

Labor Market Analysis: 0956.00 – Welding Technology

Aerospace Welding - Associate of Science (A.S. degree)

Advanced Structural Fabrication - Associate of Science (A.S. degree)

Multi-Process Combination Welder - Associate of Science (A.S. degree)

Process Pipe Welder/Fitter - Associate of Science (A.S. degree)

Los Angeles Center of Excellence, September 2024

Program Endorsement:	Endorsed: All Criteria Met ☐	Endorsed: Some Criteria Met ☒	Not Endorsed ☐
Program Endorsement Criteria			
Supply Gap:	Yes ☒	No ☐	
Living Wage: (Entry-Level, 25 th)	Yes ☐	No ☒	
Education:	Yes ☒	No ☐	
Emerging Occupation(s)			
	Yes ☐	No ☒	

SUMMARY

This report analyzes whether local labor market demand is being met by community college programs aligned with the identified middle-skill occupations¹ 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 five identified middle-skill occupations in the region. While the majority of annual openings have entry-level wages that are lower than the self-sufficiency standard wage in both Los Angeles and Orange counties, approximately one-third 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.

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.

Key Findings

Supply Gap

- 3,196 annual job openings are projected in the region through 2028. This number is greater than the three-year average of 540 awards conferred by educational institutions in the region.

Living Wage

- 93% of annual job openings for these welding occupations have entry-level wages **below** Los Angeles County's self-sufficiency standard hourly wage (\$24.03/hour).²

Educational Attainment

- A high school diploma or equivalent is the typical entry-level education for each of the welding occupations in this report, according to the Bureau of Labor Statistics (BLS).
- 31%-34% of workers in the field have completed some college or an associate degree, according to national educational attainment data.

Community college supply

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

Other postsecondary supply

- 4 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 five middle-skill occupations. [For full occupation descriptions, please see Appendix.](#)

- **Plumbers, Pipefitters, and Steamfitters (47-2152)**³
- **Sheet Metal Workers (47-2211)**⁴
- **Structural Iron and Steel Workers (47-2221)**⁵
- **Welders, Cutters, Solderers, and Brazers (51-4121)**⁶
- **Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders (51-4122)**⁷

² Self-Sufficiency Standard wage data was pulled from The Self-Sufficiency Standard Tool for California. For more information, visit: <http://selfsufficiencystandard.org/california>.

³ [Plumbers, Pipefitters, and Steamfitters \(bls.gov\)](#)

⁴ [Sheet Metal Workers \(bls.gov\)](#)

⁵ [Ironworkers \(bls.gov\)](#)

⁶ [Welders, Cutters, Solderers, and Brazers \(bls.gov\)](#)

⁷ [Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders \(bls.gov\)](#)

OCCUPATIONAL DEMAND

Exhibit 1 shows the five-year occupational demand projections for these welding occupations. In the greater Los Angeles/Orange County region, the number of jobs related to these occupations is projected to increase by 3% through 2028. There will be nearly 3,200 job openings per year through 2028 due to job growth and replacements. The majority of jobs in 2023 for these middle-skill welding occupations (65%) were located in Los Angeles County.

Exhibit 1: Current employment and occupational demand, Los Angeles and Orange counties⁸

Geography	2023 Jobs	2028 Jobs	2023-2028 Change	2023-2028 % Change	Annual Openings
Los Angeles	21,422	21,902	481	2%	2,055
Orange	11,308	11,817	510	5%	1,142
Total	32,729	33,720	990	3%	3,196

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 resilience⁹ 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 County¹⁰

Occupation	2023 Jobs	2028 Jobs	5-Yr % Change	Annual Openings	Auto-mation Resilience	% Aged 55 and older	% Full Time Workers
Plumbers, Pipefitters, and Steamfitters	10,764	11,191	4%	1,021	(16.3)	24%	100%
Sheet Metal Workers	2,153	2,211	3%	211	(17.7)	24%	100%
Structural Iron and Steel Workers	1,557	1,629	5%	151	(32.2)	26%	100%
Welders, Cutters, Solderers, and Brazers	6,455	6,412	(1%)	626	(21.4)	27%	100%
Welding, Soldering, and Brazing Machine Setters...	494	459	(7%)	46	(19.0)	24%	100%
Total	21,422	21,902	2%	2,055	-	-	-

⁸ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

⁹ 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.

¹⁰ 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 welding occupations 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, 93%, of annual openings for welding occupations 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 \$18.29 and \$24.16. (Exhibit 3).

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

- *Structural iron and steel workers*, \$24.16

Experienced *welding, soldering, and brazing machine setters, operators, and tenders* can expect to earn \$23.80, which is below the county's self-sufficiency standard wage. However, experienced workers in the other four target occupations (*plumbers, pipefitters, and steamfitters; sheet metal workers; structural iron and steel workers; and welders, cutters, solderers, and brazers*) can expect to earn wages between \$30.96 and \$48.94, 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*
Plumbers, Pipefitters, and Steamfitters	\$21.92	\$27.84	\$39.05	\$57,900
Sheet Metal Workers	\$23.05	\$33.35	\$48.94	\$69,400
Structural Iron and Steel Workers	\$24.16	\$34.13	\$46.51	\$71,000
Welders, Cutters, Solderers, and Brazers	\$21.49	\$26.02	\$30.96	\$54,100
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	\$18.29	\$20.89	\$23.80	\$43,400

*Rounded to the nearest \$100

Orange County

All five occupations 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 \$18.90 and \$26.00 (Exhibit 4). Experienced *welding, soldering, and brazing machine setters, operators, and tenders* can expect to earn \$24.56, which is below the county's self-sufficiency standard wage. However, experienced workers in the other four target occupations (*plumbers, pipefitters, and steamfitters; sheet metal workers; structural iron and steel workers; and welders, cutters, solderers, and brazers*) can expect to earn wages between \$31.51 and \$54.82, which are higher than the self-sufficiency standard.

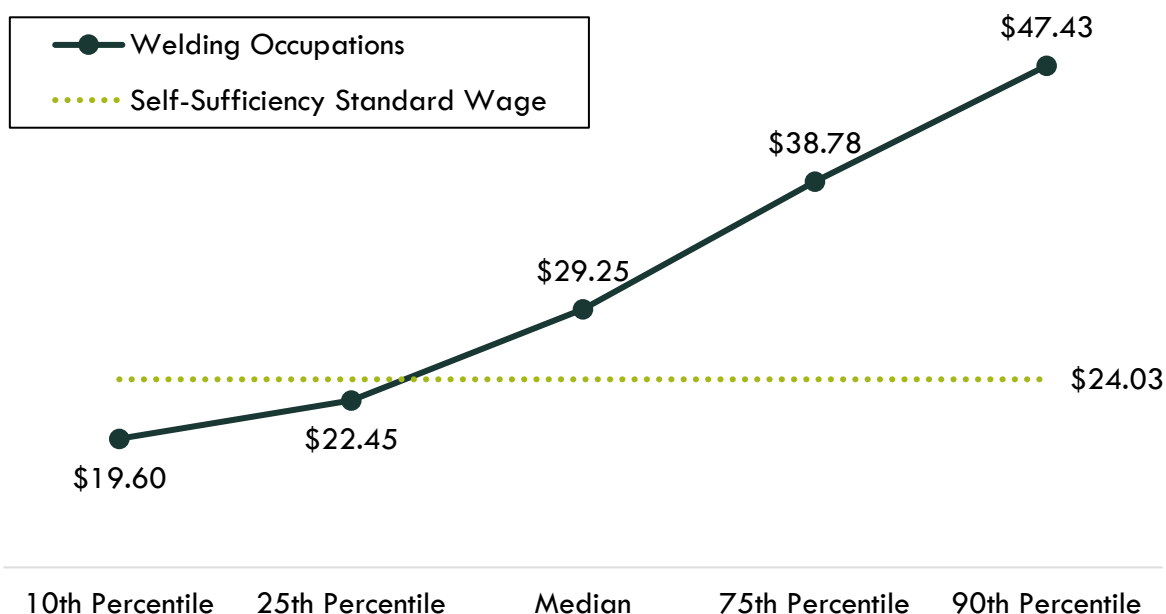
Exhibit 4: Earnings for occupations in Orange County

Occupation	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)	Median Annual Earnings*
Plumbers, Pipefitters, and Steamfitters	\$25.78	\$32.16	\$44.47	\$66,900
Sheet Metal Workers	\$26.00	\$37.84	\$54.82	\$78,700
Structural Iron and Steel Workers	\$25.38	\$36.01	\$48.59	\$74,900
Welders, Cutters, Solderers, and Brazers	\$22.24	\$26.64	\$31.51	\$55,400
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	\$18.90	\$21.59	\$24.56	\$44,900

*Rounded to the nearest \$100

Across the greater Los Angeles and Orange County region, the average entry-level hourly earnings for the welding occupations in this report are \$22.45; 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.

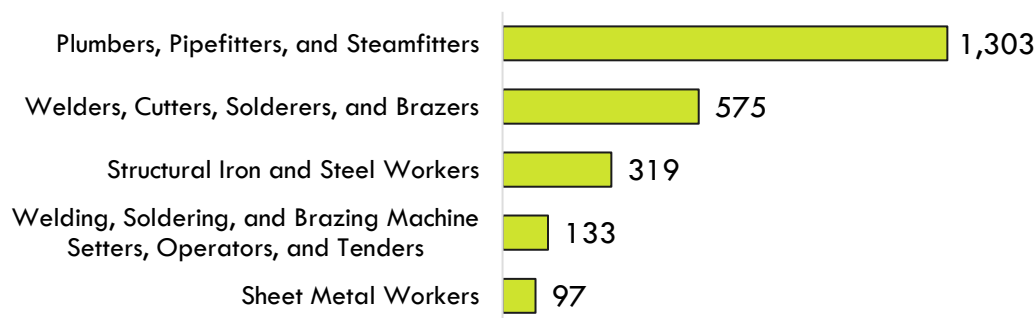
Exhibit 5: Average hourly earnings for welding occupations, Los Angeles and Orange counties



JOB POSTINGS

There were 2,427 online job postings related to welding 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 (54%) were for *plumbers, pipefitters, and steamfitters*, followed by *welders, cutters, solderers, and brazers* (24%) and *structural iron and steel workers* (13%).

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
- Plumbers - Welders - Plumbing technicians - Plumbing installers - Plumbing apprentices - TIG welders	- Plumbing - Welding - Gas Tungsten Arc welding - Metal Inert Gas (MIG) welding	- Aerotek* - Disney - SpaceX - Service Champions - Work With Your Handz* - Disability Solutions

*Staffing companies

In the greater Los Angeles/Orange County region, 29% of the welding 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 welding, Los Angeles and Orange counties

Education Level	Job Postings	% of Job Postings
Bachelor's degree	25	4%
Associate degree	25	4%
High school diploma or vocational training	659	92%

EDUCATIONAL ATTAINMENT

The Bureau of Labor Statistics (BLS) lists a high school diploma or equivalent as the typical entry-level education for each of the welding occupations in this report (Exhibit 9). However, the national-level data indicates between 31% and 34% 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 9: Entry-level education preferred by employers nationally, Bureau of Labor Statistics

Occupation	Education Level
Plumbers, Pipefitters, and Steamfitters	High school diploma or equivalent
Sheet Metal Workers	High school diploma or equivalent
Structural Iron and Steel Workers	High school diploma or equivalent
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 10 shows the annual and three-year average number of awards conferred by community colleges in the related TOP code: Welding Technology (0956.50). The colleges with the most completions in the region are Cerritos, Santa Ana, and LA Trade-Tech.

Exhibit 10: 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
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 Total/Average			244	290	347	294

Other Postsecondary Supply

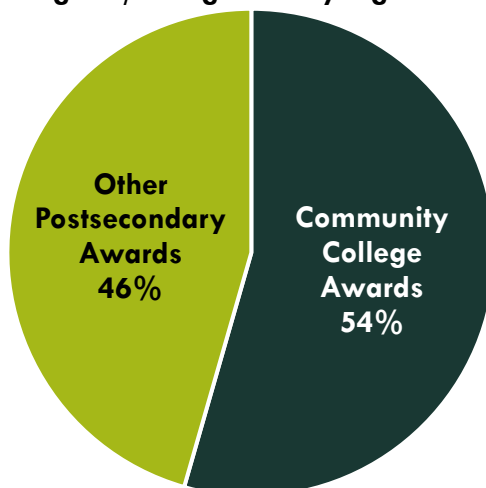
For a comprehensive regional supply analysis, it is important to consider the supply from other institutions in the region that provide training programs for welding occupations. Exhibit 11 shows the number of awards conferred by these institutions in relevant programs. Due to different data collection 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 11: 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 Ed.	27	26	24	26
		Tri-Community Adult Ed.	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 12 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 12: 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:

- **Plumbers, Pipefitters, and Steamfitters (47-2152)** Assemble, install, alter, and repair pipelines or pipe systems that carry water, steam, air, or other liquids or gases. May install heating and cooling equipment and mechanical control systems. Includes sprinkler fitters.¹¹
- **Sheet Metal Workers (47-2211)** Fabricate, assemble, install, and repair sheet metal products and equipment, such as ducts, control boxes, drainpipes, and furnace casings. Work may involve any of the following: setting up and operating fabricating machines to cut, bend, and straighten sheet metal; shaping metal over anvils, blocks, or forms using hammer; operating soldering and welding equipment to join sheet metal parts; or inspecting, assembling, and smoothing seams and joints of burred surfaces. Includes sheet metal duct installers who install prefabricated sheet metal ducts used for heating, air conditioning, or other purposes.¹²
- **Structural Iron and Steel Workers (47-2221)** Raise, place, and unite iron or steel girders, columns, and other structural members to form completed structures or structural frameworks. May erect metal storage tanks and assemble prefabricated metal buildings.¹³
- **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.¹⁴
- **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.¹⁵

¹¹ [Plumbers, Pipefitters, and Steamfitters \(bls.gov\)](#)

¹² [Sheet Metal Workers \(bls.gov\)](#)

¹³ [Ironworkers \(bls.gov\)](#)

¹⁴ [Welders, Cutters, Solderers, and Brazers \(bls.gov\)](#)

¹⁵ [Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders \(bls.gov\)](#)

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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)

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