

April 2023

Labor Market Analysis

Industrial Electrician



Prepared by Central Valley/Mother Lode Center of Excellence



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COVID-19 Statement: This report includes employment projection data by Lightcast. Lightcast’s projections are modeled on recorded (historical) employment figures and incorporate several underlying assumptions, including the assumption that the economy during the projection period will be at approximately full employment or potential output. To the extent that a recession or labor shock, such as the economic effects of COVID-19, can cause long-term structural change, they may impact the projections. At this time, it is not possible to quantify the impact of COVID-19 on projections of industry and occupational employment. Other measures such as unemployment rates and monthly industry employment estimates will reflect the most recent information on employment and jobs in the state and, in combination with input from local employers, may help validate current and future employment needs as depicted here.

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Summary

The Central Valley/Mother Lode Center of Excellence developed this report for Clovis College to determine whether there is demand in the local labor market that is not being met by the supply from community college programs. This report summarizes labor market demand, wages, skills, and postsecondary supply for *Industrial Electrician-related Occupations*, which include:

- Electricians (47-2111)
- Helpers – Electricians (47-3013)
- Electrical and Electronics Repairers, Powerhouse, Substation, and Relay (49-2095)
- Electrical Power-Line Installers and Repairers (49-9051)

Key Findings

- **Occupational Demand** — *Industrial Electrician-related Occupations* have a labor market demand of 739 annual job openings in the South Central Valley/Southern Mother Lode (SCV/SML) subregion. Between 2021 and 2026, Electricians are projected to have the most demand with 608 annual job openings and a projected growth rate of 21 percent.
- **Wages** — Average entry-level earnings of \$26.14/hour for *Industrial Electrician-related Occupations* are higher than the living wage in the SCV/SML subregion, which is \$11.91/hour for a single adult.¹ Electrical Power-Line Installers and Repairers earn the highest entry-level wage, \$38.16/hour.
- **Employers and Job Titles** — Employers in the SCV/SML subregion include PG&E, State of California, and Edison International. The most common job title is electrician.
- **Skills** — The top baseline skill is troubleshooting (problem solving), and the top specialized skill is electrical wiring/systems. The most in-demand certifications are journeyman lineman and journeyman electrician.
- **Education** — A high school diploma or equivalent is typically required for three out of the four occupations of interest. A postsecondary nondegree award is typically required for Electrical and Electronics Repairers, Powerhouse, Substation, and Relay.
- **Supply and Demand Analysis** — Based on 739 annual openings (i.e., demand), and 269 postsecondary degrees awarded in the SCV/SML subregion (i.e., supply), an analysis of supply and demand suggests there is an undersupply of 470 workers in the SCV/SML subregion. In the CVML region, 360 awards were conferred, suggesting an undersupply of 831 workers - based on 1,191 annual openings in the CVML region.

Recommendation

Based on a comparison of demand and supply, there is an undersupply of trained workers in the SCV/SML subregion and the CVML region. The Center of Excellence recommends that Clovis College work with the regional directors, the college's advisory board, and local industry in the development of programs to address the shortage of *Industrial Electrician-related Occupations* workers.

¹ The term "living wage" in Center of Excellence reports is calculated by averaging the self-sufficiency wages from the Insight Center's California Family Needs Calculator for each county in the subregion: <https://insightccd.org/tools-metrics/self-sufficiency-standard-tool-for-california/>.

Introduction

The Central Valley/Mother Lode Center of Excellence developed this report to provide Clovis College with labor market information for Industrial Electrician-related Occupations. The geographical focus for this report is the South Central Valley/Southern Mother Lode (SCV/SML) subregion, but regional demand and supply data has been included for broader applicability and use. Analysis of the program and occupational data related to Industrial Electrician resulted in the identification of applicable occupations, known as *Industrial Electrician-related Occupations*. The Standard Occupational Classification (SOC) System code and occupational titles used in this report from the Bureau of Labor Statistics and O*NET OnLine are shown below.

Electricians (47-2111)

- **Job Description:** 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.
- **Knowledge:** Building and Construction, Administration and Management, Mechanical, Mathematics, Design
- **Skills:** Troubleshooting, Repairing, Active Listening, Critical Thinking, Speaking

Helpers – Electricians (47-3013)

- **Job Description:** Help electricians by performing duties requiring less skill. Duties include using, supplying, or holding materials or tools, and cleaning work area and equipment.
- **Knowledge:** English Language, Mechanical, Building and Construction, Customer and Personal Service, Design
- **Skills:** Active Listing, Quality Control Analysis, Critical Thinking, Repairing, Speaking

Electrical and Electronics Repairers, Powerhouse, Substation, and Relay (49-2095)

- **Job Description:** Inspect, test, repair, or maintain electrical equipment in generating stations, substations, and in-service relays.
- **Knowledge:** Mechanical, Engineering and Technology, Mathematics, Public Safety and Security, English Language
- **Skills:** Critical Thinking, Equipment Maintenance, Repairing, Troubleshooting, Reading Comprehension

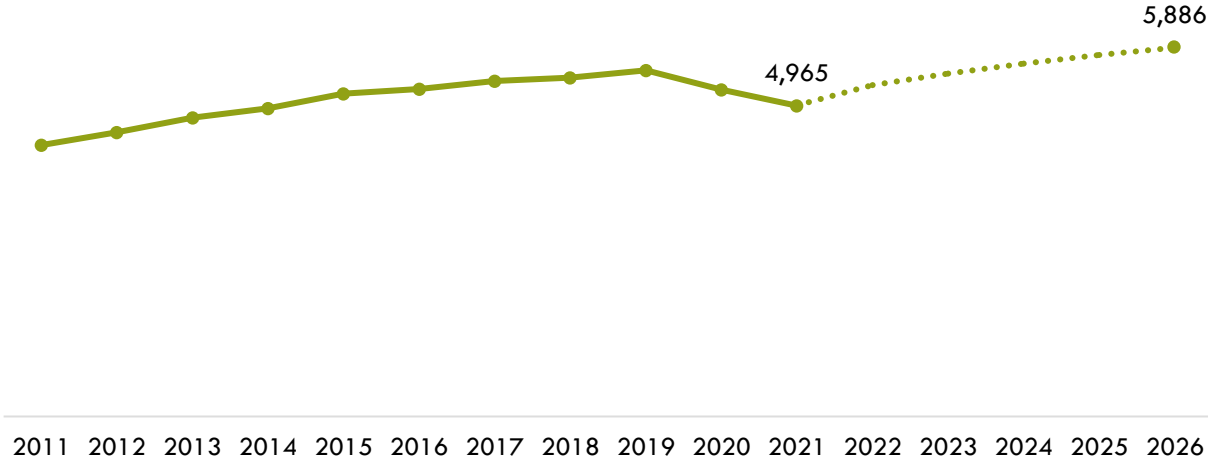
Electrical Power-Line Installers and Repairers (49-9051)

- **Job Description:** Install or repair cables or wires used in electrical power or distribution systems. May erect poles and light or heavy duty transmission towers.
- **Knowledge:** Building and Construction, English Language, Education and Training, Public Safety and Security, Transportation
- **Skills:** Active Listening, Troubleshooting, Monitoring, Operation and Control, Operations Monitoring

Occupational Demand

Exhibit 1a shows trends for *Industrial Electrician-related Occupations* in the SCV/SML subregion. Between 2021 to 2026, the number of jobs for *Industrial Electrician-related Occupations* is projected to increase by 921 jobs, or 19 percent.

Exhibit 1a. Occupational projections for *Industrial Electrician-related Occupations* in the SCV/SML subregion



Between 2021 to 2026, demand for *Industrial Electrician-related Occupations* in the SCV/SML subregion is 739 annual openings (Exhibit 1b). Electricians are projected to have the most demand with 608 annual job openings and a projected growth rate of 21 percent.

Exhibit 1b. Occupational projections for *Industrial Electrician-related Occupations* in the SCV/SML subregion

Occupation	2021 Jobs	2026 Jobs	5-Year Change	5-Year % Change	Annual Openings
Electricians	3,894	4,722	828	21%	608
Helpers – Electricians	210	277	67	32%	43
Electrical Power-Line Installers and Repairers	694	718	24	3%	70
Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	167	169	2	1%	18
TOTAL	4,965	5,886	921	19%	739

Wages

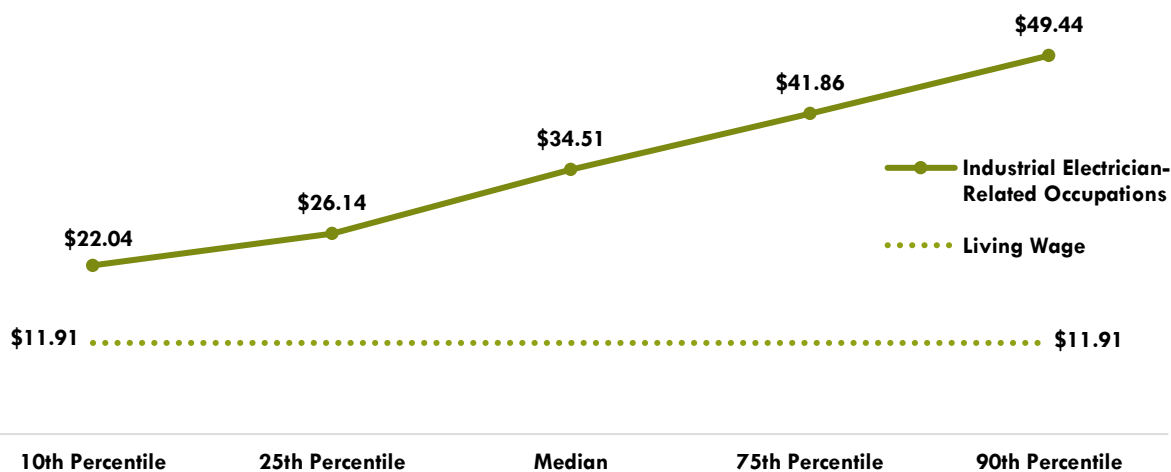
The average living wage for a single adult in the SCV/SML subregion is \$11.91/hour.² Exhibit 2a shows the hourly wages of *Industrial Electrician-related Occupations*. Electrical Power-Line Installers and Repairers earn the highest entry-level wage, \$38.16/hour in the subregion.³ Please note 10th and 25th percentiles are considered entry-level wages while 75th and 90th are considered experienced wages, either by gained by long-term employment, extra training, etc.

Exhibit 2a. Industrial Electrician-related Occupations hourly wages in the SCV/SML subregion

Occupation	Pct. 25 Hourly Earnings	Median Hourly Earnings	Pct. 75 Hourly Earnings
Electrical Power-Line Installers and Repairers	\$38.16	\$56.77	\$59.83
Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	\$29.63	\$35.49	\$48.82
Electricians	\$21.60	\$28.79	\$37.36
Helpers – Electricians	\$15.16	\$17.00	\$21.44

Exhibit 2b shows the average hourly wages for *Industrial Electrician-related Occupations*; the average entry-level wage is higher than the average entry-level living wage for the SCV/SML subregion.

Exhibit 2b. Industrial Electrician-related Occupations average hourly wages in the SCV/SML subregion



² The term "living wage" in Center of Excellence reports is calculated by averaging the self-sufficiency wages from the Insight Center's California Family Needs Calculator for each county in the subregion: <https://insightccd.org/tools-metrics/self-sufficiency-standard-tool-for-california/>.

³ Entry-level wages are derived from the 25th percentile.

Job Postings

There were 705 job postings for *Industrial Electrician-related Occupations* in the SCV/SML subregion from April 2022 to March 2023.⁴

Top Employers

The top employers with the most job postings are listed in Exhibit 3. The top employers in online job postings were PG&E, State of California, and Edison International.

Exhibit 3. Top employers of *Industrial Electrician-related Occupations* by number of job postings

Employer
PG&E
State of California
Edison International
Semper Solaris Construction
Innovative Engineering Systems
M.A. Mortenson Company

Top Titles

Exhibit 4 shows the top titles for *Industrial Electrician-related Occupations* in the SCV/SML subregion. Common job titles in postings include Electricians, Journeyman Electricians/Linemen, and Solar Electricians.

Exhibit 4. Top titles in job postings for *Industrial Electrician-related Occupations*

Title
Electricians
Journeyman Electricians/Linemen
Solar Electricians
Service Electricians
Maintenance Electricians

⁴ Other than occupation titles and job titles, the categories below can be counted one or multiple times per job posting, and across several areas in a single posting. For example, a skill can be counted in two different skill types, and an employer can indicate more than one education level.

Salaries

Exhibit 5 shows the “Advertised Salaries” for *Industrial Electrician-related Occupations*.

Exhibit 5. Market salaries for *Industrial Electrician-related Occupations*

Advertised Salary	Job Postings
\$28,000.00-\$41,999.00	8
\$42,000.00-\$55,999.00	57
\$56,000.00-\$69,999.00	77
\$70,000.00-\$83,999.00	54
\$84,000.00+	33

Education

Of the 705 job postings, 252 listed a preferred or minimum educational requirement for the position being filled. Among those, 31% requested a high school or GED, 4% requested an associate degree, and one percent requested a bachelor’s degree (Exhibit 6).

Exhibit 6. Education levels requested in job postings for *Industrial Electrician-related Occupations*

Education Level	Job Postings	% of Total Job Postings
High school or GED	216	31%
Associate degree	25	4%
Bachelor's degree	10	1%
Master's degree	1	0%

Baseline and Specialized Skills

Exhibit 7 depicts the top baseline and specialized skills in job postings. The most important baseline skills are troubleshooting (problem solving), communications, and operations. The top specialized skills are electrical wiring/systems, hand tools/power tools, and blueprinting.

Exhibit 7. In-demand *Industrial Electrician-related Occupations* baseline and specialized skills

Baseline Skills	Specialized Skills
Troubleshooting (problem solving)	Electrical Wiring/Systems
Communications	Hand Tools/Power Tools
Operations	Blueprinting
Lifting Ability	Transformers (Electrical)
Customer Service	Electrical Equipment

Certifications

Exhibit 8 shows the top certifications for *Industrial Electrician-related Occupations*.

Exhibit 8. Top Industrial Electrician-related Occupations certifications requested in job postings

Certifications	% of Job Postings
Journeyman Lineman	12%
Journeyman Electrician	6%
OSHA General Industry Card	5%
DOT Certification	4%

Education, Work Experience, & Training

A high school diploma or equivalent is typically required for three out of the four occupations. A postsecondary nondegree award is typically required for Electrical and Electronics Repairers, Powerhouse, Substation, and Relay (Exhibit 9).

Exhibit 9. Education, work experience, training, and Current Population Survey results for Industrial Electrician-related Occupations⁵

Occupation	Typical Entry-level Education	Work Experience Required	Typical On-The-Job Training	CPS
Electricians	High school diploma or equivalent	None	Apprenticeship	47%
Helpers – Electricians	High school diploma or equivalent	None	Short-term on-the-job training	21%
Electrical Power-Line Installers and Repairers	High school diploma or equivalent	None	Long-term on-the-job training	49%
Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	Postsecondary nondegree award	None	Moderate-term on-the-job training	48%

⁵ “Labor Force Statistics from the Current Population Survey,” Bureau of Labor Statistics, <https://www.bls.gov/cps/>.

Supply

An analysis of program data from the Integrated Postsecondary Education Data System (IPEDS) for the last three program years shows that, on average, 360 awards were conferred in the CVML region (Exhibits 10 and 11).

Exhibit 10. TOP and CIP codes for Industrial Electrician-related Occupations

TOP Code – Program	CIP Code – Program
0934.00 – Electronics and Electric Technology	46.0302 – Electrician
0952.20 – Electrical	

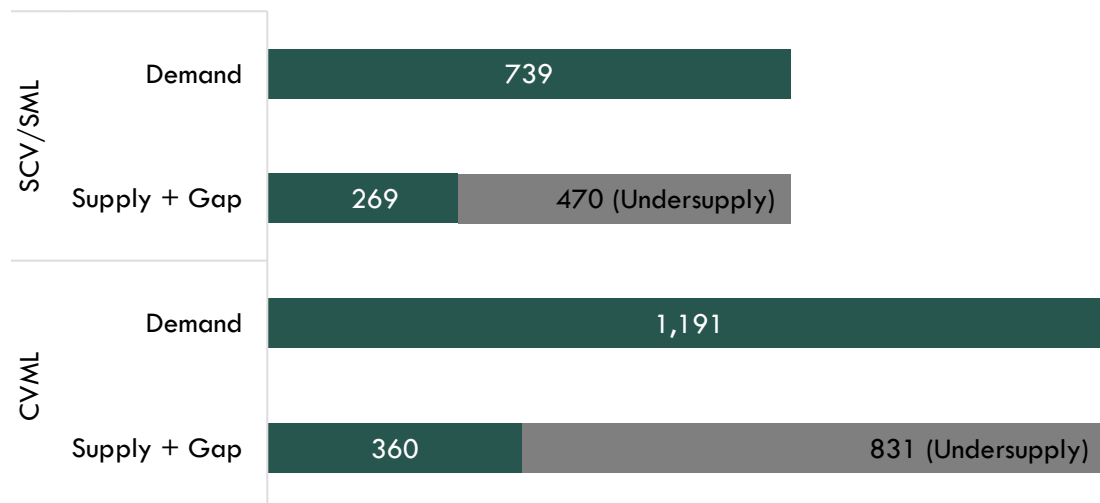
Exhibit 11. Postsecondary supply for Industrial Electrician-related Occupations

TOP – Program	College	3-Year Average
0934.00 – Electronics and Electric Technology	Bakersfield	53*
	Fresno City	53*
	Merced	2
	San Joaquin Delta	2
	Sequoias	1*
0952.20 – Electrical	Bakersfield	12*
	Merced	26
	Modesto	3
	San Joaquin Delta	28
	Sequoias	40*
46.0302 - Electrician	Milan Institute – Bakersfield West	38*
	San Joaquin Valley College – Modesto	30
	San Joaquin Valley College – Visalia	72*
SCV/SML TOTAL		269
CVML TOTAL		360

*SCV/SML Awards

There is an undersupply of 470 *Industrial Electrician-related Occupations* workers in the SCV/SML subregion and an undersupply of 831 workers in the CVML region (Exhibit 12).

Exhibit 12. *Industrial Electrician-related Occupations* workforce demand (annual job openings), postsecondary awards (supply), and additional students needed to fill gap in the SCV/SML subregion and CVML region



Recommendation

This report suggests there is a shortage of 470 workers in the SCV/SML subregion and a shortage of 831 workers in the CVML region for *Industrial Electrician-related Occupations*. Based on these findings, it is recommended that Clovis College work with the regional directors, the college's advisory board, and local industry in the development of programs to address the shortage of *Industrial Electrician-related Occupations* workers in the region.

Appendix: Methodology & Data Sources

Data Sources

Labor market and educational supply data compiled in this report derive from a variety of sources. Data were drawn from external sources, including the Economic Modeling Specialists, Inc., the California Community Colleges Chancellor’s Office Management Information Systems Data Mart and the National Center for Educational Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS). Below is the summary of the data sources found in this study.

Data Type	Source
Labor Market Information/Population Estimates and Projections/Educational Attainment	Economic Modeling Specialists, Intl. (LIGHTCAST). LIGHTCAST occupational employment data are based on final LIGHTCAST industry data and final LIGHTCAST staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates also affected by county-level LIGHTCAST earnings by industry: economicmodeling.com .
Typical Education Level and On-the-job Training	Bureau of Labor Statistics (BLS) uses a system to assign categories for entry-level education and typical on-the-job training to each occupation for which BLS publishes projections data: https://www.bls.gov/emp/tables/educational-attainment.htm .
LaunchBoard	Chancellor’s Cal-PASS Plus LaunchBoard. https://www.calpassplus.org/LaunchBoard/SWP.aspx
Labor Force, Employment and Unemployment Estimates	California Employment Development Department, Labor Market Information Division: labormarketinfo.edd.ca.gov .
Job Posting and Skills Data	Lightcast.
Additional Education Requirements/ Employer Preferences	The O*NET Job Zone database includes over 900 occupations as well as information on skills, abilities, knowledge, work activities and interests associated with specific occupations: onetonline.org .

Key Terms and Concepts

Annual Job Openings: Annual openings are calculated by dividing the number of years in the projection period by total job openings.

Education Attainment Level: The highest education attainment level of workers age 25 years or older.

Employment Estimate: The total number of workers currently employed.

Employment Projections: Projections of employment are calculated by a proprietary Economic Modeling Specialists, Intl. (LIGHTCAST) formula that includes historical employment and economic indicators along with national, state and local trends.

LaunchBoard (Attained the Living Wage): Among SWP students who exited college and did not transfer to any postsecondary institution, the proportion who attained the district county living wage for a single adult measured immediately following academic year of exit

LaunchBoard (Median Annual Earnings): Among SWP students who exited the community college system and who did not transfer to any postsecondary institution, median earnings following the academic year of exit.

LaunchBoard (Median Change in Earnings): Among SWP students who exited and who did not transfer to any postsecondary institution, median change in earnings between the second quarter prior to the beginning of the academic year of entry and the second quarter after the end of the academic year of exit from the last college attended.

LaunchBoard (Job Closely Related to Field of Study): Among SWP students who responded to the CTE Outcomes Survey and did not transfer to any postsecondary institution, the proportion who reported that they are working in a job very closely or closely related to their field of study.

Living Wage: The cost of living in a specific community or region for one adult and no children. The cost increases with the addition of children.

Occupation: An occupation is a grouping of job titles that have a similar set of activities or tasks that employees perform.

Percent Change: Rate of growth or decline in the occupation for the projected period; this does not factor in replacement openings.

Replacements: Estimate of job openings resulting from workers retiring or otherwise permanently leaving an occupation. Workers entering an occupation often need training. These replacement needs, added to job openings due to growth, may be used to assess the minimum number of workers who will need to be trained for an occupation.

Total Job Openings (New + Replacements): Sum of projected growth (new jobs) and replacement needs. When an occupation is expected to lose jobs, or retain the current employment level, number of openings will equal replacements.

Typical Education Requirement: represents the typical education level most workers need to enter an occupation.

Typical On-The-Job Training: indicates the typical on-the-job training needed to attain competency in the skills needed in the occupation.