

Program Endorsement Brief: 0956.50/Welding Technology Welding Fabrication

Los Angeles/Orange County Center of Excellence, August 2020

Summary Analysis

Program Endorsement:	Endorsed: All Criteria Met	<input checked="" type="checkbox"/>	Endorsed: Some Criteria Met	<input type="checkbox"/>	Not Endorsed	<input type="checkbox"/>
Program Endorsement Criteria						
Supply Gap:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>		
Meets Living Wage: (Entry-Level, 25th)	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>		
Typical Entry-Level Education:	HS Diploma or Less	Some College/ Cert./AA	Bachelor's Degree	Graduate Degree		
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Emerging Occupation(s)						
Emerging Occupation:	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>		

Based on the available data, there appears to be a supply gap for welding occupations in the region. **Therefore, the COE endorses this proposed program.** Reasons include:

Demand:

- Over the next five years, there are projected to be **1,857 jobs available annually** in the region due to new job growth and replacements, **which is more than the 299 awards conferred annually** by educational institutions in the region.
- Within Los Angeles County, **94% of the annual job openings** for these welding occupations have **entry-level wages above the county's living wage** (\$15.04/hour).¹
- Within the LA/OC region, **all of the annual job openings** for welding occupations **typically require a high school diploma.**
 - However, the national-level educational attainment data indicates **between 30.6% and 34.7% of workers in the field have completed some college or an associate degree.**

Supply:

- There are **12 community colleges** in the region that issued awards related to welding technology, conferring an average of **257 awards annually** between 2016 and 2019.
- Between 2014 and 2017, there was an average of **42 awards conferred annually** in related training programs by non-community college institutions throughout the region.

¹ Living wage data was pulled from California Family Needs Calculator on 8/20/2020. For more information, visit the California Family Needs Calculator website: <https://insightcced.org/2018-family-needs-calculator/>.

Introduction

The Los Angeles/Orange County Center of Excellence for Labor Market Research (COE) prepared this report to provide Los Angeles/Orange County regional labor market supply and demand data related to three middle-skill occupations related to welding:

- **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 a 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.
- **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.
- **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.

Middle-skill occupations typically require some postsecondary education, but less than a bachelor's degree.² Although these welding occupations typically require a high school diploma, they are considered middle-skill because they require additional training provided by community college training programs, and approximately one-third of workers in the field have completed some college or an associate degree. This report is intended to help determine whether there is demand in the local labor market that is not being met by the supply from community college programs that align with the relevant occupations.

Occupational Demand

Exhibit 1 shows the five-year occupational demand projections for these welding occupations. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to increase by 2% through 2024. There will be nearly 1,900 job openings per year through 2024 due to job growth and replacements.

This report includes employment projection data by Emsi which uses EDD information. Emsi's projections are modeled on recorded (historical) employment figures and incorporate several

² 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.

underlying assumptions, including the assumption that the economy, during the projection period, will be at approximately full employment. To the extent that a recession or labor shock, such as the economic effects of COVID-19, can cause long-term structural change, it 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. Therefore, the projections included in this report do not take the impacts of COVID-19 into account.

Exhibit 1: Occupational demand in Los Angeles and Orange Counties³

Geography	2019 Jobs	2024 Jobs	2019-2024 Change	2019-2024 % Change	Annual Openings
Los Angeles	10,590	10,643	53	1%	1,198
Orange	5,401	5,644	243	4%	659
Total	15,991	16,287	296	2%	1,857

Wages

The labor market endorsement in this report considers the entry-level hourly wages for these occupations related to welding in Los Angeles County as they relate to the county’s living wage. Orange County wages are included below in order to provide a complete analysis of the LA/OC region. Detailed wage information, by county, is included in Appendix A.

Los Angeles County—94% of the annual openings for these occupations have entry-level wages above the living wage for one adult (\$15.04 in Los Angeles County).⁴ Typical entry-level hourly wages are in a range between \$13.95 and \$15.23 and experienced workers can expect to earn wages between \$23.25 and \$33.56. Los Angeles County’s average wages are below the average statewide wage of \$24.55 for these occupations.

Orange County—All of the annual openings for these occupations have entry-level wages below the California Family Needs Calculator hourly wage (living wage) for one adult (\$17.36 in Orange County). Typical entry-level hourly wages are in a range between \$14.44 and \$17.20. Experienced workers can expect to earn wages between \$23.93 and \$37.61, which are higher than the living wage estimate. Orange County’s average wages are also below the average statewide wage of \$24.55 for these occupations.

Job Postings—The following tables (Exhibits 2 through 5) display real-time job posting information obtained from employer job advertisements in Los Angeles/Orange County over the last twelve months, August 2019 to July 2020. Over the last twelve months, there were 1,215 job postings for welding occupations in the region.

³ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

⁴ Living wage data was pulled from California Family Needs Calculator on 8/20/2020. For more information, visit the California Family Needs Calculator website: <https://insightcced.org/2018-family-needs-calculator/>.

Exhibit 2: Job posting count by occupation

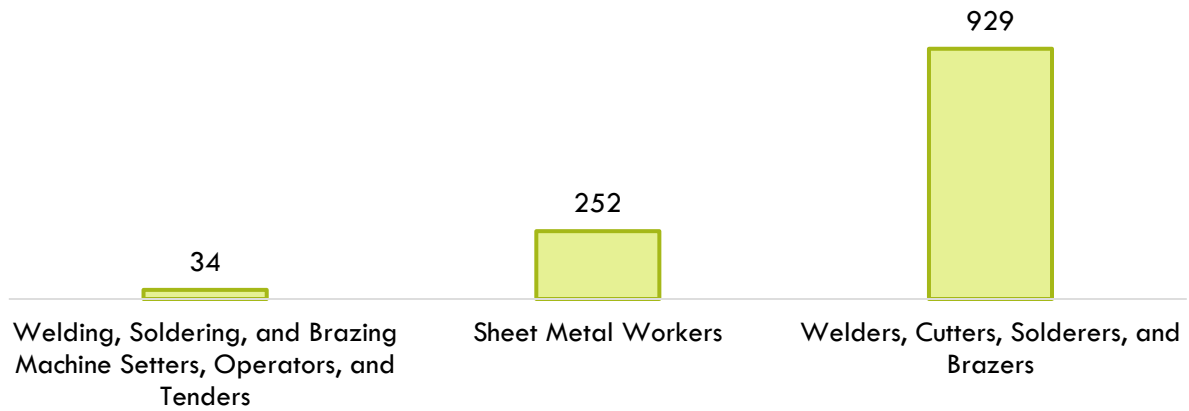


Exhibit 3: Most frequently used job titles for welding occupations

Job Titles	Job Ads
Welder	497
Tig Welder	167
Mig Welder	73
Deburr Technician	38
Sheet Metal Worker	33

Exhibit 4: In-demand skills from job postings for welding occupations

Skills	Job Ads
Mig and Tig Welding	540
Repair	353
Welding Equipment	205
Arc Welding	165
Soldering	141
Schematic Diagrams	112

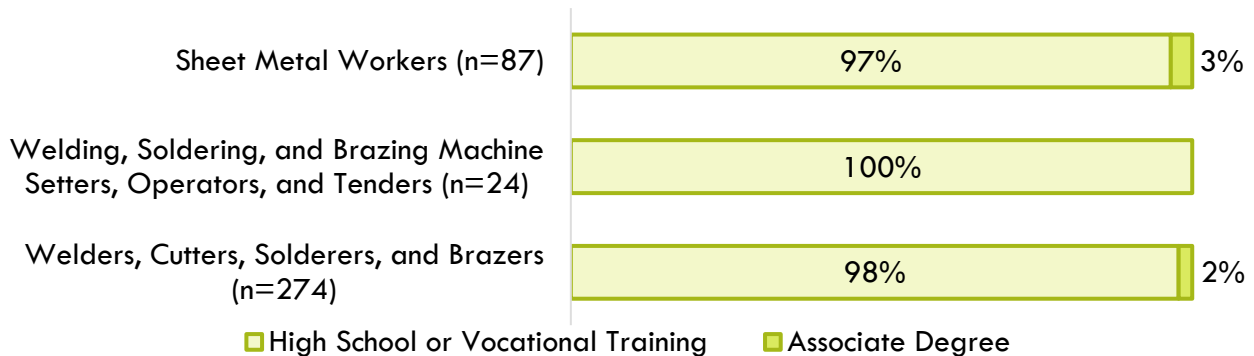
Exhibit 5: Employers posting the most job advertisements for welding occupations

Employers	Job Ads
Space Exploration Technologies	39
Honeywell	30
Aerojet Rocketdyne	12
Waste Management	11
Precision Castparts	9
All Other Employers	1,114
Total	1,215

It is important to note that the job postings data included in this section reflects online job postings listed in the past 12 months and does not yet demonstrate the impact of COVID-19. While employers have generally posted fewer online job postings since the beginning of the pandemic, the long-term effects are currently unknown.

Educational Attainment—The Bureau of Labor Statistics (BLS) lists a high school diploma as the typical entry-level education for these three welding occupations. The national-level educational attainment data indicates between 30.6% and 34.7% of workers in the field have completed some college or an associate degree. Exhibit 6 displays the 32% of welding job postings specifying a minimum education requirement in Los Angeles/Orange County. The vast majority of employers are seeking candidates with a high school diploma or vocational training for these positions.

Exhibit 6: Advertised education requirements for welding occupations



Educational Supply

Community College Supply—Exhibit 7 shows the annual and three-year average number of awards conferred by community colleges in the related TOP code: Welding Technology (0956.50). The school with the most completions in the region is Cerritos. Over the past 12 months, there was one other related program recommendation request from a regional community college.

Exhibit 7: Regional community college awards (certificates and degrees), 2016-2019

TOP Code	Program	College	2016-2017 Awards	2017-2018 Awards	2018-2019 Awards	3-Year Award Average
0956.50	Welding Technology	Cerritos	108	85	131	108
		Compton	4	5	1	3
		El Camino	16	25	33	25
		Glendale	3	-	2	2
		LA Trade-Tech	23	27	16	22
		Long Beach	3	-	11	5
		Mt. San Antonio	11	15	28	18
		Pasadena	4	2	11	6
		Rio Hondo	22	18	2	14
		LA Subtotal	194	177	235	202
		Fullerton	8	10	9	9
		Orange Coast	10	8	20	13
		Santa Ana	16	24	60	33
		OC Subtotal	34	42	89	55
		Supply Total/Average			228	219

Exhibit 8 displays strong workforce program outcome metrics for the welding technology programs in the region.

Exhibit 8: Strong workforce program metrics for regional welding programs

Strong Workforce Program Metrics (2017-18, unless noted otherwise)	Los Angeles/Orange County	California
Unduplicated count of enrolled students (2018-19)	4,288	12,849
Median annual earnings	\$36,240	\$34,740
Median change in earnings	49%	44%
Students who attained the living wage	56%	61%
Job closely related to field of study (2016-17)	72%	71%

Non-Community College Supply—It is important to consider the supply from non-community college institutions in the region that provide training programs for welding occupations. Exhibit 9 shows the annual and three-year average number of awards conferred by these institutions in the related Classification of Instructional Programs (CIP) Code: Welding Technology/Welder (46.0302). Due to different data collection periods, the most recent three-year period of available data is from 2014 to 2017. Between 2014 and 2017, non-community colleges in the region conferred an average of 42 awards annually in related training programs.

Exhibit 9: Regional non-community college awards, 2014-2017

CIP Code	Program	College	2014-2015 Awards	2015-2016 Awards	2016-2017 Awards	3-Year Award Average
46.0508	Welding Technology/ Welder	Hacienda La Puente Adult Education	47	42	31	40
		Pomona Unified School District Adult and Career Education	5	-	-	2
Supply Total/Average			52	42	31	42

Appendix A: Occupational demand and wage data by county

Exhibit 10. Los Angeles County

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Welders, Cutters, Solderers, and Brazers (51-4121)	7,218	7,180	(38)	(1%)	796	\$15.05	\$19.19	\$26.13
Sheet Metal Workers (47-2211)	2,699	2,850	151	6%	330	\$15.23	\$21.49	\$33.56
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders (51-4122)	673	613	(60)	(9%)	71	\$13.95	\$18.63	\$23.25
Total	10,590	10,643	53	1%	1,198			

Exhibit 11. Orange County

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Welders, Cutters, Solderers, and Brazers (51-4121)	3,457	3,542	85	2%	404	\$15.51	\$19.68	\$26.68
Sheet Metal Workers (47-2211)	1,562	1,743	181	12%	215	\$17.20	\$24.10	\$37.61

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders (51-4122)	382	359	(23)	(6%)	41	\$14.44	\$19.22	\$23.93
Total	5,401	5,644	243	4%	659			

Exhibit 12. Los Angeles and Orange Counties

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings
Welders, Cutters, Solderers, and Brazers (51-4121)	10,675	10,722	47	0%	1,200
Sheet Metal Workers (47-2211)	4,261	4,593	332	8%	545
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders (51-4122)	1,055	972	(83)	(8%)	112
Total	15,991	16,287	296	2%	1,857

Appendix B: Sources

- O*NET Online
- Labor Insight/Jobs (Burning Glass)
- Economic Modeling Specialists, International (Emsi)
- Bureau of Labor Statistics (BLS)
- Employment Development Department, Labor Market Information Division, OES
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- California Family Needs Calculator, Insight Center for Community Economic Development
- Chancellor's Office Curriculum Inventory (COCI 2.0)

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