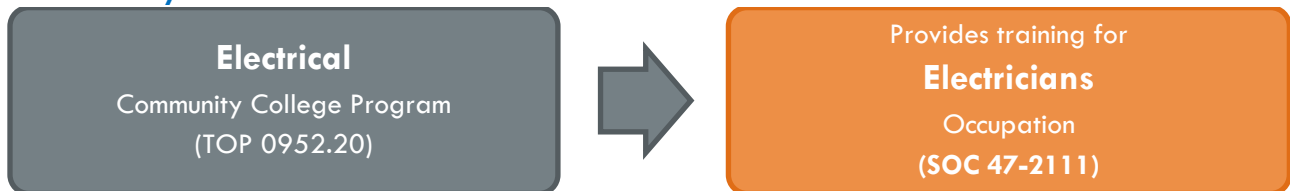


Electrical

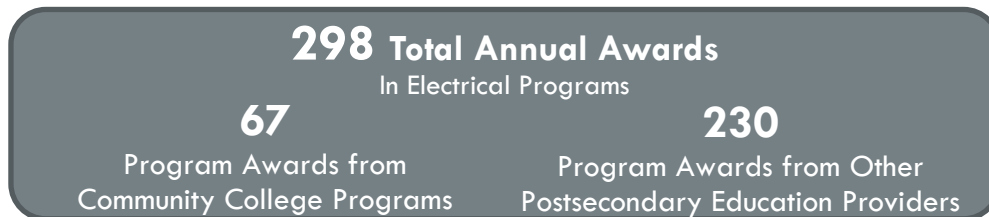
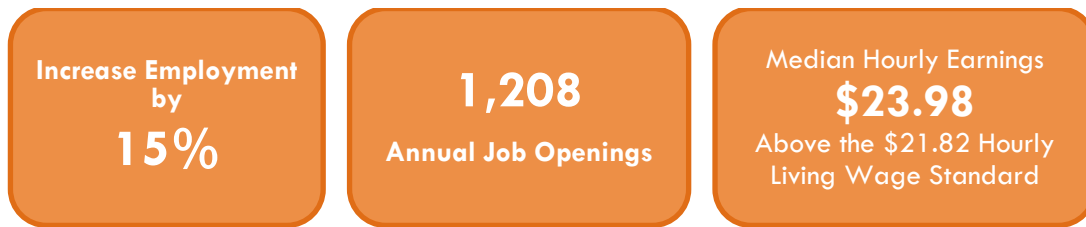
Inland Empire/Desert Region (Riverside and San Bernardino counties)

This workforce demand report uses state and federal job projection data 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 verify their current employment needs.

Summary



Over the next five years (2021-2026), employment for electricians is projected to



The Inland Empire/Desert Centers of Excellence
 **Recommends**
 Electrical Program Expansion
 to meet the need for more workers in the region

Introduction

California Community College electrical programs (TOP 0952.20) prepare students for employment through the instruction of the installation, operation, maintenance, and repair of electrical systems in buildings, including residential, commercial, and industrial electric power wiring and motors, controls, and electrical-distribution panels (Taxonomy of Programs, 2012). The knowledge, skills, and abilities trained by electrical programs lead to the following occupation.

Electricians (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 job titles: Control Electrician, Industrial Electrician, Inside Wireman, Maintenance Electrician, Mechanical Trades Specialist, Wireman

Entry-Level Educational Requirement: High school diploma or equivalent

Training Requirement: Apprenticeship

Work Experience: None

Incumbent workers with a Community College Award or Some Postsecondary Coursework: 47%

In 2021, there were 8,634 electrician jobs in the region. Employment for electricians is projected to increase by 15% through 2026; 1,208 job openings are expected annually. Exhibit 1 displays the job counts, five-year projected job growth, job openings, and the share of incumbent workers aged 55 years and greater in the region.

Exhibit 1. Five-year projections for electricians, Inland Empire/Desert Region, 2021-2026

Occupation	2021 Jobs	2026 Jobs	5-Yr % Change	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)	% of workers age 55+
Electricians	8,634	9,955	15%	6,042	1,208	21%

Source: Lightcast 2022.2

An online job ad search for electrical jobs was conducted to reveal the employers seeking these workers, including the time it takes to fill positions, earnings information, and in-demand skills. Exhibit 2 shows the number of job ads posted during the last 12 months, July 2021 through June 2022, and the regional and statewide average time to fill these jobs. On average, employers in the local region fill online job ads for electricians in 34 days, three days shorter than the statewide average time to fill. Time to fill information indicates that employers in the region likely face similar challenges filling open positions as other employers in California.

Exhibit 2. Job ads and time to fill, Inland Empire/Desert Region, July 2021 through June 2022

Occupation	Job Ads	Regional Average Time to Fill (Days)	Statewide Average Time to Fill (Days)
Electricians	366	34	37

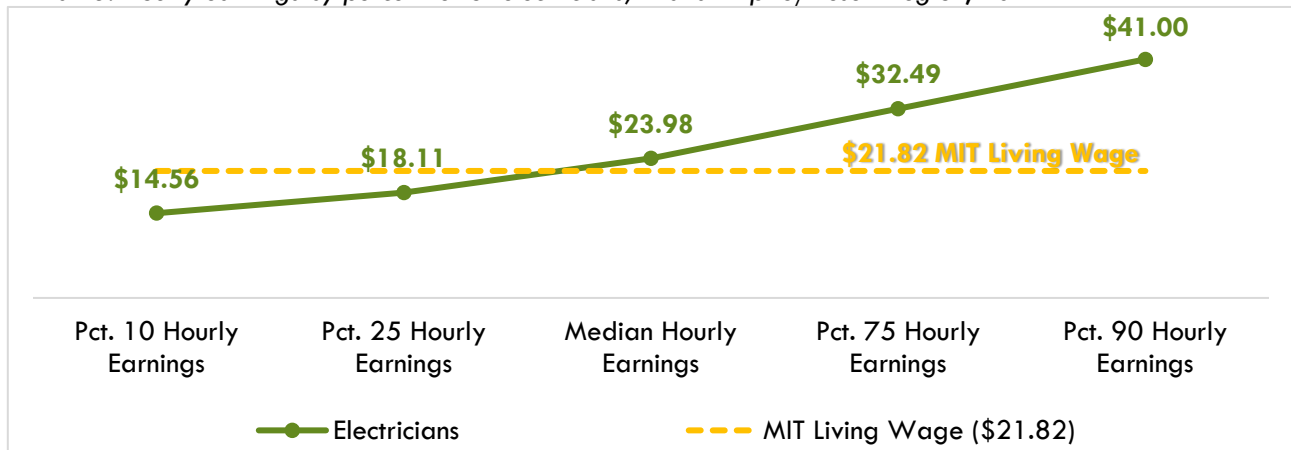
Source: Burning Glass – Labor Insights

Earnings and Benefits

Community colleges should ensure their training programs lead to employment opportunities that provide a living wage. The MIT living wage calculator estimates that an individual must earn \$21.82 per or \$45,386 annually in California (Glasmeier, 2022).

Exhibit 3 displays the hourly earnings for electricians. The median hourly earnings for electricians are above the living wage standard, indicating that at least 50% of workers earn a living wage.

Exhibit 3. Hourly earnings by percentile for electricians, Inland Empire/Desert Region, 2021



Source: Lightcast 2022.2

Benefits information, provided in the occupational guides developed by the California Labor Market Information Division, reveals that benefits for electricians vary widely from company to company. Electrical workers may receive paid holidays, vacation, and health insurance. The type of benefits package is determined by company policy or union contract. Self-employed electrical workers need to provide their own benefits (Detailed Occupational Guides, 2022).

Advertised Salary from Online Job Ads

Exhibit 4 displays online job ad salary data for electricians over the last 12 months. Online job ad salary information reveals that employers are willing to pay electricians an average annual salary of \$66,000, above the region's \$45,386 annual (\$21.82 hourly) MIT living wage standard. Consider the salary information with caution since only 45% (166 out of 366) of online job ads for this occupation provided salary information. The salary figures are prorated to reflect full-time, annual earnings status.

Exhibit 4. Advertised salary information, Inland Empire/Desert Region, July 2021 through June 2022

Occupation	Number of job ads	Real-Time Salary Information				Average Annual Salary
		Less than \$35,000	\$35,000 to \$49,999	\$50,000 to \$74,999	More than \$75,000	
Electricians	166	3%	10%	70%	17%	\$66,000

Source: Burning Glass – Labor Insights

Employers, Skills, Education, and Work Experience

Exhibit 5 displays the employers that posted the most job ads during the last 12 months. Displaying employer names provides insight into where students may find employment after completing a program. Sunrun posted the most job ads for electricians in the region.

Exhibit 5. Employers posting the most job ads for electricians, Inland Empire/Desert Region, July 2021 through June 2022

Occupation	Top Employers
Electricians (n=360)	<ul style="list-style-type: none"> Sunrun SunPower Corporation State of California Motive Companies MasTec Inc Rogers Electric Services

Source: Burning Glass – Labor Insights

Exhibit 6 lists a sample of specialized and employability skills employers seek when looking for workers to fill electrician positions. Specialized skills are occupation-specific skills that employers request for industry or job competency. Employability skills are foundational skills that transcend industries and occupations; this category is often referred to as "soft skills." The skills requested in job ads may be utilized to guide curriculum development.

Exhibit 6. Sample of in-demand skills from employer job ads, Inland Empire/Desert Region, July 2021 through June 2022

Occupation	Specialized skills	Employability skills
Electricians (n=347)	<ul style="list-style-type: none"> Repair Electrical Systems Wiring Hand Tools Schematic Diagrams 	<ul style="list-style-type: none"> Troubleshooting Physical Abilities Communication Skills Problem Solving Teamwork/Collaboration

Source: Burning Glass – Labor Insights

Exhibit 7 displays the typical entry-level education, educational attainment, and minimum advertised education requirements for electricians. According to the Bureau of Labor Statistics, 47% of incumbent workers in this field hold a community college-level of educational attainment; "some college, no degree," and an "associate degree." Approximately 95% of job ads for electricians sought candidates with a high school diploma or vocational training.

Exhibit 7. Typical entry-level education, educational attainment, and minimum advertised education requirements, Inland Empire/Desert Region, July 2021 through June 2022

Occupation	Typical Entry-Level Education Requirement (National)	CC-Level Educational Attainment* (National)	Number of Job Ads	Real-Time Minimum Advertised Education Requirement		
				High school or vocational training	Associate degree	Bachelor's degree or higher
Electricians	High school diploma or equivalent	47%	176	95%	5%	-

Source: Lightcast 2022.2, Burning Glass – Labor Insights

*Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework

Exhibit 8 displays the work experience typically required for electricians and the real-time work experience requirements from employer job ads. Approximately 52% of employers sought electricians with three to five years of previous work experience.

Exhibit 8. Work experience required and real-time work experience requirements, Inland Empire/Desert Region, July 2021 through June 2022

Occupation	Work Experience Typically Required	Real-Time Work Experience			
		Number of job ads	0 – 2 years	3 – 5 years	6+ years
Electricians	None	233	39%	52%	9%

Source: Lightcast 2022.2, Burning Glass – Labor Insights

Student Completions and Programs Outcomes

Exhibit 9 displays student completions for electrical (TOP 0952.20) programs over the last three academic years (2018-21). In the previous three academic years, regional community colleges have issued 67 awards annually in electrical programs. Program completion and student outcome methodologies are found in the appendix.

Exhibit 9. Annual average community college awards for electrical programs, Inland Empire/Desert Region, Academic Years 2018-2021

TOP 0952.20 – Electrical (Local Program Title)	Academic Year 2018-19	Academic Year 2019-20	Academic Year 2021-21	Total CC Annual Average Awards, Academic Years 2018-21
Barstow (Residential Electrical)				0
Associate Degree	-	-	-	0
Norco College (Electrician, Electrician Apprenticeship, Facility Maintenance)				67
Associate Degree	2	6	5	4
Certificate 30 < 60 semester units	95	19	63	59
Certificate 18 < 30 semester units	11	0	0	4
Victor Valley				0
Certificate 6 < 18 semester units	0	0	1	0
Total	108	25	69	67

Source: MIS Data Mart, COCI

California program outcome data may provide a useful insight into the likelihood of success for the proposed program. Community college student outcome information based on the selected TOP code and region is provided in Exhibit 10. Approximately 80% of electrical program completers and skills-builders students attained a living wage.

Exhibit 10. 0952.20 – Electrical strong workforce program outcomes, Inland Empire/Desert Region, Academic Year 2018-2019 (Unless Noted)

Strong Workforce Program Metrics: 0952.20 – Electrical	Inland Empire/Desert Region	California Region
Unduplicated count of enrolled students (2019-20)	614	9,042
Completed 9+ career education units in one year (2019-20)	65%	28%
Perkins Economically disadvantaged students (2019-20)	64%	61%
Students who attained a noncredit workforce milestone in a year (2019-20)	-	67%
Students who earned a degree, certificate, or attained apprenticeship (2019-20)	44	645
Transferred to a four-year institution (transfers)	-	26
Job closely related to the field of study (2017-18)	94%	84%
Median annual earnings (all exiters)	\$47,148	\$54,712
Median change in earnings (all exiters)	79%	52%

Strong Workforce Program Metrics: 0952.20 – Electrical	Inland Empire/Desert Region	California
Attained a living wage (completers and skills-builders)	80%	72%

Sources: LaunchBoard Community College Pipeline and Strong Workforce Program Metrics

Exhibit 11 displays awards other postsecondary education providers reported in electrician programs (CIP 46.0302). Completion data is compiled from the Integrated Postsecondary Education Data System (IPEDS) for the most recent three years. Five other regional postsecondary education providers issued 230 awards annually over the last three academic years.

Exhibit 11. Other educational providers electrician programs, three-year annual average credentials, Inland Empire/Desert Region, Academic Years 2017-2020

46.0302 - Electrician	Award <1 year	Postsecondary awards	Associate Degree	Other Educational Providers Annual Average Credentials,
InterCoast Colleges-Riverside	-	38	-	38
San Joaquin Valley College-Ontario	-	39	7	46
San Joaquin Valley College-Rancho Mirage	-	-	-	0
San Joaquin Valley College-Temecula	-	22	2	23
Summit College	123	-	-	123
Total	123	99	8	230

Source: IPEDS

Summary of Findings

The knowledge, skills, and abilities trained by electrical programs (TOP 0952.20) lead to the electricians occupation. Electricians are projected to have 1,208 annual job openings and increase employment by 15% over the next five years. The median earnings for electricians is \$23.98 per hour, above the living wage standard for the region (\$21.83 per hour). This indicates that at least 50% of workers in this occupation earn a living wage.

Community college electrical programs have issued 67 awards annually over the last three academic years. Other postsecondary education providers have issued 123 awards annually in programs related to electrical. Combined, education providers in the region have issued 191 awards annually in electrical programs over the last three academic years.

The Centers of Excellence recommends expanding electrical programs to meet the regional demand for more workers. Colleges considering this program should partner with relevant employers and confirm their demand for electricians and the skills needed for students to secure work in this field shortly after exiting the program.

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Appendix: Methodology

Exhibit 9 displays the average annual California Community College (CCC) awards conferred during the three academic years between 2018 and 2021 from the California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart. Awards are the combined total of associate degrees and certificates issued during the timeframe, divided by three in this case to calculate an annual average. This is done to minimize the effect of atypical variations that might be present in a single year.

Community college student outcome information is from LaunchBoard and based on the selected TOP code and region. These metrics are based on records submitted to the California Community Colleges Chancellor's Office Management Information Systems (MIS) by community colleges, which come from self-reported student information from CCC Apply and the National Student Clearinghouse. Employment and earnings metrics are sourced from California's Employment Development Department's Unemployment Insurance database records. When available, outcomes for completers are reported to demonstrate the impact that earning a degree or certificate can have on employment and earnings. For more information on the types of students included for each metric, please see the web link for LaunchBoard's Strong Workforce Program Metrics Data Element Dictionary in the References section (LaunchBoard, 2022a). Finally, employment in a job closely related to the field of study comes from self-reported student responses on the CTE Employment Outcomes Survey (CTEOS), administered by Santa Rosa Junior College (LaunchBoard, 2022a).

Job ad data is limited to the information provided by employers and the ability of artificial intelligence search engines to identify this information. Additionally, preliminary calculations by Georgetown Center on Education and the Workforce found that "just 30 to 40 percent of openings for candidates with some college or an associate degree, and only 40 to 60 percent of openings for high school diploma holders appear online" (Carnevale et al., 2014). Online job ads often do not reveal employers' hiring intentions; it is unknown if employers plan to hire one or multiple workers from a single online job ad or collecting resumes for future hiring needs. A closed job ad may not be the result of a hired worker.

Table 1. 2021 to 2026 job growth, wages, entry-level education, training, and work experience required for electricians in the Inland Empire/Desert Region (Riverside and San Bernardino Counties combined)

Occupation (SOC)	2021 Jobs	5-Year Change	5-Year % Change	Annual Openings (New + Replacement Jobs)	Entry-Experienced Hourly Wage (10 th to 90 th percentile)	Median Hourly Wage (50 th percentile)	Average Annual Earnings	Entry-Level Education & On-The-Job-Training	Work Experience Required
Electricians (47-2111)	8,634	1,322	15%	1,208	\$14.56 to \$41.00	\$23.98	\$56,300	High school diploma or equivalent & Apprenticeship	None

Source: Lightcast 2022.2