

0956.50 - Welding Technology

Welding

July 2018

Research Summary

The Los Angeles/Orange County Center of Excellence (COE) compiled this report to provide regional labor market supply and demand data related to **welding**.

The following list summarizes key findings from this data brief:

- The number of jobs for welding-related occupations is expected to increase by 8% through 2022, **resulting in nearly 4,500 annual openings**.
- The median hourly earnings for welding-related occupations are between \$17.18 and \$29.66, per hour.
- In 2017, there were **1,418 employer job ads** for welding-related occupations.
- Of employers posting job ads with a minimum education requirement, **95%** listed high school or vocational training. Between 28% - 34% of the current workforce has some postsecondary coursework training.
- Between 2014 and 2017, community colleges conferred an average of 243 awards (associate degrees and certificates) in a related training program.

Occupation Codes and Descriptions

Currently, there are five occupations in the standard occupational classification (SOC) system that are related to welding technology. The occupation titles and descriptions, as well as reported job titles are included in Exhibit 1.

Exhibit 1 – Occupations, descriptions, and sample job titles

SOC Code	Title	Description	Sample of Reported Job Titles
47-2152	Plumbers, Pipefitters, and Steamfitters	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 sprinklerfitters.	<p>47-2152.01 - Pipe Fitters and Steamfitters Sample of reported job titles: Equipment Service Associate (ESA), Fire Sprinkler Service Technician, Journeyman Pipe Fitter, Journeyman Pipefitter, Machine Repairman, Pipe Fitter, Pipe Welder, Pipefitter, Sprinkler Fitter, Steamfitter</p> <p>47-2152.02 - Plumbers Sample of reported job titles: Commercial Plumber; Drain Cleaner, Plumber; Drain Technician; Journeyman Plumber; Master Plumber; Plumber; Plumber Gasfitter; Plumbing and Heating Mechanic; Residential Plumber; Service Plumber</p>
47-2211	Sheet Metal Workers	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.	Field Installer; HVAC Sheet Metal Installer (Heating, Ventilation, and Air Conditioning Sheet Metal Installer); Journeyman Sheet Metal Worker; Sheet Metal Apprentice; Sheet Metal Fabricator; Sheet Metal Foreman; Sheet Metal Installer; Sheet Metal Layout Mechanic; Sheet Metal Mechanic; Sheet Metal Worker

47-2221	Structural Iron and Steel Workers	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.	Fitter, Fitter / Welder, Iron Worker, Iron Worker Foreman, Ironworker, Rigger, Steel Fabricator, Steel Worker, Structural Steel Erector, Tower Hand
51-4121	Welders, Cutters, Solderers, and Brazers	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.	<p>51-4121.06 - Welders, Cutters, and Welder Fitters Sample of reported job titles: Aluminum Welder, Fabrication Welder, Fabricator, Fitter/Welder, Maintenance Welder, Mig Welder, Sub Arc Operator, Welder, Welder-Fitter, Welder/Fabricator</p> <p>51-4121.07 - Solderers and Brazers Assembly Line Brazer, Brazer, Connector, Electronic Technician, Fabricator, Production Technician, Refrigeration Brazer/Solderer, Refrigeration Specialist, Solderer, Wirer</p>
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	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.	Braze Operator, Fabricator, Finishing Technician, Fitter-Welder, Machine Operator, Mig Welder, Operator, Robot Operator, Spot Welder, Technical Associate (TA)

Source: O*NET Online

Current and Future Employment

In Los Angeles and Orange Counties, the number of jobs for occupations related to welding is expected to increase by 8% over the next five years. More than 4,400 job opportunities will be available annually for this occupation group through 2022 due to new job growth and/or replacement need (e.g., retirements). Exhibit 2 contains detailed employment projections data for the occupations.

Exhibit 2 – Five-year projections for welding-related occupations

SOC	Occupation	2017 Jobs	2022 Jobs	2017 - 2022 Change	2017 - 2022 % Change	Annual Openings
47-2152	Plumbers, Pipefitters, and Steamfitters	17,488	19,757	2,269	13%	2,363
51-4121	Welders, Cutters, Solderers, and Brazers	10,027	10,159	132	1%	1,091
47-2211	Sheet Metal Workers	3,716	4,116	400	11%	483
47-2221	Structural Iron and Steel Workers	2,563	2,830	267	10%	334
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	1,627	1,458	(169)	(10%)	163
	Total	35,421	38,320	2,899	8%	4,434

Source: EMSI 2018.2 – QCEW, non-QCEW, Self-Employed.

Earnings

In Los Angeles and Orange Counties, the entry-level average wage for the studied occupations is between \$11.86 and \$17.49 per hour. The average annual earnings for the occupations in the region is between \$37,505 and \$67,128 per year, assuming full-time employment.

Exhibit 3 contains hourly wages and annual average earnings for the occupation group studied in this report. Entry-level hourly earnings is represented by the 10th percentile of wages, median hourly earnings is represented by the 50th percentile of wages, and experienced hourly earnings is represented by the 90th percentile of wages, demonstrating various levels of employment.

Exhibit 3 – Earnings for welding-related occupations

SOC	Occupation	Entry-Level Hourly Earnings	Median Hourly Earnings	Experienced Hourly Earnings	Average Annual Earnings
47-2221	Structural Iron and Steel Workers	\$17.49	\$29.66	\$48.92	\$67,128
47-2152	Plumbers, Pipefitters, and Steamfitters	\$14.36	\$22.64	\$43.87	\$53,188
47-2211	Sheet Metal Workers	\$12.94	\$22.14	\$41.63	\$51,835
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	\$11.94	\$17.18	\$26.20	\$37,505
51-4121	Welders, Cutters, Solderers, and Brazers	\$11.86	\$17.81	\$30.34	\$40,975

Source: EMSI 2018.2 – QCEW, non-QCEW, Self-Employed.

Employer Job Postings

In this research brief, real-time labor market information is used to provide a more nuanced view of the current job market, as it captures job advertisements for occupations relevant to the field of study. Employer job postings are consulted to understand who is employing in the welding field, and what they are looking for in potential candidates. To identify job postings related to welding, the occupation codes in Exhibit 1 were used.

Top Titles

The most common job titles for welding-related jobs are listed in Exhibit 4. Plumber was mentioned in 37% of all relevant job postings (520 out of 1,418 postings).

Exhibit 4 –Job titles (n=1,418)

Title	Job Postings, Full Year 2017
Plumber	520
Welder	344
TIG Welder	59
Service Technician	55
MIG Welder	45
Pipefitter	33
Sheet Metal Worker	28
Plumbing Technician	22
Structural Welder	21
Fabricator	19

Source: Labor Insight/Jobs (Burning Glass)

Top Employers

Exhibit 5 lists the major employers hiring professionals in the field of welding. Top employers postings job ads included SpaceX, American Residential Services, and Porch. The top worksite cities in the region for these occupations were Los Angeles, Anaheim, Hawthorne, Long Beach, and Torrance.

Exhibit 5 – Top employers (n=611)

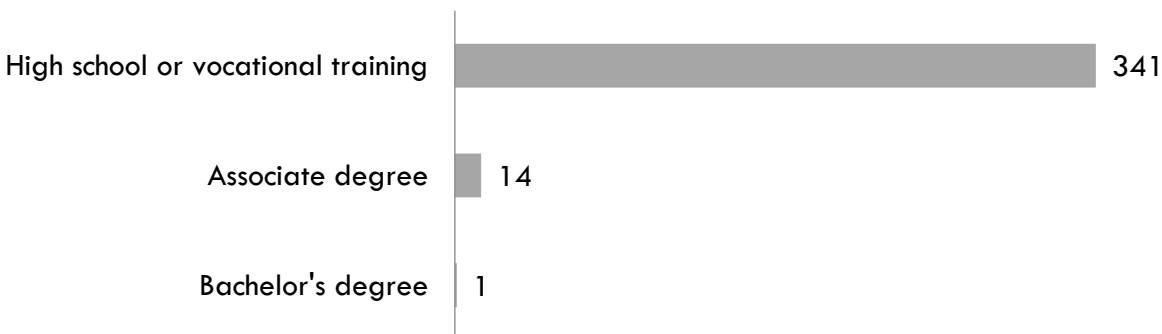
Employer	Job Postings, Full Year 2017
SpaceX	45
American Residential Services	28
Porch	18
University California	16
Jacobs Engineering Group Incorporated	14
Johnson Controls Incorporated	11
Next Page	11
Waste Management	11
Ars Rescue Rooter	10
California State University	10

Source: Labor Insight/Jobs (Burning Glass)

Advertised Education Levels

Exhibit 6 displays the education level requested by employers in online job ads. The majority of employers were looking for a candidate with high school or vocational training. Approximately 75% of job postings did not specify a level of education.

Exhibit 6 – Advertised education requirements for welding-related occupations (n=356)



Source: Labor Insight/Jobs (Burning Glass)

Education and Training

Exhibit 7 shows the typical entry-level education requirement for the occupations of interest, along with the typical on-the-job training, and percentage of workers in the field who hold a community college award or have completed some postsecondary courses. Between 28% and 34% of the workforce has completed some community college education as their highest level of education.

Exhibit 7 – Education and training requirements

SOC	Occupation	Typical entry-level education	Typical on-the-job training	% of Community College Award Holders or Some Postsecondary Coursework
47-2211	Sheet Metal Workers	HS diploma/equivalent	Apprenticeship	34%
47-2152	Plumbers, Pipefitters, and Steamfitters	HS diploma/equivalent	Apprenticeship	31%
47-2221	Structural Iron and Steel Workers	HS diploma/equivalent	Apprenticeship	31%
51-4121	Welders, Cutters, Solderers, and Brazers	HS diploma/equivalent	Moderate-term	28%
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	HS diploma/equivalent	Moderate-term	28%

Source: EMSI, Bureau of Labor Statistics Employment Projections (Educational Attainment)

In Los Angeles and Orange Counties, 14 community colleges have conferred awards in programs that have historically trained students for the occupations of interest. Between 2014 and 2017, there was an average of 243 community college awards conferred annually across three programs. It is important to note that an award is not equivalent to a single person in search of a job opening, since a student may earn more than one award (e.g. an associate degree and a certificate).

Exhibit 8 – CCC Student Awards (by TOP and College)

TOP Code	Program	College	2014-15 Awards	2015-16 Awards	2016-2017 Awards	3-Year Award Average
0952.30	Plumbing, Pipefitting, and Steamfitting	LA Trade	35	23	35	31
Subtotal/Average			35	23	35	31
0956.40	Sheet Metal and Structural Metal	Long Beach	6	9	2	6
Subtotal/Average			6	9	2	6
0956.50	Welding Technology	Cerritos	90	71	108	90
		Compton	3	5	4	4
		El Camino	7	8	16	10
		Fullerton	18	16	8	14
		Glendale	1	5	3	3
		LA Trade	22	25	23	23
		Long Beach	1	1	3	2
		Mt San Antonio	10	26	11	16
		Orange Coast	10	4	10	8
		Pasadena	11	6	4	7
		Rio Hondo	N/A	8	22	15
		Santa Ana	11	33	16	20
Subtotal/Average			184	208	228	207
Total			225	240	265	243

Source: California Community Colleges Chancellor’s Office MIS Data Mart

Student Outcomes

The CTE LaunchBoard provides student outcome data on the effectiveness of CTE programs. The following student outcome information was collected from exiters of the Plumbing, Pipefitting, and Steamfitting Taxonomy of Program (TOP) code (0952.30) in Los Angeles and Orange Counties for the 2015-16 academic year.

- Median earnings in the second fiscal quarter after program completion is \$17,055
- 76% of students are earning a living wage

- 77% of students are employed within six months after completing a program

Sheet Metal and Structural Metal Taxonomy of Program (TOP) code (0956.40)

- Median earnings in the second fiscal quarter after program completion is \$6,141
- 30% of students are earning a living wage
- 71% of students are employed within six months after completing a program

Welding Technology Taxonomy of Program (TOP) code (0956.50)

- Median earnings in the second fiscal quarter after program completion is \$7,396
- 47% of students are earning a living wage
- 73% of students are employed within six months after completing a program

Source: CTE LaunchBoard

Sources

O*Net Online, Labor Insight/Jobs (Burning Glass), Economic Modeling Specialists International (EMSI), MIT Living Wage Calculator, Bureau of Labor Statistics (BLS) Education Attainment, California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart, CTE LaunchBoard, Statewide CTE Outcomes Survey, Employment Development Department Unemployment Insurance Dataset

Notes

Data included in this analysis represents the labor market demand for positions most closely related to welding. Standard occupational classification (SOC) codes were chosen based on the national education level required for employment (associate degree and postsecondary certificate) as well as the proportion of current workers who hold a community college award or have had some community college training. This selection process narrows the labor market analysis to the most relevant employment opportunities for students with community college education and/or training.

Traditional labor market information was used to show current and projected employment based on data trends, as well as annual average awards granted by regional community colleges. Real-time labor market information captures job post advertisements for occupations relevant to the field of study and should not be used to establish current job openings, because the numbers may include duplicate job postings or postings intended to gather a pool of applicants. Real-time labor market information can signal demand and show what employers are looking for in potential employees, but is not a perfect measure of the quantity of open positions.