

Electricians

Labor Market Analysis: San Diego County

October 2020

Summary



The San Diego-Imperial Center of Excellence for Labor Market Research (COE) developed this brief about *Electricians* to assist community colleges in the region with program development and strategic planning. According to available labor market information, *Electricians* have a labor market demand of 1,194 annual job openings, while average demand for a single occupation in San Diego County is 277 annual job openings. Two educational institutions in San Diego County supply 47 awards for this occupation, which suggests that there is a significant supply gap in the labor market. This occupation's entry-level and median earnings are above the living wage. According to the California Community Colleges' outcomes data, 82 percent of students in San Diego-Imperial Region who completed a related program (e.g., Electrical) earned a living wage, compared to 52 percent of students who completed Career Education programs in general. The typical entry-level education for *Electricians* is a high school diploma or equivalent. The COE endorses a **new** program for this occupation because 1) a supply gap exists for this occupation; 2) its entry-level and median earnings are above the living wage; and 3) a high number of annual openings exist.

Introduction

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

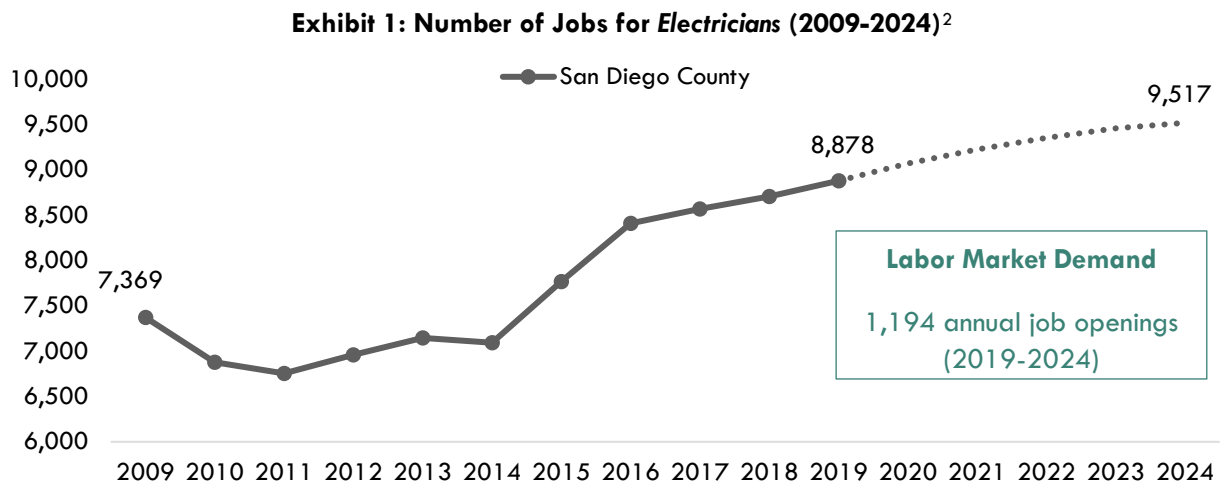
Electricians (SOC 47-2111): Install, maintain, and repair electrical wiring, equipment, and fixtures.

Ensure that work is in accordance with relevant codes. May install or service street lights, intercom systems, or electrical control systems. Sample reported job titles include:

- Maintenance Electrician
- Industrial Electrician
- Chief Electrician
- Control Electrician
- Inside Wireman
- Qualified Craft Worker, Electrician (QCW, Electrician)
- Mechanical Trades Specialist, Electrician
- Journeyman Wireman
- Journeyman Electrician

Projected Occupational Demand

Between 2019 and 2024, *Electricians* are projected to increase by **639** net jobs or **seven** percent (Exhibit 1). Employers in San Diego County will need to hire **1,194** workers annually to fill new jobs and backfill jobs due to attrition caused by turnover and retirement, for example.



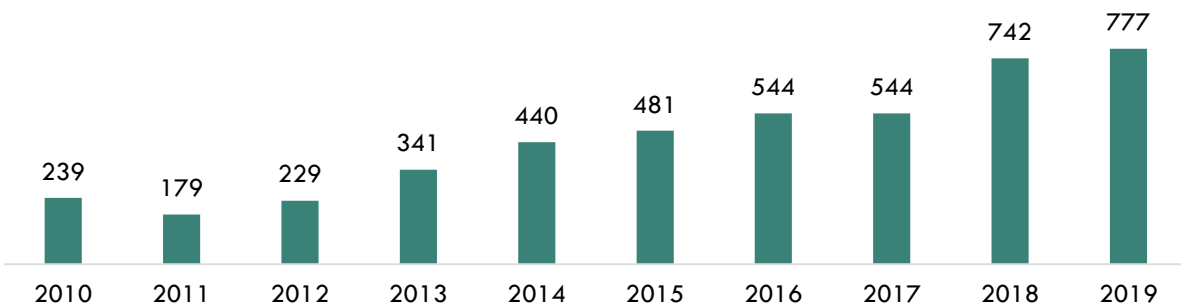
¹ The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating or disseminating data. [bls.gov/soc](https://www.bls.gov/soc/).

² Emsi 2020.03; QCEW, Non-QCEW, Self-Employed.

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 2019, there was an average of 452 online job postings per year for *Electricians* in San Diego County (Exhibit 2). Please note that online job postings do not equal labor market demand; demand is represented by annual job openings (Exhibit 1). Employers may post a position multiple times for various reasons, such as increasing the pool of applicants, for example.

Exhibit 2: Number of Online Job Postings for *Electricians* in San Diego County (2010-2019)³



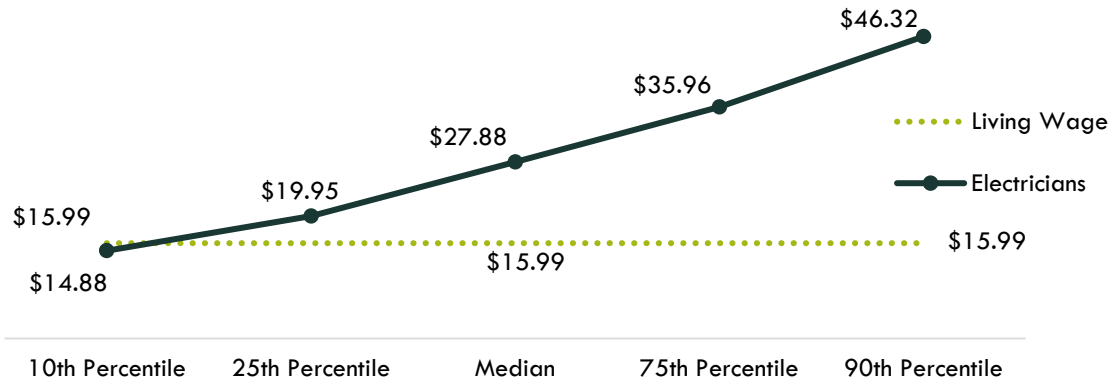
Earnings

Electricians receive entry-level hourly earnings of \$19.95; this is more than the living wage for a single adult in San Diego County, which is \$15.99 per hour (Exhibit 3).⁴

³ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2010-2019.

⁴ "California Family Needs Calculator (formerly the Self-Sufficiency Standard)," Insight: Center for Community Economic Development, last updated 2018. insightccd.org/2018-self-sufficiency-standard.

Exhibit 3: Hourly Earnings⁵ for *Electricians* in San Diego County⁶



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 There are **two** TOP codes and **three** CIP codes related to *Electricians* (Exhibit 4).

Exhibit 4: Related TOP and CIP Codes for *Electricians*

<i>Electricians</i>
TOP 093400: Electronics and Electric Technology
TOP 095220: Electrical
CIP 15.0406: Automation Engineer Technology/Technician
CIP 46.0302: Electrician
CIP 46.0303: Lineworker

According to TOP data, **four** community college institutions supply the region with awards for this occupation: **Palomar College, San Diego Continuing Education, San Diego City College and Southwestern**. According to CIP data, **no** other institution supplies the region with awards (Exhibit 5).

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 2020.03; QCEW, Non-QCEW, Self-Employed.

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).

**Exhibit 5: Number of Awards (Certificates and Degrees) Conferred by Postsecondary Institutions
(Program Year 2014-15 through PY2018-19 Average)**

TOP6 or CIP	TOP6 or CIP Title	3-Yr Annual Average CC Awards (PY16-17 to PY18-19)	Other Educational Institutions 3-Yr Annual Average Awards (PY14-15 to PY16-17)	3-Yr Total Average Supply (PY14-15 to PY18-19)
093400	Electronics and Electric Technology	147	0	147
	• San Diego Continuing Ed	132	0	
	• San Diego City	5	0	
	• Southwestern	0	0	
095220	Electrical	47	0	47
	• Palomar	32	0	
	• San Diego City	15	0	
			Total	194

Demand vs. Supply

Comparing labor demand (annual openings) with labor supply⁸ suggests that there is a **supply gap** for this occupation in San Diego County, with **1,194** annual openings and **47** awards. Comparatively, there are **12,355** annual openings in California and **1,652** awards⁹ (Exhibit 6).

Exhibit 6: Labor Demand (Annual Openings) Compared with 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	1,194	194	1,000
California	12,355	1,652	10,703

⁸ 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.

⁹ "Supply and Demand," Centers of Excellence Student Outcomes, coecc.net/Supply-and-Demand.aspx.

Important Information to Note:

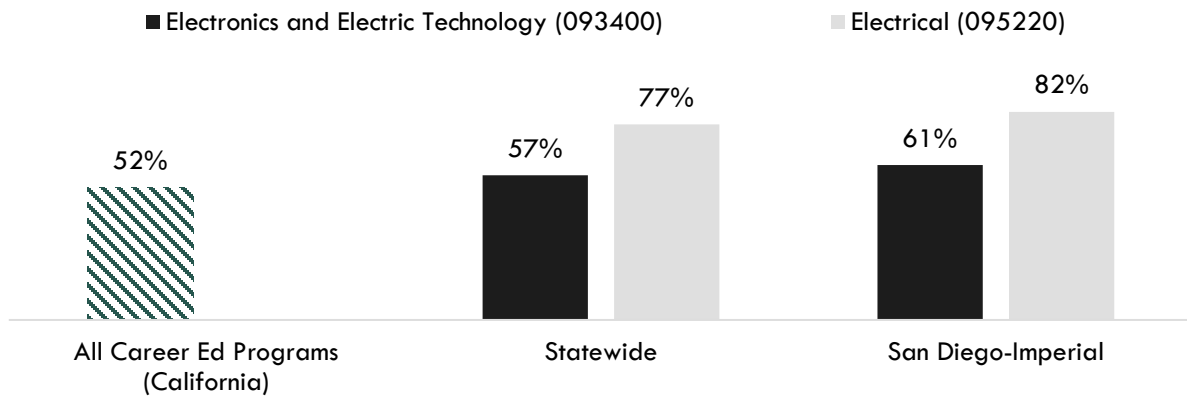
This is a basic analysis of supply and demand of labor. The data does not include workers currently in the labor force who could fill these positions or workers who are not captured by publicly available data. This data should be used to discuss the potential gaps or oversupply of workers; however, it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

Additionally, while “supply” in the labor market is generally measured by the number of awards in related programs, the COE understands that an individual may obtain more than one award, resulting in potentially overestimated supply numbers. To address this challenge, the COE compared the number of awards with the number of unduplicated students “who earned a degree or certificate or attained apprenticeship journey status,” as defined by the California Community Colleges LaunchBoard, Strong Workforce Program. According to this information, the three-year average number of unduplicated students who completed Electrical (095220) programs in San Diego-Imperial was 162, which suggests that a supply gap exists for this occupation. Unfortunately, the number of unduplicated students is only available for TOP data and not CIP data. Therefore, the COE uses the awards data shown in Exhibit 6 for its primary demand and supply (gap) analysis. The COE encourages readers to look at the trends rather than the absolute numbers in the supply gap analysis due to nuances in labor market research.

Student Outcomes and Regional Comparisons

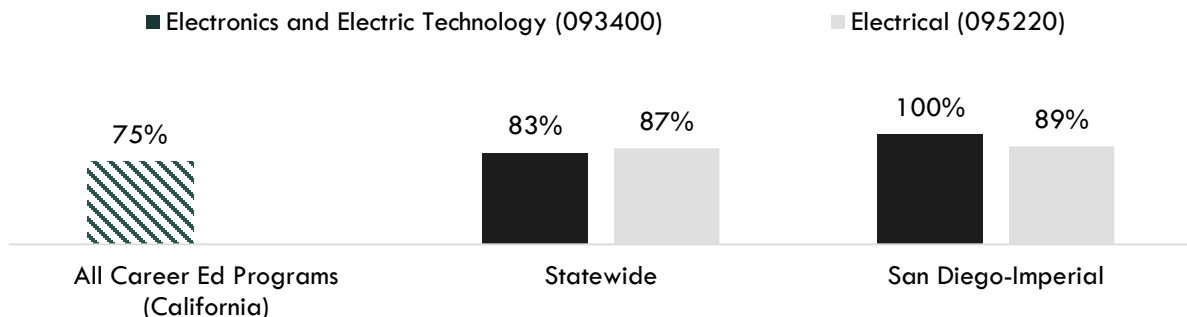
According to the California Community Colleges LaunchBoard, between 61 and 82 percent of students in the San Diego-Imperial region earned a living wage after completing a program related to *Industrial Automation Occupations*, compared to 57 to 77 percent statewide and 52 percent of students in Career Education programs in general across the state (Exhibit 7a).¹⁰

Exhibit 7a: Proportion of Students Who Earned a Living Wage, PY2017-18¹¹



According to the California Community Colleges LaunchBoard, between 89 and 100 percent of students in the San Diego-Imperial region obtained a job closely related to their field of study after completing a related program, compared to 83 to 87 percent statewide and 75 percent of students in Career Education programs in general across the state (Exhibit 7b).¹²

Exhibit 7b: Percentage of Students in a Job Closely Related to Field of Study, PY2016-17¹³



¹⁰ calpassplus.org/LaunchBoard/SWP.aspx

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

¹² calpassplus.org/LaunchBoard/SWP.aspx

¹³ Most recent year with available data is Program Year 2014-15. 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.

Top Employers

Between January 1, 2017 and December 31, 2019, the top five employers in San Diego County for this occupation were [General Dynamics](#), [U.S. Government](#), [Vivint Solar](#), [Epsilon Systems Solutions](#), and [Outsource](#) (Exhibit 8).

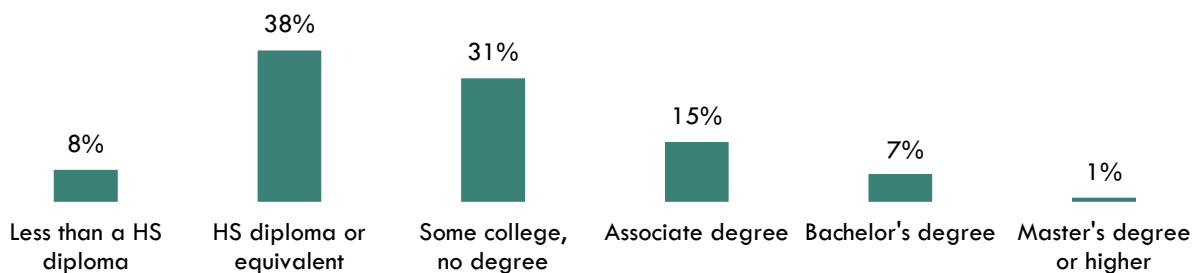
Exhibit 8: Top Employers in San Diego County for Electricians¹⁴

Top Employers	
<ul style="list-style-type: none"> • General Dynamics • U.S. Government • Vivint Solar • Epsilon Systems Solutions Incorporated • Outsource 	<ul style="list-style-type: none"> • Tyonek Native Corporation • Semper Solaris • Naval Facilities Engineering Command • Huntington Ingalls Industries • University of California San Diego

Education and Skills

Exhibit 9 indicates the educational attainment for the occupation found currently in the national labor force. There typically requires an [apprenticeship](#) for this profession. The typical entry-level education is a [high school diploma or equivalent](#).¹⁵

Exhibit 9: National Educational Attainment of Electricians¹⁶



¹⁴ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2017-2019.

¹⁵ Emsi 2020.03; QCEW, Non-QCEW, Self-Employed.

¹⁶ "Educational Attainment for Workers 25 Years and Older by Detailed Occupation," Bureau of Labor Statistics, last modified September 4, 2019. 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, 2017 and December 31, 2019

Exhibit 10: Top Skills for *Electricians* in San Diego County¹⁷

Specialized Skills	Soft Skills	Software Skills
<ul style="list-style-type: none"> • Electrical Work • Repair • Electrical Systems • Wiring • Hand Tools 	<ul style="list-style-type: none"> • Troubleshooting • Physical Abilities • Communication Skills • English • Preventive Maintenance 	<ul style="list-style-type: none"> • Microsoft Excel • Active Server Pages • Microsoft Word • Adobe Acrobat • Adobe Creative Suite

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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.

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.

¹⁷ Burning Glass Technologies, “Labor Insight Real-Time Labor Market Information Tool.” 2017-2019.