



Labor Market Analysis: 0956.50 – Welding Technology

Robotic Welding – Noncredit

Los Angeles Center of Excellence, November 2024

Program Endorsement:	Endorsed: All Criteria Met <input type="checkbox"/>	Endorsed: Some Criteria Met <input checked="" type="checkbox"/>	Not Endorsed <input type="checkbox"/>
Program Endorsement Criteria			
Supply Gap:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Living Wage: (Entry-Level, 25th)	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Education:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Emerging Occupation(s)			
	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	

SUMMARY

This report analyzes whether local labor market demand is being met by community college programs aligned with the identified middle-skill occupation(s)¹ or whether a shortage of workers exists. Labor market demand is measured by annual job openings while education supply is measured by the number of awards (degrees and certificates) conferred on average each year.

Based on the available data, there appears to be a supply gap for the three identified middle-skill occupations in the region. While entry-level wages are lower than the self-sufficiency standard wage in both Los Angeles and Orange counties, approximately one-third or more of current workers in the field have completed some college or an associate degree as their highest level of educational attainment.

Recommendation: Due to two of three program endorsement criteria being met, the Los Angeles Center of Excellence for Labor Market Research (LA COE) endorses this proposed program.

Key Findings

Supply Gap

- 1,046 annual job openings are projected in the region through 2028. This number is greater than the three-year average of 544 awards conferred by educational institutions in the region.

¹ Middle-skill occupations typically require some postsecondary education, but less than a bachelor’s degree. The COE classifies middle-skill jobs as the following:

- All occupations that require an educational requirement of some college, associate degree or apprenticeship;
- All occupations that require a bachelor’s degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or
- All occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training where multiple community colleges have existing programs.

- 96% of annual job openings for these middle-skill occupations related to robotic welding have entry-level wages **below** Los Angeles County’s self-sufficiency standard hourly wage (\$24.03/hour).²

Educational Attainment

- 96% of the annual job openings typically require a high school diploma or equivalent for middle-skill occupations related to robotic welding in the LA/OC region.
- 31%-50% of workers in the field have completed some college or an associate degree, according to national educational attainment data.

Community college supply

- 14 community colleges issued awards related to robotics and/or welding in the greater LA/OC region.
- 298 awards (degrees and certificates) were conferred on average each year between 2021 and 2023.

Other postsecondary supply

- Four educational institutions in the LA/OC region have conferred awards in programs related to welding over the past three years.
- 246 awards were conferred on average each year by other postsecondary institutions throughout the greater LA/OC region between 2020 and 2022.

TARGET OCCUPATIONS

LA COE prepared this report to provide regional labor market and postsecondary supply data related to three middle-skill occupations. [For full occupation descriptions, please see Appendix.](#)

- **Electro-Mechanical and Mechatronics Technologists and Technicians (17-3024)**³
 - **Robotics Technicians (17-3024.01)**⁴
- **Welders, Cutters, Solderers, and Brazers (51-4121)**⁵
- **Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders (51-4122)**⁶

OCCUPATIONAL DEMAND

Exhibit 1 shows the five-year occupational demand projections for these occupations related to robotic welding. In the greater Los Angeles/Orange County region, the number of jobs related to these occupations is projected to decrease by 2% through 2028. However, there will be more than 1,000 job openings per year through 2028 due to retirements and workers leaving the field. The majority of jobs in 2023 for these middle-skill occupations (67%) were located in Los Angeles County.

² Center for Women’s Welfare, University of Washington. (2024). *The self-sufficiency standard for California 2024*. <http://selfsufficiencystandard.org/California>.

³ [Electro-Mechanical and Mechatronics Technologists and Technicians \(bls.gov\)](#)

⁴ [Robotics Technicians \(onet.org\)](#)

⁵ [Welders, Cutters, Solderers, and Brazers \(bls.gov\)](#)

⁶ [Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders \(bls.gov\)](#)

Exhibit 1: Current employment and occupational demand, Los Angeles and Orange counties⁷

Geography	2023 Jobs	2028 Jobs	2023-2028 Change	2023-2028 % Change	Annual Openings
Los Angeles	7,296	7,080	(216)	(3%)	697
Orange	3,558	3,550	(8)	(0%)	349
Total	10,854	10,630	(224)	(2%)	1,046

Detailed Occupation Data

Exhibit 2 displays the current employment and projected occupational demand for each of the target occupations in Los Angeles County. Positive scores for automation resilience⁸ reflect a lower-than-average threat of the occupation(s) being replaced by automation, while negative scores reflect a greater-than-average risk of automation. The average percentage of workers aged 55+ across all occupations in the Los Angeles/Orange County region is 26%; occupations with a larger share of workers aged 55 and older typically have greater replacement needs to offset the amount of impending retirements. On average, 81% of workers across all occupations in California are employed full-time.

Exhibit 2: Detailed employment and occupational demand, Los Angeles County⁹

Occupation	2023 Jobs	2028 Jobs	5-Yr % Change	Annual Openings	Auto-mation Resilience	% Aged 55 and older	% Full Time Workers
Electro-Mechanical and Mechatronics Technologists and Technicians	343	321	(6%)	30	(5.7)	31%	Data unavail.
Welders, Cutters, Solderers, and Brazers	6,463	6,312	(2%)	621	(21.4)	26%	100%
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	490	447	(9%)	46	(19.0)	27%	100%
Total	7,296	7,080	(3%)	697	-	-	-

⁷ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

⁸ Automation risk is calculated based on the percentage of time spent on high-risk compared to low-risk work, the number of high-risk jobs in compatible occupations, and the overall industry automation risk.

⁹ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

WAGES

The labor market endorsement in this report considers the entry-level hourly wages for these occupations related to robotic welding in Los Angeles County as they relate to the county's self-sufficiency standard wage. Orange County wages are included below in order to provide a complete analysis of the greater Los Angeles/Orange County region.

Los Angeles County

The majority, 96%, of annual openings for middle-skill occupations related to robotic welding have entry-level wages below the self-sufficiency standard wage for one adult (\$24.03 in Los Angeles County). Typical entry-level hourly wages are in a range between \$18.27 and \$28.09. (Exhibit 3).

One occupation has entry-level wages above the self-sufficiency standard wage:

- *Electro-mechanical and mechatronics technologist and technicians, \$28.09*

Experienced *welding, soldering, and brazing machine setters, operators, and tenders* can expect to earn \$23.78, which is less than the self-sufficiency standard. However, experienced *welders, cutters, solderers, and brazers* and *electro-mechanical and mechatronics technologists and technicians* can expect to earn wages between \$30.96 and \$46.34, which are higher than the self-sufficiency standard.

Exhibit 3: Earnings for occupations in Los Angeles County

Occupation	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)	Median Annual Earnings*
Electro-Mechanical and Mechatronics Technologists and Technicians	\$28.09	\$37.99	\$46.34	\$79,000
Welders, Cutters, Solderers, and Brazers	\$21.49	\$26.01	\$30.96	\$54,100
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	\$18.27	\$20.87	\$23.78	\$43,400

*Rounded to the nearest \$100

Orange County

The majority, 95%, of annual openings for middle-skill occupations related to robotic welding have entry-level wages below the self-sufficiency standard wage for one adult (\$27.13 in Orange County). Typical entry-level hourly wages are in a range between \$18.92 and \$29.05. (Exhibit 4).

One occupation has entry-level wages above the self-sufficiency standard wage:

- *Electro-mechanical and mechatronics technologist and technicians, \$29.05*

Experienced *welding, soldering, and brazing machine setters, operators, and tenders* can expect to earn \$24.58, which is less than the self-sufficiency standard. However, experienced *welders, cutters, solderers, and brazers* and *electro-mechanical and mechatronics technologists and technicians*

can expect to earn wages between \$31.52 and \$47.82, which are higher than the self-sufficiency standard.

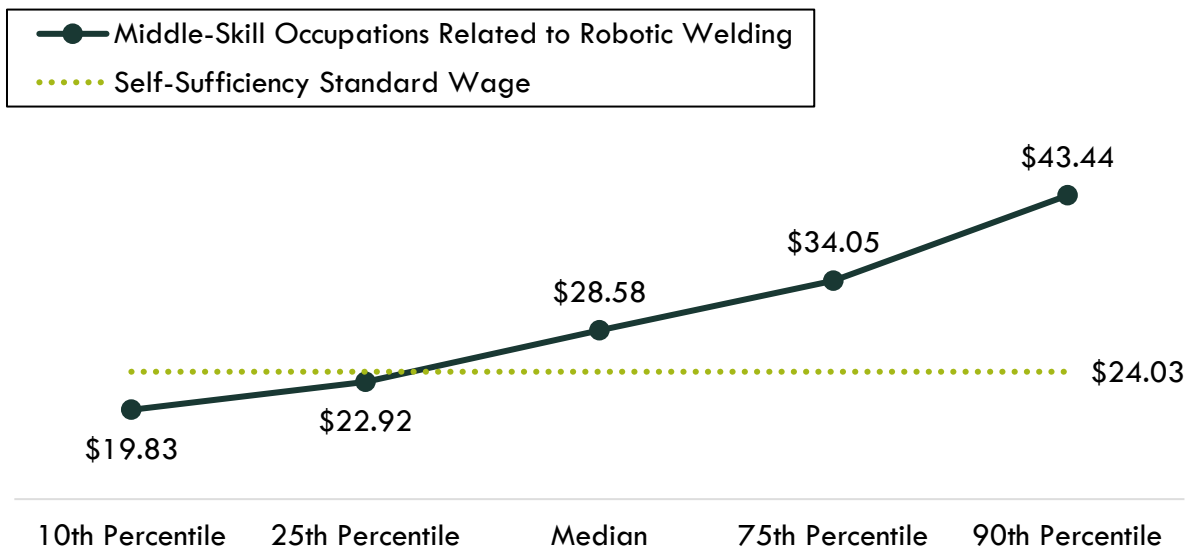
Exhibit 4: Earnings for occupations in Orange County

Occupation	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)	Median Annual Earnings*
Electro-Mechanical and Mechatronics Technologists and Technicians	\$29.05	\$39.24	\$47.82	\$81,600
Welders, Cutters, Solderers, and Brazers	\$22.24	\$26.65	\$31.52	\$55,400
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	\$18.92	\$21.61	\$24.58	\$44,900

*Rounded to the nearest \$100

Across the greater Los Angeles and Orange County region, the average entry-level hourly earnings for the occupations in this report are \$22.92; this is below the living wage for one single adult in Los Angeles County (\$24.03). Exhibit 5 shows the average hourly wage for the occupations in this report, for entry-level to experienced workers.

Exhibit 5: Average hourly earnings for related occupations, Los Angeles and Orange counties



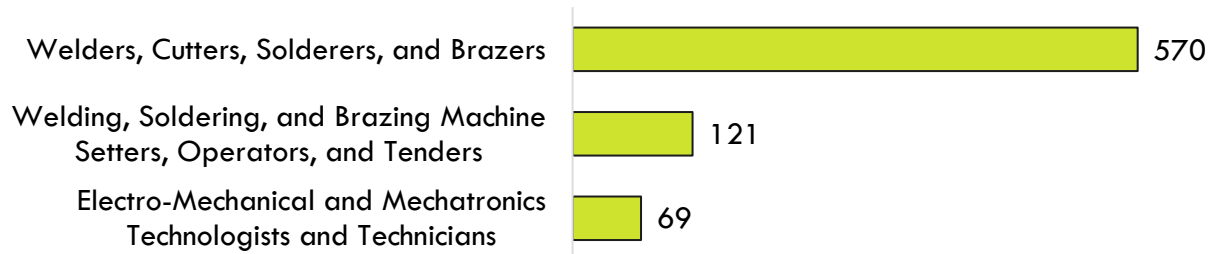
JOB POSTINGS

Target occupations

There were 760 online job postings related to the target occupations listed in the past 12 months in Los Angeles and Orange counties. Exhibit 6 displays the number of job postings by occupation. The majority of job postings (75%) were for welders, cutters, solderers, and brazers, followed by

welding, soldering, and brazing machine setters, operators, and tenders (16%) and electro-mechanical and mechatronics technologists and technicians (9%).

Exhibit 6: Job postings by occupation (last 12 months), Los Angeles and Orange counties



Job postings were analyzed for the most common job titles, skills, and employers associated with the target occupations in this report (Exhibit 7).

Exhibit 7: Most commonly requested job titles, skills and employers in job postings, Los Angeles and Orange counties

Top Job Titles	Top Skills	Top Employers
<ul style="list-style-type: none"> Welders Welders/Fabricators TIG welders Solderers MIG welders Electromechanical technicians Robot operators 	<ul style="list-style-type: none"> Welding Metal inert gas (MIG) welding Gas tungsten arc welding Fabrication Aluminum Welding equipment Machinery 	<ul style="list-style-type: none"> Aerotek* SpaceX Express Employment Professionals* ResourceMFG Arrowhead Products Kelly Services*

*Staffing company

In the greater Los Angeles/Orange County region, 37% of the target job postings listed a minimum educational requirement. Exhibit 8 details the number and percentage of job postings by educational level.

Exhibit 8: Education levels requested in job postings for occupations related to robotic welding, Los Angeles and Orange counties

Education Level	Job Postings	% of Job Postings
Bachelor's degree	13	5%
Associate degree	21	7%
High school diploma or vocational training	248	88%

Robotics Technicians Job Postings

There were 45 online job postings for *robotics technicians*, an emerging occupation, listed in the past 12 months in Los Angeles and Orange counties. Job postings were analyzed for the most common job titles, skills, and employers associated with the target occupations in this report (Exhibit 9). One job posting listed “welding” as a requested skill for *robotics technicians*.

Exhibit 9: Most commonly requested job titles, skills and employers in job postings, Los Angeles and Orange counties

Top Job Titles	Top Skills	Top Employers
<ul style="list-style-type: none"> • Robotics Technicians • Robot Technicians • Robotics Techs • Field Applications Specialists • Mechatronics Technicians 	<ul style="list-style-type: none"> • Robotics • Automation • Robotic Systems • Programmable Logic Controllers • Robotic Automation Software 	<ul style="list-style-type: none"> • Diligent Robotics • HCA Healthcare • ATS Automation • Eastridge* • Miso Robotics • Starship Technology

*Staffing company

In the greater Los Angeles/Orange County region, 69% of *robotics technician* job postings listed a minimum educational requirement. Exhibit 10 details the number and percentage of job postings by educational level.

Exhibit 10: Education levels requested in job postings for occupations related to robotic welding, Los Angeles and Orange counties

Education Level	Job Postings	% of Job Postings
Bachelor's degree	9	36%
Associate degree	4	16%
High school diploma or vocational training	12	48%

EDUCATIONAL ATTAINMENT

In the greater Los Angeles/Orange County region, the majority of annual job openings (96%) typically require a high school diploma or equivalent (Exhibit 11). However, the national-level data indicates between 31% and 50% of workers in the field have completed some college or an associate degree as their highest level of educational attainment. The Bureau of Labor Statistics (BLS) lists the following typical entry-level education levels for the occupations in this report:

Exhibit 11: Entry-level education preferred by employers nationally, Bureau of Labor Statistics

Occupation	Education Level
Electro-Mechanical and Mechatronics Technologists and Technicians	Associate degree
Welders, Cutters, Solderers, and Brazers	High school diploma or equivalent
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	High school diploma or equivalent

EDUCATIONAL SUPPLY

Community College Supply

Exhibit 12 shows the annual and three-year average number of awards conferred by community colleges in programs that have historically trained for the occupations of interest. The colleges with the most completions in the region are Cerritos, Santa Ana, and LA Trade-Tech.

Exhibit 12: Regional community college awards (certificates and degrees), 2021-2023

TOP Code	Program	College	2020-21 Awards	2021-22 Awards	2022-23 Awards	3-Year Average
0935.00	Electro-Mechanical Technology	Santa Ana	-	4	8	4
		OC Subtotal	-	4	8	4
		Supply Subtotal/Average	-	4	8	4
0956.50	Welding Technology	Cerritos	66	93	109	89
		Compton	-	1	-	0
		El Camino	2	9	5	5
		Glendale	6	10	1	6
		LA Pierce	2	5	-	2
		LA Trade-Tech	10	53	59	41
		Long Beach	20	19	54	31
		Mt San Antonio	16	34	23	24
		Pasadena	3	4	4	4
		Rio Hondo	2	5	1	3
		LA Subtotal	127	233	256	205
		Fullerton	9	7	4	7
		Orange Coast	12	20	18	17
		Santa Ana	96	30	69	65
		OC Subtotal	117	57	91	88
Supply Subtotal/Average			244	290	347	294
Supply Total/Average			244	294	355	298

Other Postsecondary Supply

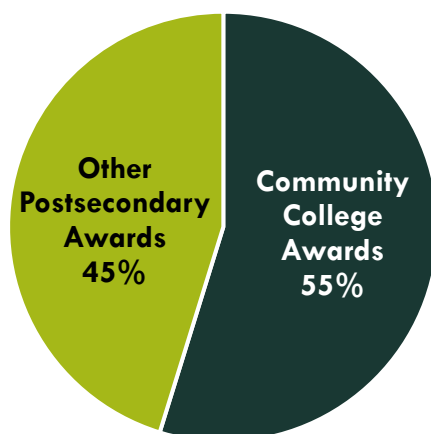
For a comprehensive regional supply analysis, it is important to consider the supply from other institutions in the region that provide training programs for welding. Exhibit 13 shows the number of awards conferred by these institutions in relevant programs. Due to different data collection periods, the most recent data is from 2020 to 2022. Between 2020 and 2022, other postsecondary college institutions in the region conferred an average of 246 sub-baccalaureate awards. Sub-baccalaureate awards include associate degrees, postsecondary awards, and other academic awards that typically take fewer than four years to complete.

Exhibit 13: Other regional postsecondary awards, 2020-2022

CIP Code	Program	Postsecondary Institution	2019-20 Awards	2020-21 Awards	2021-22 Awards	3-Year Average
48.0508	Welding Technology/ Welder	Hacienda La Puente Adult Education	27	26	24	26
		Tri-Community Adult Education	123	122	120	122
		UEI College-Gardena	-	55	87	47
		Universal Technical Institute-Southern CA	-	21	133	51
Supply Total/Average			150	224	364	246

Exhibit 14 shows the proportion of community college awards conferred in the greater Los Angeles/Orange County region compared to the number of other postsecondary awards for the programs in this report. The majority of awards conferred in these programs are awarded by community colleges in the greater Los Angeles/Orange County region.

Exhibit 14: Percentage of community college awards compared to other postsecondary institution awards in the Los Angeles/Orange County region



APPENDIX: OCCUPATION DESCRIPTIONS

LA COE prepared this report to provide regional labor market supply and demand data related to these target occupations:

- **Electro-Mechanical and Mechatronics Technologists and Technicians (17-3024)** Operate, test, maintain, or adjust unmanned, automated, servomechanical, or electromechanical equipment. May operate unmanned submarines, aircraft, or other equipment to observe or record visual information at sites such as oil rigs, crop fields, buildings, or for similar infrastructure, deep ocean exploration, or hazardous waste removal. May assist engineers in testing and designing robotics equipment.¹⁰
 - **Robotics Technicians (17-3024.01)** Build, install, test, or maintain robotic equipment or related automated production systems.¹¹
- **Welders, Cutters, Solderers, and Brazers (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.¹²
- **Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders (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.¹³

Contact information:

Luke Meyer, Director

Los Angeles Center of Excellence

lmeyer7@mtsac.edu

If for any reason this document is not accessible or if you have specific needs for readability, please contact us and we will do our utmost to accommodate you with a modified version.

DATA SOURCES

- O*NET Online
- Lightcast (formerly Emsi)
- Bureau of Labor Statistics (BLS)
- California Employment Development Department, Labor Market Information Division, OES
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- Self-Sufficiency Standard at the Center for Women's Welfare, University of Washington
- Chancellor's Office Curriculum Inventory (COCI 2.0)



POWERED BY



¹⁰ [Electro-Mechanical and Mechatronics Technologists and Technicians \(bls.gov\)](#)

¹¹ [Robotics Technicians \(onet.org\)](#)

¹² [Welders, Cutters, Solderers, and Brazers \(bls.gov\)](#)

¹³ [Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders \(bls.gov\)](#)

Important Disclaimer: 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. Efforts have been made to qualify and validate the accuracy of the data and the reported findings; however, neither the Centers of Excellence, COE host District, nor California Community Colleges Chancellor's Office are responsible for applications or decisions made by recipient community colleges or their representatives based upon components or recommendations contained in this study.

**© 2024 California Community Colleges Chancellor's Office,
Centers of Excellence for Labor Market Research, Economic and Workforce Development Program**