










Welding Occupations

Labor Market Analysis: San Diego County

November 2024

Summary

NEW PROGRAM RECOMMENDATION?	EVIDENCE OF A SUPPLY GAP?	AT OR ABOVE THE LIVING WAGE?	EXPECTED LEVEL OF EDUCATION
 Proceed with Caution	 	 	<input type="checkbox"/> Doctorate Degree <input type="checkbox"/> Master's Degree <input type="checkbox"/> Bachelor's Degree <input type="checkbox"/> Associate Degree <input type="checkbox"/> Some College or Certificate <input checked="" type="checkbox"/> HS Diploma or Equivalent <input type="checkbox"/> Less Than a HS Diploma <input type="checkbox"/> Apprenticeship
SUPPORT FOR PROGRAM MODIFICATION?	NUMBER OF INSTITUTIONS THAT PROVIDE TRAINING	NUMBER OF ANNUAL JOB OPENINGS	
 	LOW 	HIGH 	

The San Diego & Imperial Center of Excellence (COE) developed this brief to assist the region’s community colleges with strategic planning and program development. *Welding Occupations* include “Welders, Cutters, Solderers, and Brazers,” and “Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders.” According to available data, *Welding Occupations* in San Diego County have a labor market demand of 389 annual job openings (while average demand for a single occupation in San Diego County is 289 annual job openings), and three institutions supply 257 awards for these occupations, suggesting that there is a supply gap in the labor market. Employers historically reported to the California Employment Development Department (EDD) and U.S. Bureau of Labor Statistics (BLS) that on average *Welding Occupations* earned entry-level earnings of \$20.39 per hour, which is below the living wage in San Diego County. Comparatively, recent online job postings (2021-2023) show median earnings between \$25 to \$26 per hour. This brief recommends proceeding with caution when developing a new program and supports a program modification because there is a supply gap in the region and a high number of annual job openings, but entry-level wages are below the living wage. Recent online job posting data suggests that wages may be increasing. The colleges should also note that the typical entry-level education for these occupations is a high school diploma or equivalent.

Introduction

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

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

For the purpose of this report, these occupations are referred to as *Welding Occupations*.

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/).

Projected Occupational Demand

Between 2023 and 2028, employers in San Diego County will need to hire **389** workers annually to fill new jobs and backfill jobs in *Welding Occupations* due to attrition caused by turnover and retirement, for example (Exhibit 1). “Welders, Cutters, Solderers, and Brazers” are projected to have the most labor market demand between 2023 and 2028, with **370** annual job openings.

Exhibit 1: Number of Jobs for Welding Occupations (2023-2028)²

Occupational Title	2023 Jobs	2028 Jobs	2023 – 2028 Net Jobs Change	2023 - 2028 % Net Jobs Change	Annual Job Openings (Demand)
Welders, Cutters, Solderers, and Brazers	3,416	3,559	143	4%	370
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	186	191	5	2%	19
Total	3,602	3,750	148	4%	389

Earnings

According to traditional³ labor market information (LMI), entry-level hourly earnings for *Welding Occupations* range from **\$18.40** to **\$22.38** (Exhibit 2).

Exhibit 2: Hourly Earnings for Welding Occupations in San Diego County⁴

Occupational Title	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Welders, Cutters, Solderers, and Brazers	\$22.38	\$28.19	\$32.99
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	\$18.40	\$22.63	\$29.43

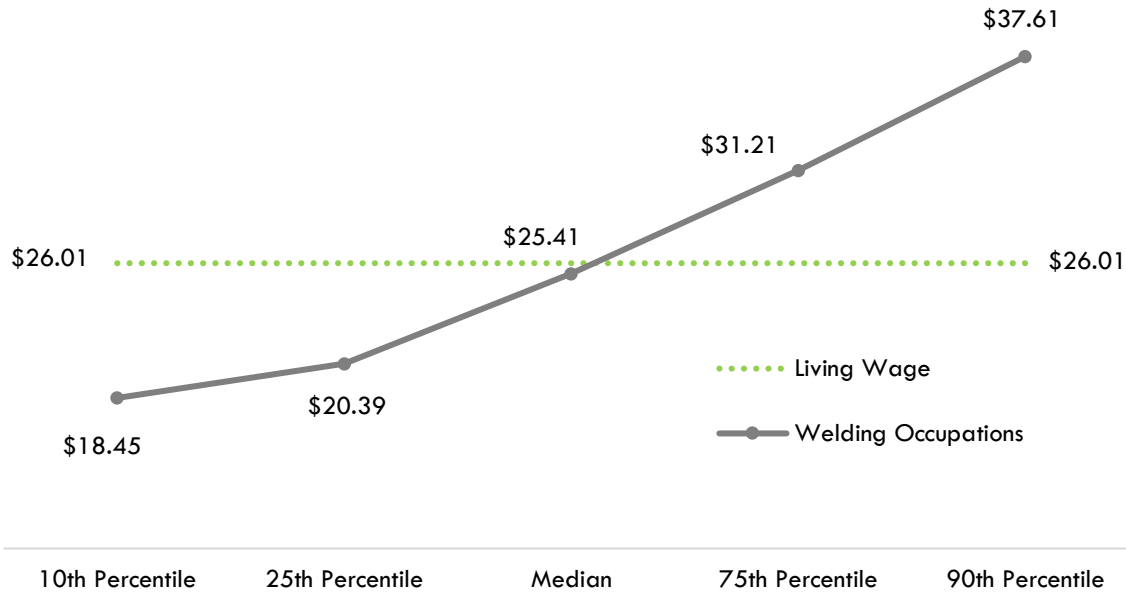
² Lightcast 2024.03; QCEW, Non-QCEW, Self-Employed.

³ Traditional LMI is generally historical data captured by the U.S. Bureau of Labor Statistics (BLS) or the California Employment Development Department (EDD). It does not account for recent technological, economic, or legislative changes that may affect labor market demand and wages.

⁴ Lightcast 2024.03; QCEW, Non-QCEW, Self-Employed.

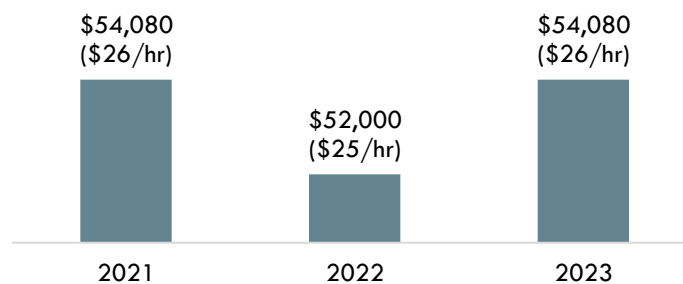
On average, the entry-level hourly earnings are \$20.39 —or \$42,411 annual salary⁵; this is less than the living wage for a single adult in San Diego County, which is \$26.01 per hour (Exhibit 3).⁶

Exhibit 3: Hourly Earnings⁷ for Welding Occupations in San Diego County⁸



Between January 1, 2021 and December 30, 2023, employers advertised between \$25 to \$26 per hour in online job postings for *Welding Occupations* in San Diego County (Exhibit 4).⁹ This suggests that employers in recent years are increasing wages due to labor market forces that may not be captured by traditional LMI.

Exhibit 4: Median Advertised Salaries in Online Job Postings for *Welding Occupations* in San Diego County (2021-2023)*



⁵ Annualized salaries assume a full-time position with 2,080 hours. Multiplying the hourly wage with 2,080 yields the annual salary.

⁶ Center for Women's Welfare, University of Washington. (2024). The self-sufficiency standard for California 2024. selfsufficiencystandard.org/California.

⁷ 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.

⁸ Lightcast 2024.03; QCEW, Non-QCEW, Self-Employed.

⁹ Lightcast 2024.03; "Job Posting Analytics." 2021-2023.

Expected Level of Education

According to traditional LMI, *Welding Occupations* have a national educational attainment of a [high school diploma or equivalent](#).¹⁰ (Exhibit 5).

Exhibit 5: National Educational Attainment for *Welding Occupations*¹¹

Occupational Title	Typical Entry-Level Education
Welders, Cutters, Solderers, and Brazers	High school diploma or equivalent
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	High school diploma or equivalent

Similarly, online job postings between January 1, 2021 and December 31, 2023 in San Diego County had a [high school diploma or equivalent](#) as the most requested educational requirement for *Welding Occupations*; however, employers also expected the following certifications (Exhibit 6).¹²

Exhibit 6: Top Certifications for *Welding Occupations* in San Diego County in Online Job Postings (2021-2023)¹³

1. Security Clearance
2. 10-Hour OSHA General Industry Card
3. American Welding Society Certification
4. Certified Welding Inspector
5. Certified Welder First Aid Certification
6. CDL Class B License
7. Structural Masonry Special Inspector
8. Cardiopulmonary Resuscitation (CPR) Certification
9. Forklift Certification
10. ASNT Non-Destructive Tester
11. HAZWOPER Certification
12. 30-Hour OSHA General Industry Card
13. ACI Concrete Field-Testing Technician
14. CDL Class C License
15. 6G Welding Certification

¹⁰ Lightcast 2024.03; QCEW, Non-QCEW, Self-Employed.

¹¹ Lightcast 2024.03; QCEW, Non-QCEW, Self-Employed.

¹² Lightcast 2024.03; "Job Posting Analytics." 2021-2023.

¹³ Lightcast 2024.03; "Job Posting Analytics." 2021-2023.

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. There is **one** TOP code and **three** CIP codes related to *Welding Occupations* (Exhibit 7).

Exhibit 7: Related TOP and CIP Codes for Welding Occupations¹⁴

TOP or CIP Code	TOP or CIP Program Title
TOP 0956.50	Welding Technology
CIP 15.0614	Welding Engineering Technology/Technician
CIP 48.0508	Welding Technology/Welder
CIP 48.0511	Metal Fabricator

According to TOP data, **two** community colleges supply the region with awards for these occupations: **Palomar College** and **San Diego College of Continuing Education**. According to CIP data, **one** non-community-college institution supplies the region with awards, **CET-San Diego** (Exhibit 8).

Exhibit 8: Number of Awards (Certificates and Degrees) Conferred by Postsecondary Institutions (Program Year 2019-20 Through Program Year 2022-23 Average)

TOP6 or CIP Code	TOP6 or CIP Program Title	3-Yr Annual Average CC Awards (PY20-21 to PY22-23)	Other Educational Institutions 3-Yr Annual Average Awards (PY19-20 to PY21-22)	Total Average Supply (PY19-20 to PY22-23)
0956.50	Welding Technology	180	0	180
	Palomar	38	0	
	• Associate Degree	6	0	
	• Certificate 30 < 60 units	8	0	
	• Certificate 6 < 18 units	24	0	
	San Diego Cont. Ed	142	0	
	• Noncredit 480 < 960 hrs	22	0	
	• Noncredit 288 < 480 hrs	120	0	

¹⁴ This brief uses a conservative estimate of program supply and only calculates awards from the TOP code listed in Exhibit 7.

48.0508	Welding Technology/Welder	0	77	77
	CET-San Diego	0	77	
	• Certificates of at least 1 but less than 2 years	0	77	
			Total	257

Demand vs. Supply

Comparing labor demand (annual openings) with labor supply¹⁵ suggests that there is a supply gap for these occupations in San Diego County, with 389 annual openings and 257 awards. Comparatively, there are 3,821 annual openings in California and 2,423 awards, suggesting that there is also a supply gap across the state¹⁶ (Exhibit 9).

Exhibit 9: Labor Demand (Annual Openings) Compared with Labor Supply (Average Annual Awards)

	Demand (Annual Openings)	Supply (Annual Awards)	Supply Gap or Oversupply
San Diego	389	257	132
California	3,821	2,423	1,398

Please 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.

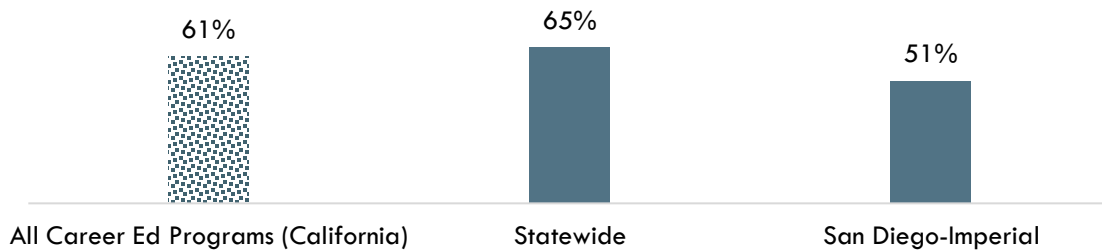
¹⁵ Labor supply can be found from two different sources: Lightcast or the California Community Colleges Chancellor's Office MIS Data Mart. Lightcast uses CIP codes while MIS uses TOP codes. Different coding systems result in differences in the supply numbers.

¹⁶ "Supply and Demand," Centers of Excellence Student Outcomes, coecc.net/our-resources.

Student Outcomes and Regional Comparisons

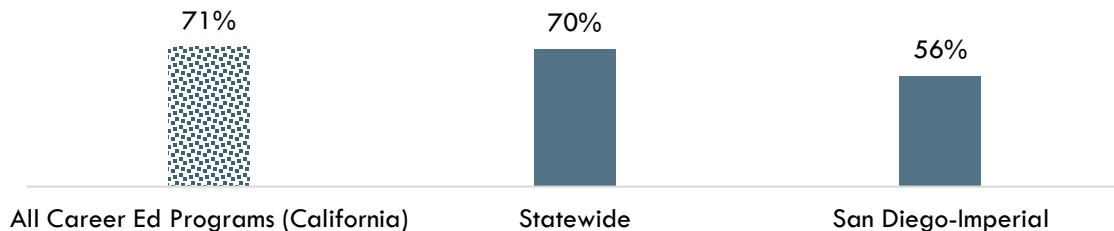
According to the California Community Colleges DataVista, **51** percent of students in the San Diego-Imperial region earned a living wage after completing a Welding Technology (TOP 0956.50) program, compared **65** percent statewide and **61** percent of students in Career Education programs in general across the state (Exhibit 10).¹⁷

Exhibit 10: Percentage of Students Who Earned a Living Wage by Program, PY2021-22¹⁸



According to the California Community Colleges DataVista, **56** percent of students in the San Diego-Imperial region obtained a job closely related to their field of study after completing a Welding Technology (TOP 0956.50) program, compared **70** percent statewide and **71** percent of students in Career Education programs in general across the state (Exhibit 11).¹⁹

Exhibit 11: Percentage of Students in a Job Closely Related to Field of Study by Program, PY2020-21²⁰



¹⁷ DataVista, California Community Colleges, datavista.cccco.edu/.

¹⁸ Most recent year with available data is Program Year 2021-22. Among completers and skills builders who exited, the percentage of students who attained a living wage.

¹⁹ DataVista, California Community Colleges, datavista.cccco.edu/.

²⁰ Most recent year with available data is Program Year 2020-21. 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.

Employers

Between January 1, 2021 and December 31, 2023, the top five employers in San Diego County for *Welding Occupations* were [Aerotek](#), [Venture Dynamics](#), [Tradesmen International](#), [General Dynamics](#), and [Epsilon Systems Solutions](#) based on online job postings (Exhibit 12).

Exhibit 12: Top Employers for Welding Occupations in San Diego County²¹

Top Employers	
<ul style="list-style-type: none"> • Aerotek • Venture Dynamics • Tradesmen International • General Dynamics • Epsilon Systems Solutions 	<ul style="list-style-type: none"> • Volt • NSC Technologies • Huntington Ingalls Industries • Propulsion Controls Engineering • Austal

Skills

Exhibit 13 lists the top specialized, soft, and software skills that appeared in online job postings between January 1, 2021 and December 31, 2023.

Exhibit 13: Top Skills for Welding Occupations in San Diego County²²

Specialized Skills	Soft Skills	Software Skills
<ul style="list-style-type: none"> • Welding • Gas Tungsten Arc Welding • Flux-Cored Arc Welding • Metal Inert Gas • Welding • Fabrication • Aluminum • Gas Metal Arc Welding • Hand Tools • Welding Equipment • Pipe • Brazing • Blueprinting • Shielded Metal Arc Welding • Grinding Machine • Power Tool Operation 	<ul style="list-style-type: none"> • English Language • Lifting Ability • Communication • Operations • Leadership • Management • Mathematics • Detail Oriented • Fine Motor Skills • Coordinating • Self-Motivation • Strong Work Ethic • Mechanical Aptitude • Arithmetic • Quality Assurance 	<ul style="list-style-type: none"> • N/A

²¹ Lightcast 2024.03; "Job Posting Analytics." 2021-2023.

²² Lightcast 2024.03; "Job Posting Analytics." 2021-2023.

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Important Disclaimers

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