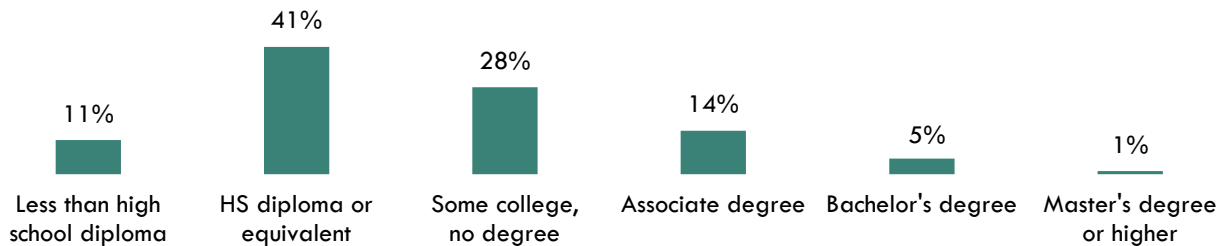
Exhibit 8: Top Employers in San Diego County for Heating, Air Conditioning, and Refrigeration Mechanics and Installers²⁰

Top Employers	
<ul style="list-style-type: none"> Lincoln Military Housing Sears John Stevenson Plumbing & Mechanical, Inc. Johnson Controls Incorporated Alliance Residential Company 	<ul style="list-style-type: none"> Lincoln Property Company BAE Systems American Residential Services Countywide Mechanical Systems American Mechanical Service

Skills, Education, and Certifications

Exhibit 9 indicates the educational attainment for the occupation found currently in the national labor force. The typical on-the-job training for this profession is [long-term on-the-job training](#). The typical entry-level education is a [postsecondary non-degree award](#).²¹

Exhibit 9: National Educational Attainment of Heating, Air Conditioning, and Refrigeration Mechanics and Installers²²



²⁰ Labor Insight Jobs. Burning Glass Technologies. San Diego, CA. Full years 2015-2017.

²¹ EMSI. San Diego (6073). 2018.04 Class of Worker. QCEW + Non-QCEW + Self-Employed. 2017-2022.

²² Bureau of Labor Statistics, Educational attainment for workers 25 years and older by detailed occupation. bls.gov/emp/ep_table_111.htm.

Exhibit 10 lists the top specialized, soft and software skills that appeared in online job postings for this occupation between January 1, 2015 and December 31, 2017.

Exhibit 10: Top Skills for Heating, Air Conditioning, and Refrigeration Mechanics and Installers in San Diego County²³

Specialized Skills	Soft Skills	Software Skills
<ul style="list-style-type: none"> • HVAC • Repair • Plumbing • Predictive/ Preventative Maintenance • Ventilation 	<ul style="list-style-type: none"> • Troubleshooting • Communication Skills • Physical Abilities • Organizational Skills • Computer Literacy 	<ul style="list-style-type: none"> • Microsoft Excel • Microsoft Project • Microsoft Word • Microsoft Outlook • Active Server Pages (ASP)

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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.

²³ Labor Insight Jobs. Burning Glass Technologies. San Diego, CA. Full years 2015-2017.