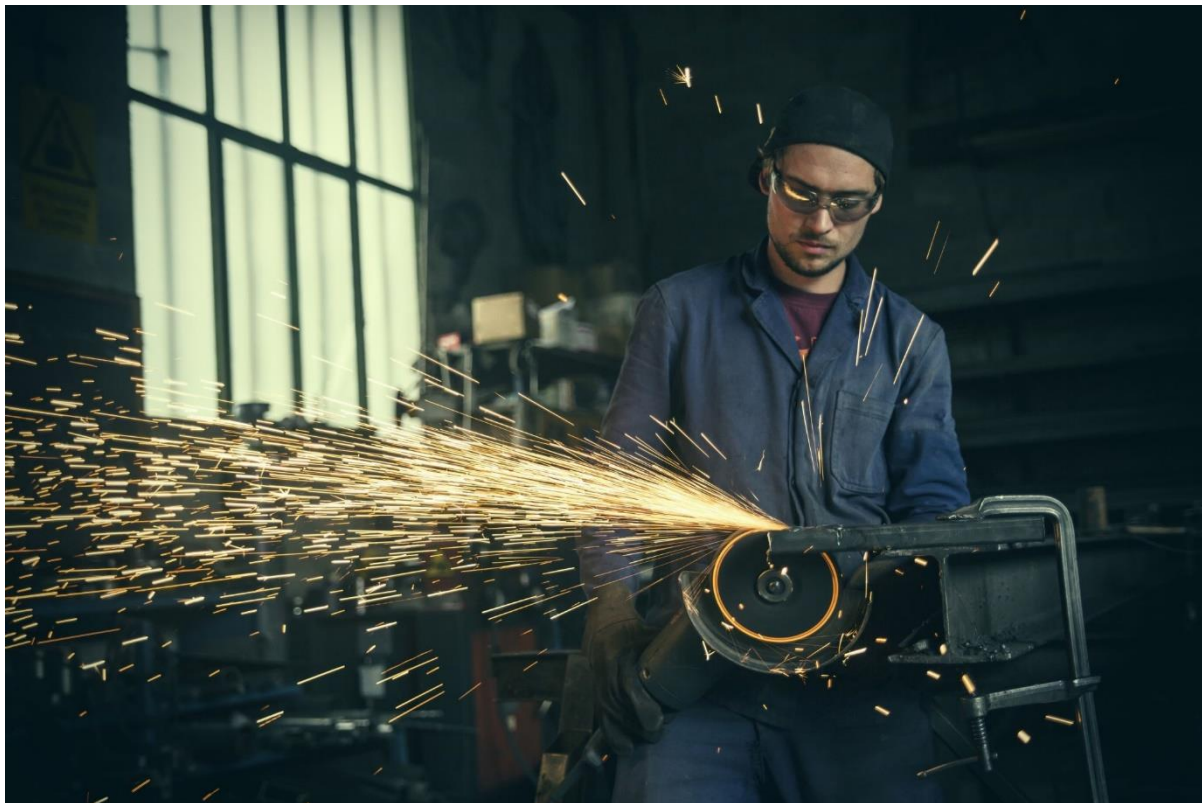


February 2024

Labor Market Analysis

Welding Technology



Prepared by Central Valley/Mother Lode Center of Excellence



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Table of Contents

- Summary 2
 - Key Findings..... 2
 - Recommendation 2
- Introduction..... 3
- Occupational Demand 4
- Wages 5
- Job Postings 6
 - Top Employers..... 6
 - Salaries..... 6
 - Education 7
 - Baseline, Specialized, and Software Skills..... 7
 - Certifications..... 7
- Education, Work Experience, & Training 8
- Supply 9
- Recommendation 10
- Appendix: Methodology & Data Sources 11

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Summary

The Central Valley/Mother Lode Center of Excellence developed this report for College of the Sequoias 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 *Welding Technology occupations*, which include:

- Welders, Cutters, Solderers, and Brazers (SOC 51-4121)
- Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders (SOC 51-4122)

Key Findings

- **Occupational Demand** — *Welding Technology occupations* have a labor market demand of 320 annual job openings in the South Central Valley/Southern Mother Lode (SCV/SML) subregion. Between 2022 and 2027, *welders, cutters, solderers, and brazers* are projected to have the most demand with 311 annual job openings and a projected growth rate of 6%.
- **Wages** — The average entry-level hourly wage for *Welding Technology occupations* is \$15.92 per hour, which is above the living wage in the SCV/SML subregion – \$11.91/hour for a single adult.¹ *Welders, cutters, solderers, and brazers* earn the highest entry-level wage, \$18.71/hour.
- **Employers** — Employers in the SCV/SML subregion include Randstad, Aerotek, Mid Cal Labor Solutions, and Volt.
- **Skills** — The top baseline skill is lifting ability; the top specialized skill is Metal Inert Gas (MIG) Welding; and the top software skill is fleet maintenance.
- **Education** — A high school diploma or equivalent is typically required for both *Welding Technology occupations*.
- **Supply and Demand Analysis** — Based on 320 annual openings (i.e., demand), and 154 postsecondary degrees awarded (i.e., supply), an analysis of supply and demand suggests there is an undersupply of 166 workers in the SCV/SML subregion. In the CVML region, 267 awards were conferred suggesting an undersupply of 267 workers – based on 534 annual openings in CVML.

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 College of the Sequoias work with the regional directors, the college's advisory board, and local industry in the expansion of programs to address the shortage of *Welding Technology* 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 College of the Sequoias with labor market information for Welding Technology. 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 Welding Technology resulted in the identification of applicable occupations, known as *Welding Technology 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.

Welders, Cutters, Solderers, and Brazers (SOC 51-4121)

- **Job Description:** Use hand-welding, flame-cutting, hand-soldering, or brazing equipment to weld or join metal components or to fill holes, indentations, or seams of fabricated metal products.
- **Knowledge:** Production and Processing, Mechanical
- **Skills:** Quality Control Analysis, Monitoring

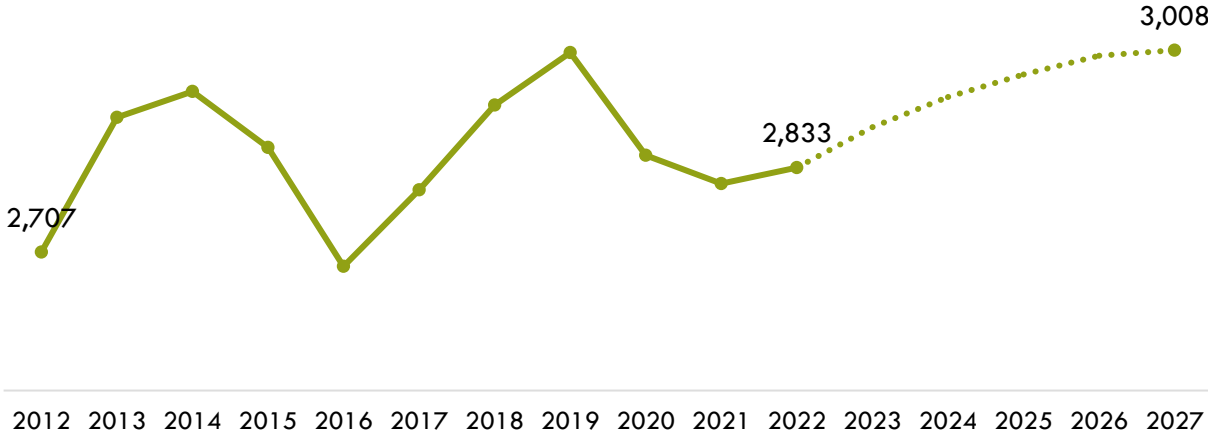
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders (SOC 51-4122)

- **Job Description:** Set up, operate, or tend welding, soldering, or brazing machines or robots that weld, braze, solder, or heat treat metal products, components, or assemblies. Includes workers who operate laser cutters or laser-beam machines.
- **Knowledge:** Mathematics
- **Skills:** Operations Monitoring, Active Listening, Critical Thinking, Operation and Control, Speaking

Occupational Demand

Exhibit 1a shows trends for *Welding Technology* occupations in the SCV/SML subregion. Between 2022 to 2027, the number of jobs for *Welding Technology* occupations is projected to increase by 175 jobs, or eight percent.

Exhibit 1a. Historical employment and projected occupational demand for occupations related to Welding Technology in the SCV/SML subregion, 2012-2027



Between 2022 to 2027, 320 annual openings are projected for *Welding Technology* occupations in the SCV/SML subregion (Exhibit 1b). *Welders, Cutters, Solderers, and Brazers* are projected to have the most demand with 311 annual job openings and a projected growth rate of 6%

Exhibit 1b. Current employment and projected occupational demand for occupations related to Welding Technology in the SCV/SML subregion, 2022-2027

Occupation	2022 Jobs	2027 Jobs	5-Year Change	5-Year % Change	Annual Openings
Welders, Cutters, Solderers, and Brazers	2,751	2,922	171	6%	311
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	82	86	4	4%	9
TOTAL	2,833	3,008	175	6%	320

Wages

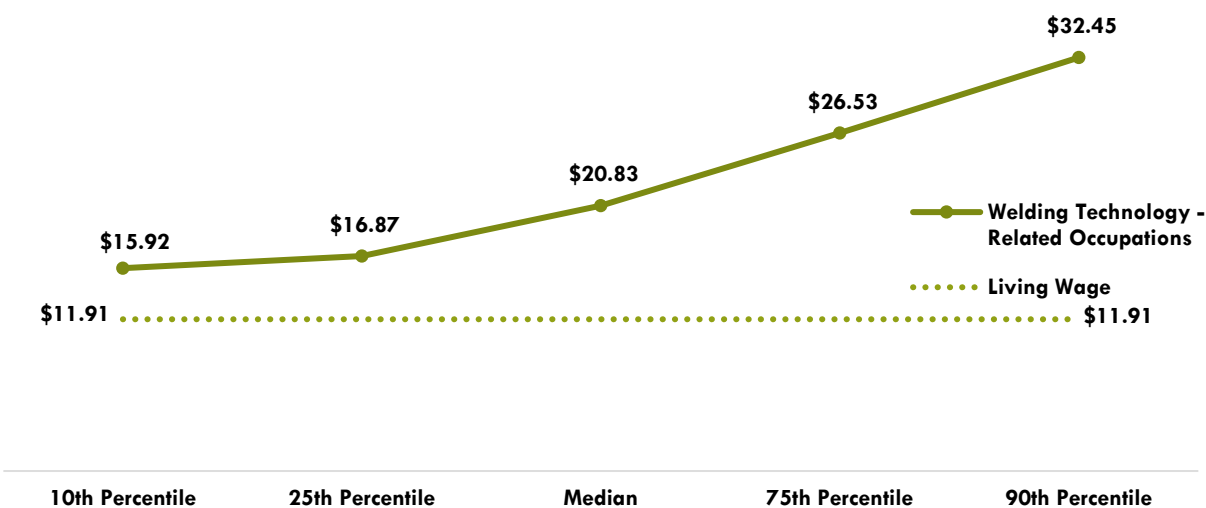
The average living wage for a single adult in the SCV/SML subregion is \$11.91/hour.² Exhibit 2a shows the hourly wages for *Welding Technology occupations*. *Welders, Cutters, Solderers, and Brazers* earn the highest entry-level wage, \$18.71/hour in the SCV/SML subregion.³ Please note 10th and 25th percentiles are considered entry-level wages while 75th and 90th are considered experienced wages.

Exhibit 2a. Welding Technology Occupations hourly wages in the SCV/SML subregion

Occupation	Pct. 25 Hourly Earnings	Median Hourly Earnings	Pct. 75 Hourly Earnings
Welders, Cutters, Solderers, and Brazers	\$18.71	\$23.03	\$27.73
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	\$15.02	\$18.62	\$25.34

Exhibit 2b shows the average hourly wages for *Welding Technology occupations*; the average entry-level wage is higher than the average entry-level living wage for the SCV/SML subregion.

Exhibit 2b. Welding Technology 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://insightcced.org/tools-metrics/self-sufficiency-standard-tool-for-california/>.

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

Job Postings

There were 329 job postings for *Welding Technology occupations* in the SCV/SML subregion from January to December 2023.⁴

Top Employers

The employers with the most job postings are listed in Exhibit 3. The top employers in online job postings were Randstad, Aerotek, Mid Cal Labor Solutions, and Volt.

Exhibit 3. Top employers of *Welding Technology Occupations* by number of job postings

Employer
Randstad
Aerotek
Mid Cal Labor Solutions
Volt
Express Employment Professionals
Oldcastle Infrastructure
Bluescope Buildings North America
Krazan & Associates
PrideStaff
Waste Management
Evans Construction

Salaries

Exhibit 4 shows the “Market Salaries” for *Welding Technology occupations*. These are calculated by Lightcast using a machine learning model built from millions of job postings every year. This accounts for adjustments based on location, industry, skills, experience, education, among other variables.

Exhibit 4. Market salaries for *Welding Technology Occupations*

Market Salary	Job Postings
\$35,000-\$39,999	62
\$40,000-\$44,999	72
\$45,000-\$49,999	28
\$50,000-\$59,999	26
\$60,000+	25

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.

Education

Of the 329 job postings, 82 listed a preferred or minimum educational requirement for the position being filled. Among those, 94% requested a high school diploma or GED, 2% requested an associate degree, and 4% bachelor's degree (Exhibit 5).

Exhibit 5. Education levels requested in job postings for Welding Technology Occupations

Education Level	Job Postings	% of Job Postings
High school or GED	77	94%
Associate degree	2	2%
Bachelor's degree	3	4%

Baseline, Specialized, and Software Skills

Exhibit 6 shows the top baseline, specialized, and software skills in job postings. The top baseline skills are lifting ability, tape measure, and management. The top specialized skills are Metal Inert Gas (MIG) Welding, and fabrication. The top software skill is Fleet Maintenance.

Exhibit 6. In-demand Welding Technology Occupations baseline, specialized, and software skills

Baseline Skills	Specialized Skills	Software Skills
Lifting Ability	Metal Inert Gas (MIG) Welding	Fleet Maintenance Software
Tape Measure	Welding	Microsoft Office Suite
Management	Fabrication	Application Programming Interface (API)
Communication	Gas Tungsten Arc Welding	Design Software
Detail Oriented	Grinding Machine	AutoCAD

Certifications

Of the job postings that listed a certification, 33% indicated a need for a Certified Welding Inspector certification and 29% indicated a need for a forklift certification (Exhibit 7).

Exhibit 7. Top Welding Technology Occupations certifications requested in job postings

Certifications	% of Job Postings
Certified Welding Inspector	33%
Forklift Certification	29%
American Welding Society Certification	11%
6G Welding Certification	7%
Certified Welder	7%

Education, Work Experience, & Training

A high school diploma or equivalent is typically required for the two *Welding Technology occupations* (Exhibit 8).

Exhibit 8. Education, work experience, training, and Current Population Survey Results *Welding Technology Occupations*⁵

Occupation	Typical Entry-level Education	Work Experience Required	Typical On-The-Job Training	CPS
Welders, Cutters, Solderers, and Brazers	High school diploma or equivalent	None	Moderate-term	31%
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	High school diploma or equivalent	None	Moderate-term	31%

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, 154 awards were conferred in the SCV/SML subregion (Exhibits 9 and 10).

Exhibit 9. TOP and CIP codes for Welding Technology Occupations

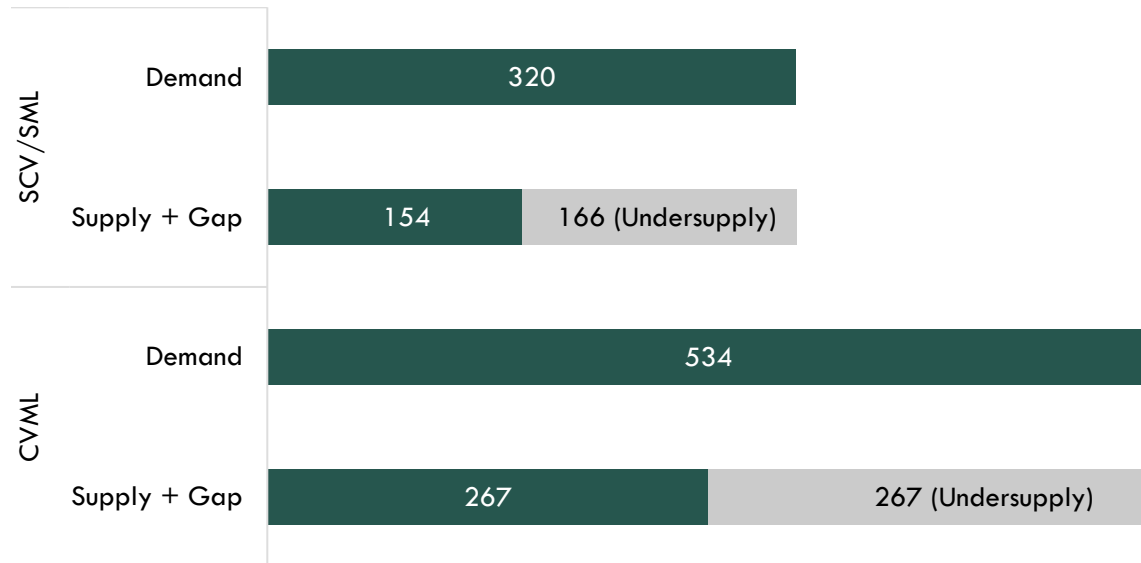
TOP Titles	CIP Titles
0956.50 - Welding Technology	48.0508 - Welding Technology/Welder

Exhibit 10. Postsecondary supply for Welding Technology Occupations

TOP Code	Program	College	2019-2020 Awards	2020-2021 Awards	2021-2022 Awards	3-Year Award Average
0956.50	Welding Technology	Columbia	3	2	2	2
		Merced	58	76	66	67
		Modesto	14	17	22	18
		San Joaquin Delta	20	23	36	26
		NCV/NML Subtotal	95	118	126	113
		Bakersfield	50	42	18	37
		Cerro Coso	28	25	25	26
		Fresno City	28	21	45	31
		Madera	-	-	9	3
		Porterville	10	12	-	7
		Reedley	41	7	12	20
		Sequoias	13	22	16	17
		Taft	6	1	11	6
		West Hills Coalinga	3	7	9	6
		SCV/SML Subtotal	179	137	145	154
Supply Subtotal/Average			274	255	271	267

There is an undersupply of 166 Welding Technology workers in the SCV/SML subregion and an undersupply of 267 workers in the region (Exhibit 11).

Exhibit 11. Welding Technology Occupations workforce demand (annual job openings), postsecondary awards (supply), and additional students needed to fill gap in the SCV/SML subregion and region



Recommendation

This report suggests there is a shortage of 166 workers in the SCV/SML subregion and a shortage of 267 workers in the CVML region for *Welding Technology* occupations. Based on these findings, it is recommended that College of the Sequoias work with the regional directors, the college’s advisory board, and local industry in the expansion of programs to address the shortage of Welding Technology 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 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.