

Program Endorsement Brief: 0956.50/Welding Technology
Shielded Metal Arc Welding (SMAW) Structural Steel
Gas Tungsten Arc Welding (GTAW) Ferrous and Non-Ferrous Metals
 Los Angeles/Orange County Center of Excellence, January 2021

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"/>		
Living Wage: (Entry-Level, 25th)	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>		
Education:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>		
Emerging Occupation(s)						
Yes <input type="checkbox"/>			No <input checked="" type="checkbox"/>			

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 four middle-skill welding-related occupations: *sheet metal workers* (47-2211); *structural iron and steel workers* (47-2221); *welders, cutters, solderers, and brazers* (51-4121); and *welding, soldering, and brazing machine setters, operators, and tenders* (51-4122). Middle-skill occupations typically require some postsecondary education, but less than a bachelor's degree.¹ 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.

Based on the available data, there appears to be a supply gap for welding-related occupations in the LA/OC region. **Therefore, the COE endorses this proposed program.** Detailed reasons include:

Demand:

- **Supply Gap Criteria** - Over the next five years, there are projected to be **2,174 jobs available annually** in the LA/OC region due to job growth and replacements, **which is more than the 299 awards conferred annually** by educational institutions in the region.

¹ 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.

- **Living Wage Criteria** - Within Los Angeles County, **95% of the annual job openings** for these welding occupations have **entry-level wages above the county’s living wage** (\$15.04/hour).²
- **Education Criteria** - Within the LA/OC region, the occupations related to welding **typically require a high school diploma or vocational training degree.**
 - However, national-level educational attainment data indicates **that 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 LA/OC region that issue awards related to welding, 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.

Occupational Demand

Exhibit 1 displays the five-year occupational demand projections for welding-related occupations. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to increase by 1% through 2024. There will be nearly 2,200 job openings per year through 2024 due to job growth and replacements in the LA/OC region.

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 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	12,358	12,445	87	1%	1,416
Orange	6,486	6,630	143	2%	758
Total	18,845	19,075	230	1%	2,174

² Living wage data was pulled from California Family Needs Calculator on 12/17/2020. For more information, visit the California Family Needs Calculator website: <https://insightcced.org/2018-family-needs-calculator/>.

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.

Wages—The labor market endorsement in this report considers the entry-level hourly wages for these welding-related occupations 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.

Los Angeles County—The majority of annual openings (95%) 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 \$13.93 and \$21.12. Experienced workers can expect to earn hourly wages between \$23.22 and \$42.68, which are higher than the living wage estimate.

Orange County—Approximately 19% of annual openings for these occupations have entry-level wages above the living wage for one adult (\$17.36 in Orange County).⁵ Typical entry-level hourly wages are in a range between \$14.47 and \$21.99. Experienced workers can expect to earn hourly wages between \$23.98 and \$44.15, which are higher than the living wage estimate.

Job Postings—Over the last twelve months, there have been 1,417 job advertisements for these four welding-related occupations in Los Angeles/Orange County. The job titles with the most postings were: welder, fabricator, TIG welder, soldering technician, and deburr technician. The top skills were: welding, MIG and TIG welding, repair, welding equipment, and hand tools. The top employers, by the number of job postings, in the region were: SpaceX, Honeywell, and Aerojet Rocketdyne.

Shielded Metal Arc Welding (SMAW) Job Postings—Over the last twelve months, there have been 32 job advertisements for these four welding-related occupations specifically requesting Shield Metal Arc Welding (SMAW) skills in Los Angeles/Orange County. The job titles with the most postings were welder, welder/fabricator, structural welders, pipe welder, and sheet metal journeyman. The top skills were: welding, Shield Metal Arc Welding (SMAW), MIG and TIG welding, Gas-metal Arc Welding (GMAW), and Gas-tungsten Arc Welding (GTAW). The top employers, by the number of job postings, in the region were: City of Los Angeles, SpaceX, and Paramount Metal and Supply Company.

Gas Tungsten Arc Welding (GTAW) Job Postings—Over the last twelve months, there have been 35 job advertisements for these four welding-related occupations specifically requesting Gas-Tungsten Arc Welding (GTAW) skills in Los Angeles/Orange County. The job titles with the most postings were welder (starship), welder, TIG welder – foundry, TIG welder, and structural welder. The top skills were: welding, Gas-Tungsten Arc Welding (GTAW), MIG and TIG welding, engineering drawings, and repair. The top employers, by the number of job postings, in the region were: SpaceX, PMG Incorporated, and Peak Technical Services, Inc.

⁴ Living wage data was pulled from California Family Needs Calculator on 12/17/2020. For more information, visit the California Family Needs Calculator website: <https://insightcced.org/2018-family-needs-calculator/>.

⁵ Ibid.

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 or equivalent as the typical entry-level education requirements for the four welding-related occupations in this report. However, 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 as their highest level of education. Of the 31% of welding job postings listing a minimum education requirement in Los Angeles/Orange County, 96% (425) requested a high school diploma, 2% (10) requested an associate degree, and 2% (7) requested a bachelor’s degree.

Educational Supply

Community College Supply—Exhibit 2 displays the annual and three-year average number of awards conferred by LA/OC regional 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 El Camino. Over the past 12 months, there were two other related program recommendation requests from LA/OC regional community colleges.

Exhibit 2: 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	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

Non-Community College Supply—It is important to consider the supply from non-community college institutions in the region that provide training programs related to welding. Exhibit 3 shows the annual and three-year average number of awards conferred by these institutions in the related Classification of Instructional Program (CIP) Code: Welding Technology/Welder (48.0508). 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 3: Regional non-community college awards, 2014-2017

CIP Code	Program	College	2014-2015 Awards	2015-2016 Awards	2016-2017 Awards	3-Year Award Average
48.0508	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 4. 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)	7,210	7,146	(65)	(1%)	793	\$15.05	\$19.17	\$26.11
Sheet Metal Workers (47-2211)	2,697	2,803	106	4%	317	\$15.22	\$21.47	\$33.53
Structural Iron and Steel Workers (47-2221)	1,777	1,881	104	6%	236	\$21.12	\$32.51	\$42.68
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders (51-4122)	675	615	(59)	(9%)	71	\$13.93	\$18.61	\$23.22
Total	12,358	12,445	87	1%	1,416			

Exhibit 5. Orange County

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)
Welders, Cutters, Solderers, and Brazers (51-4121)	3,454	3,480	25	1%	386	\$15.55	\$19.71	\$26.72
Sheet Metal Workers (47-2211)	1,549	1,643	94	6%	190	\$17.24	\$24.14	\$37.68
Structural Iron and Steel Workers (47-2221)	1,101	1,147	46	4%	141	\$21.99	\$33.75	\$44.15
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders (51-4122)	382	360	(22)	(6%)	41	\$14.47	\$19.26	\$23.98
Total	6,486	6,630	143	2%	758			

Exhibit 6. Los Angeles and Orange counties

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Typical Entry-Level Education
Welders, Cutters, Solderers, and Brazers (51-4121)	10,664	10,625	(39)	(0%)	1,179	HS diploma or equivalent
Sheet Metal Workers (47-2211)	4,246	4,446	200	5%	507	HS diploma or equivalent
Structural Iron and Steel Workers (47-2221)	2,878	3,028	150	5%	377	HS diploma or equivalent
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders (51-4122)	1,057	975	(81)	(8%)	112	HS diploma or equivalent
Total	18,845	19,075	230	1%	2,174	

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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