

Heating, Air Conditioning, and Refrigeration Mechanics and Installers

Labor Market Analysis: San Diego County

January 2018

Summary

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

- Between 2016 and 2021, *Heating, Air Conditioning, and Refrigeration Mechanics and Installers* are projected to increase by 419 jobs (or 17 percent) in San Diego County.
- Employers in San Diego County will need to hire 334 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 297 online job postings per year for *Heating, Air Conditioning, and Refrigeration Mechanics and Installers* in San Diego County.
- *Heating, Air Conditioning, and Refrigeration Mechanics and Installers* earn median hourly earnings of \$26.03, more than the self-sufficiency wage (\$13.09 per hour) for a single adult in San Diego County.
- According to the California Community Colleges Chancellor's Office Management Information System (MIS) Data Mart, four colleges supply the region with an annual average of 351 awards for this occupation: San Diego Continuing Education, Imperial Valley College, San Diego City College and International Polytechnic Institute.
- Comparing the labor market demand against labor supply, there is an oversupply for this occupation in San Diego County, with 334 annual openings and 351 awards. Comparatively, there are 4,085 annual openings in California and 1,683 awards.
- Between January 1, 2015 and December 31, 2017, the top five employers in San Diego County for this occupation were John Stevenson Plumbing & Mechanical Inc., Sears, BAE Systems, American Residential Services and Johnson Controls, Inc.
- The typical on-the-job training for this profession is long-term. The typical entry-level education is a post-secondary degree.

Introduction

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

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.

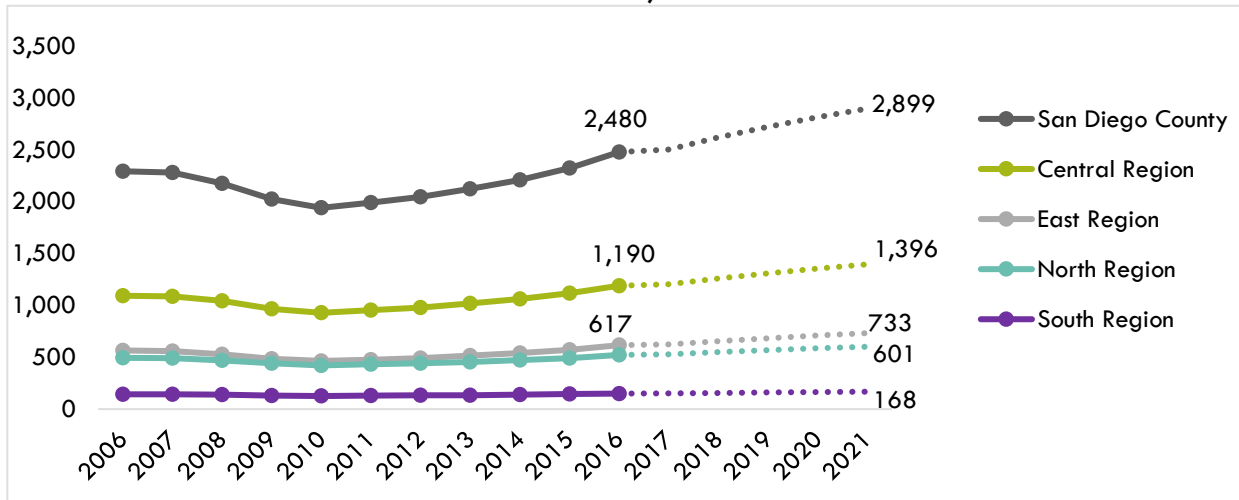
Heating, Air Conditioning, and Refrigeration Mechanics and Installers (SOC 49-9021): Install or repair heating, central air conditioning or refrigeration systems, including oil burners, hot-air furnaces, and heating stoves. Sample reported job titles include:

- Refrigeration Mechanic
- Mechanic
- Systems Mechanic
- Service Technician
- Maintenance Mechanic
- Refrigeration Technician
- VRT Mechanic (Variable Retention Time Mechanic)
- Transportation Refrigeration Technician
- Technician

Projected Occupational Demand

Between 2016 and 2021, *Heating, Air Conditioning, and Refrigeration Mechanics and Installers* are projected to increase by 419 jobs (or 17 percent) in San Diego County (Exhibit 1a and Exhibit 1b).²

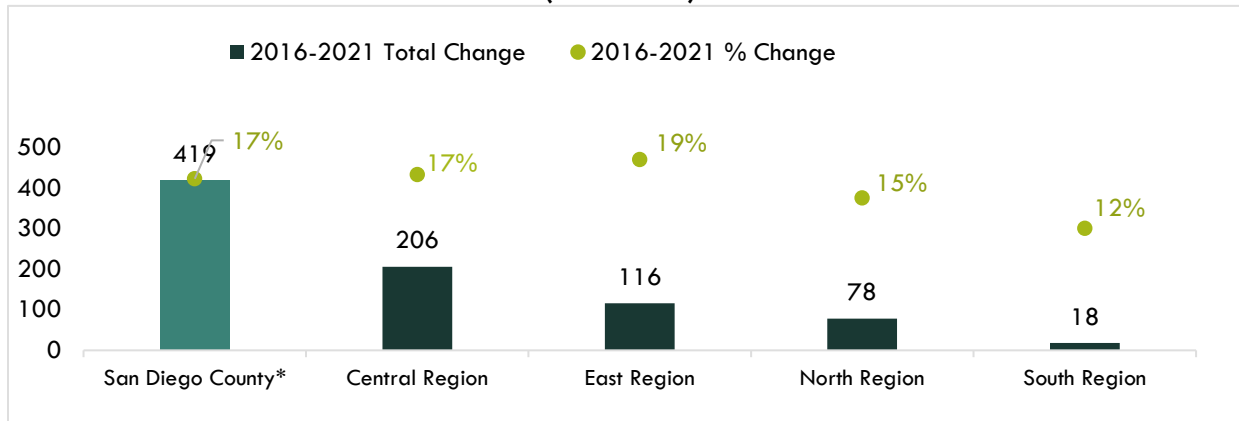
Exhibit 1a: Number of Jobs for Heating, Air Conditioning, and Refrigeration Mechanics and Installers (2006-2021)³



² South, East, Central and North Regions' ZIP codes in this report are defined by the local Workforce Development Board, the San Diego Workforce Partnership.

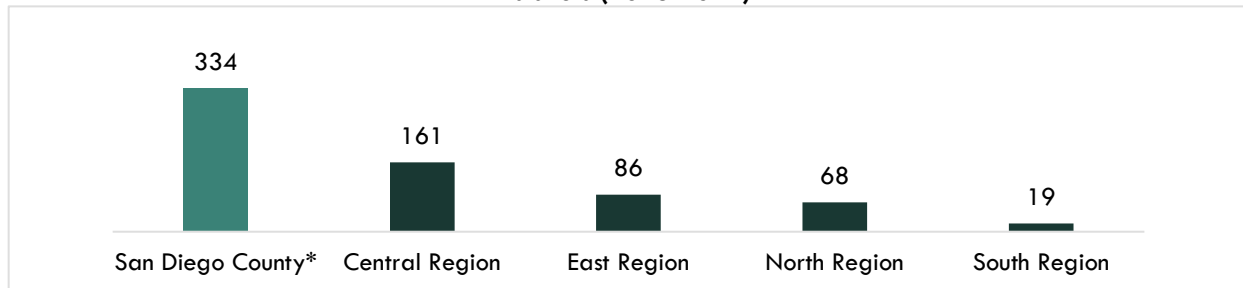
³ Economic Modeling Specialists, Int'l. (EMS). San Diego County (6073). 2017.03 Class of Worker. QCEW + Non-QCEW+ Self-Employed. 2006-2021.

Exhibit 1b: Five-Year Projections for Heating, Air Conditioning, and Refrigeration Mechanics and Installers (2016-2021)⁴



Employers in San Diego County will need to hire 334 workers annually to fill new jobs and backfill jobs due to attrition such as retirement or turnover (Exhibit 2).

Exhibit 2: Projected Annual Openings for Heating, Air Conditioning, and Refrigeration Mechanics and Installers (2016-2021)⁵



*Total annual openings for the subregions in San Diego County may not add up exactly due to rounding.

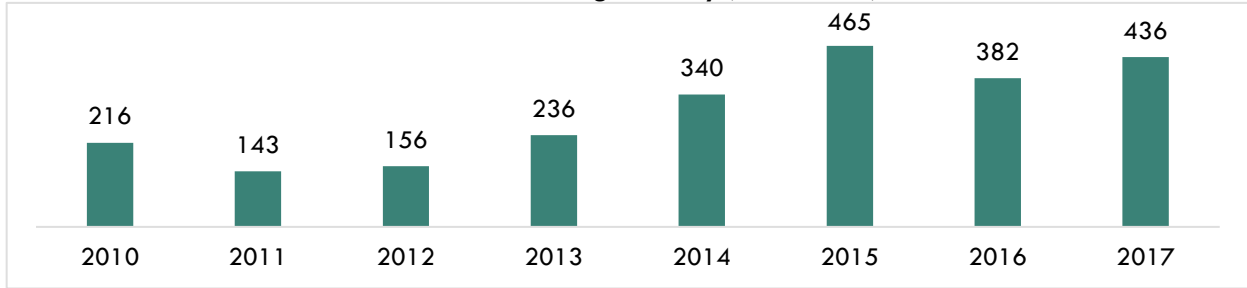
Online Job Postings

Between 2010 and 2017, there was an average of 297 online job postings per year for Heating, Air Conditioning, and Refrigeration Mechanics and Installers in San Diego County (Exhibit 3).

⁴ EMSI. San Diego County (6073). 2017.04 Class of Worker. QCEW + Non-QCEW + Self-Employed. 2016-2021.

⁵ EMSI. San Diego County (6073). 2017.04 Class of Worker. QCEW + Non-QCEW + Self-Employed. 2016-2021.

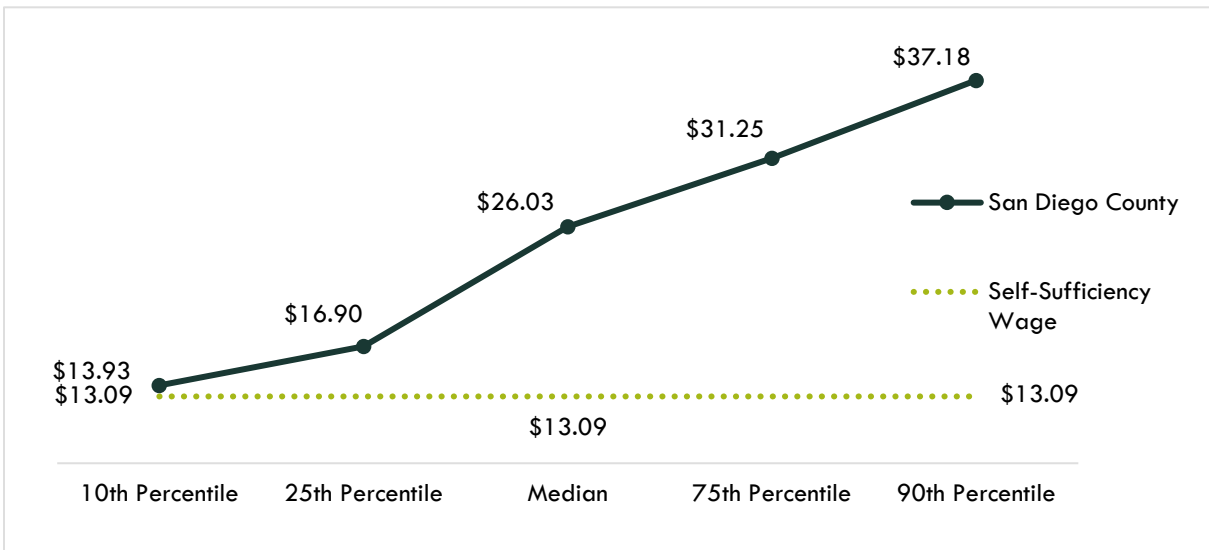
Exhibit 3: Number of Online Job Postings for Heating, Air Conditioning, and Refrigeration Mechanics and Installers in San Diego County (2010-2017)⁶



Earnings

Heating, Air Conditioning, and Refrigeration Mechanics and Installers earn median hourly earnings of **\$26.03**, more than the self-sufficiency wage (\$13.09 per hour)⁷ for a single adult in San Diego County (Exhibit 4).

Exhibit 4: Hourly Earnings for Heating, Air Conditioning, and Refrigeration Mechanics and Installers in San Diego County⁸



Educational Supply

Educational supply for an occupation can be estimated by analyzing the number of related program completers/graduates/awards in San Diego County. To determine what programs are available, Exhibit 5 lists the Taxonomy of Programs (TOP) code(s) related to the SOC code analyzed.

⁶ Labor Insight Jobs. Burning Glass Technologies. San Diego, CA. Full years 2010-2017.

⁷ The self-sufficiency wage in San Diego for one adult is \$13.09 (insightccd.org/tools-metrics/self-sufficiency-standard-tool-for-california).

⁸ EMSI. San Diego County (6073). 2017.04 Class of Worker. QCEW + Non-QCEW + Self-Employed. 2016-2021.

Exhibit 5: Related TOP Codes in San Diego County

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

TOP 94600: Environmental Control Technology

TOP 94610: Energy Systems Technology

According to the California Community Colleges Chancellor's Office Management Information System (MIS) Data Mart, four colleges supply the region with awards for this occupation: [San Diego Continuing Education](#), [Imperial Valley College](#), [San Diego City College](#) and [International Polytechnic Institute](#) (Exhibit 6).

Exhibit 6 shows the annual average regional community college awards (associate degrees and certificates) conferred during the three academic years between 2013 and 2016, as well as other awards granted outside the California Community Colleges from 2012 to 2015 with the relevant TOP code.

Please note: An award is not equivalent to a single person in search of a job opening because a student may earn more than one award such as an associate degree in addition to a certificate.

Exhibit 6: Number of Awards (Certificates and Degrees) Conferred by Postsecondary Institutions by Occupation (Program Year 2012-13 through PY2015-16 Average)

TOP06	TOP06 Title	3-Yr Annual Average Supply (PY13-14 to PY15-16)	3-Yr Annual Average CC Awards (PY13-14 to PY15-16)	Other Educational Institutions 3-Yr Annual Average Awards (PY12-13 to PY14-15)
94600	Environmental Control Technology	323	323	0
	<ul style="list-style-type: none"> San Diego Continuing Education 		235	
	<ul style="list-style-type: none"> Imperial Valley College 		13	
	<ul style="list-style-type: none"> San Diego City College 		75	
94610	Energy Systems Technology	28	0	28
	<ul style="list-style-type: none"> International Polytechnic Institute 			28
	TOTAL	351		

*Total number of awards may not add up exactly due to rounding.

Demand vs. Supply

Comparing labor demand (annual openings) with labor supply⁹ from the region's colleges, there is an **oversupply** for this occupation in San Diego County, with **334** annual openings and **351** awards.

Comparatively, there are **4,085** annual openings in California and **1,683** completions.¹⁰

Exhibit 7: 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 County	334	351	17
California	4,085	1,683	2,402

Please note: This is a basic analysis of supply and demand of labor for these occupations. This data should be used to discuss the potential gaps or oversupply of workers for these occupations; 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,¹¹ students who took courses in the related TOP codes exhibited the following outcomes (Exhibit 8).

Exhibit 8: Strong Workforce Program Metrics for TOP 096400 Environmental Control Technology and TOP 096410 Energy Systems Technology vs. All Programs in San Diego-Imperial Region (PY2014-15)

Metric	TOP 096400	TOP 906410	All Programs
Number of course enrollments ¹²	1,365	145	1,009,712
Number of students who got a degree or certificate ¹³	173	N/A ¹⁴	17,536
Number of students who transferred ¹⁵	1	0	6,269
Employed in the second fiscal quarter after exit ¹⁶	66%	50%	66%

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.

¹⁰ EMSI. San Diego County (6073). 2017.04 Class of Worker. QCEW + Non-QCEW + Self-Employed. 2016-2021.

¹¹ calpassplus.org/LaunchBoard/SWP.aspx.

¹² The number of enrollments in courses assigned to the TOP code in the selected year.

¹³ 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.

¹⁴ Insufficient data available.

¹⁵ 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.

¹⁶ Among all exiters with a valid SSN, the percentage who were employed two quarters after exiting California Community Colleges.

Metric	TOP 096400	TOP 906410	All Programs
Employed in the fourth fiscal quarter after exit ¹⁷	60%	46%	65%
Job closely related to field of study ¹⁸	N/A ¹⁹	N/A ²⁰	N/A ²¹
Median earnings in the second fiscal quarter after exit ²²	\$9,108	\$10,002	\$9,134
Median change in earnings ²³	41%	11%	31%
Attained a living wage ²⁴	67%	N/A ²⁵	50%

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 [John Stevenson Plumbing & Mechanical Inc.](#), [Sears](#), [BAE Systems](#), [American Residential Services](#) and [Johnson Controls, Inc.](#) (Exhibit 9).

Exhibit 9: Top Industries and Employers in San Diego County for Heating, Air Conditioning, and Refrigeration Mechanics and Installers

Top Employers	Top Industries
<ul style="list-style-type: none"> John Stevenson Plumbing & Mechanical, Inc. Sears BAE Systems American Residential Services Johnson Controls, Inc. 	<ul style="list-style-type: none"> Building Equipment Contractors Automotive Parts, Accessories, and Tire Stores Colleges, Universities, and Professional Schools Residential Building Construction National Security and International Affairs

Skills, Education and Certifications

Exhibit 10 indicates the educational attainment for the occupation found currently in the national labor force. The typical on-the-job training for this occupation is [long-term on-the-job training](#). The typical entry-level education is a [postsecondary non-degree award](#).²⁶

¹⁷ Among exiting students with a valid SSN, the percentage who were employed four quarters after exiting California Community Colleges.

¹⁸ Among students who responded to the CTEOS, the percentage reporting employment in the same or similar field as their program of study.

¹⁹ Data for this metric has not been released for PY2014-15; in PY2013-14, the result was unavailable, as there were fewer than three students.

²⁰ Data for this metric has not been released for PY2014-15; in PY2013-14, there was insufficient data to calculate this metric.

²¹ Data for this metric has not been released for PY2014-15; however, in PY2013-14, the result was 81%.

²² Among exiting students, the median second-quarter earnings one year after the year in which they exited California Community Colleges.

²³ Among exiting students with a valid SSN, the percentage change in earnings one year before and one year after exiting California Community Colleges.

²⁴ Among completers and skills-builders who exited, the proportion of students who attained a living wage.

²⁵ Because there were fewer than 10 students, this metric has been suppressed.

²⁶ EMSI. San Diego County (6073). 2017.04 Class of Worker. QCEW + Non-QCEW + Self-Employed. 2016-2021.

Exhibit 10: National Educational Attainment of Heating, Air Conditioning, and Refrigeration Mechanics and Installers

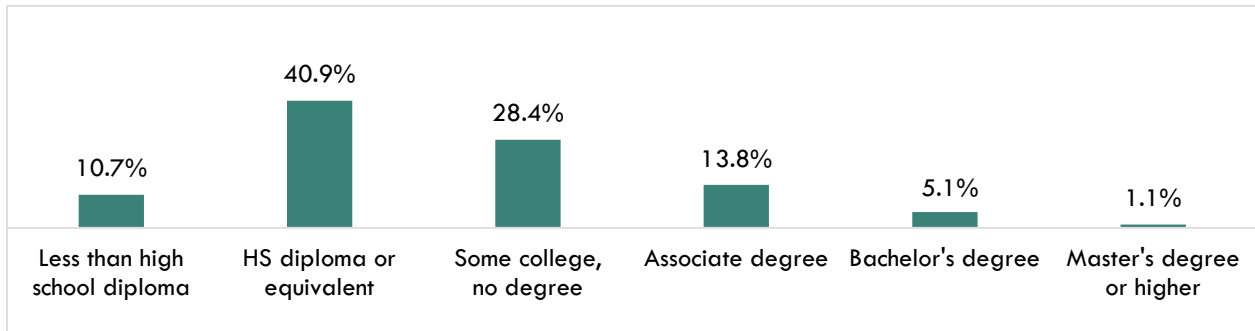


Exhibit 11 lists the top specialized, soft and software skills that appeared in online job postings between January 1, 2015 and December 31, 2017.

Exhibit 11: Top Skills for Heating, Air Conditioning, and Refrigeration Mechanics and Installers in San Diego County²⁷

Specialized Skills	Soft Skills	Software Skills
<ul style="list-style-type: none"> • HVAC • Repair • Inspection • Ventilation • Plumbing 	<ul style="list-style-type: none"> • Troubleshooting • Preventive Maintenance • Communication Skills • Writing • Physical Demand 	<ul style="list-style-type: none"> • Microsoft Office • Microsoft Project • Microsoft Vista • AutoCAD • Revit

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²⁷ Labor Insight Jobs. Burning Glass Technologies. San Diego, CA. Full years 2015-2017.