



Welding Technology

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Prepared by the Los Angeles/Orange County Center of Excellence for Labor Market Research

Occupation Codes and Descriptions

Currently, there is one occupation in the standard occupational classification (SOC) system and one emerging occupation related to welding technology. The occupation titles and descriptions, as well as reported job titles are included in Exhibit 1.¹

Exhibit 1 – Occupations, descriptions and sample job titles

SOC Code/ O*NET Code	Title	Description	Sample of Reported Job Titles
51-4121.06	Welders, Cutters, and Welder Fitters	Use hand-welding or flame-cutting equipment to weld or join metal components or to fill holes, indentations, or seams of fabricated metal products.	Aluminum Welder, Fabrication Welder, Fabricator, Fitter/Welder, Maintenance Welder, Mig Welder, Sub Arc Operator, Welder, Welder-Fitter, Welder/Fabricator
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

Source: O*NET Online

Current and Future Employment

In Los Angeles County, the number of welding technology jobs is expected to decrease by 3% over the next five years. However, nearly 930 job opportunities will be available annually for this group of occupations through 2016 due to replacement need (e.g., retirements). Exhibit 2 contains detailed employment projections data for these occupations.

¹ New and emerging occupations (N&E) are incorporated into the O*NET-SOC classification system based on the evolving nature of workforce requirements stemming from changes in technology, society, law, and business practices. Incorporating N&E occupations into the O*NET system makes O*NET information more beneficial and responsive. <https://www.onetcenter.org/reports/NewEmerging.html>

Exhibit 2 – Five-year projections for welding technology occupations in Los Angeles County

SOC	Occupation	2016 Jobs	2021 Jobs	2016 - 2021 Change	2016 - 2021 % Change	Annual Openings
51-4121	Welders, Cutters, Solderers, and Brazers	7,735	7,577	(158)	(2%)	828
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	1,006	879	(127)	(13%)	103
		8,741	8,456	(285)	(3%)	930

Source: Economic Modeling Specialists International (EMSI)

Earnings

In Los Angeles County, the average entry-level wage for welding technology ranges from \$11.31 to \$12.92, which is below the MIT Living Wage² estimate of \$13.08 per hour for a single adult. The average annual earnings for this occupation group in the region ranges between \$39,891 and \$40,391 per year, assuming full-time employment.

Exhibit 3 contains hourly wages and annual average earnings for these occupations. 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 technology occupations in Los Angeles County, 2016-2021

SOC	Occupation	Entry-Level Hourly Earnings	Median Hourly Earnings	Experienced Hourly Earnings	Average Annual Earnings
51-4121	Welders, Cutters, Solderers, and Brazers	\$11.31	\$17.26	\$29.66	\$39,891
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	\$12.92	\$17.98	\$28.57	\$40,319

Source: Economic Modeling Specialists International (EMSI)

² MIT Living Wage Calculator. <http://livingwage.mit.edu/>

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 welding technology, and what they are looking for in potential candidates. To identify job postings related to welding technology, the SOC code, and O*NET code were used.

Top Occupations

In 2016, there were 540 job postings for welding technology workers. Majority of the postings (97%) were for welders, cutters, and welder fitters (526 job postings). There were 480 job postings for the same occupations in 2015, and 350 job postings in 2014.

Exhibit 4 – Number of job postings by TOP/SOC (n=540)

SOC Code/ O*NET Code	Occupation	Job Postings, Full Year 2016
51-4121.06	Welders, Cutters, and Welder Fitters	526
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	14

Source: Labor Insight/Jobs (Burning Glass)

Top Titles

The top job titles for employers posting ads for welding technology workers are listed in Exhibit 5. Welder was mentioned in 61% of all relevant job postings (330 of 540 job postings).

Exhibit 5 –Job titles (n=540)

Title	Job Postings, Full Year 2016
Welder	330
Tig Welder	78
Mig Welder	31
Structural Welder	14
Aluminum Welder	11

Source: Labor Insight/Jobs (Burning Glass)

Top Employers

Exhibit 6 lists the major employers hiring professionals in the field of welding technology. Top employers postings job ads included SpaceX, Space Exploration Technologies Corp., and Athens Services. The top worksite cities in the region for these occupations were Los Angeles, Hawthorne, Long Beach, Torrance, and Santa Fe Springs.

Exhibit 6 – Top employers (n=172)

Employer	Job Postings, Full Year 2016
SpaceX	27
Space Exploration Technologies Corp	20
Athens Services	7
Dans Certified Welding Incorporated	6
Hyperloop Technologies	6

Source: Labor Insight/Jobs (Burning Glass)

Certifications and Skills

Welding Certification is the most sought after certification for this occupation group, and was included in 64% of the postings that specified a certification. Other certifications that were largely present on postings were CDL Class C certification (16 % of postings) and Commercial Driver’s License (13%). Job-specific skills desired by employers are welding, repair, inspection, welding equipment, and Mig and Tig welding skills.

Exhibit 7 –Job certifications (n=103) and job skills (n=391)

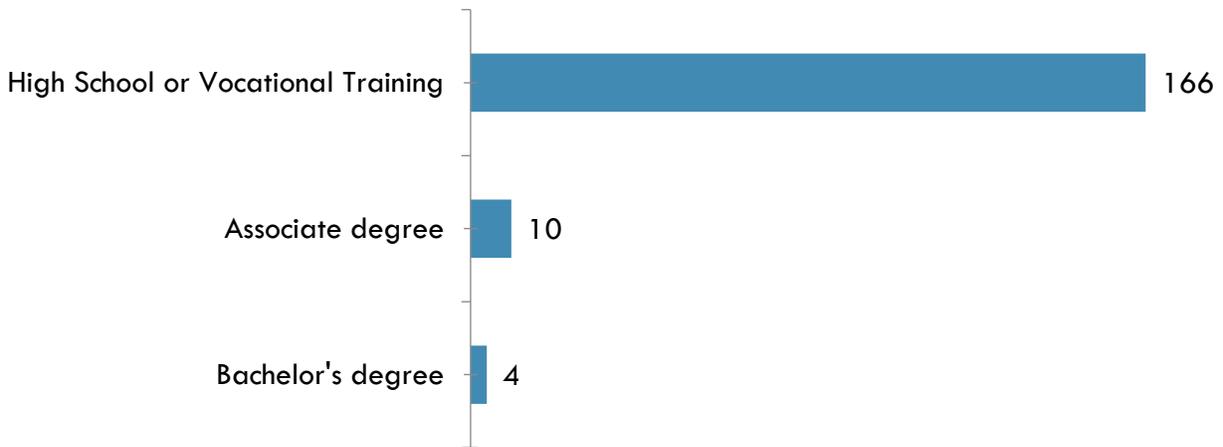
Certification	Job Postings, Full Year 2016	Skills	Job Postings, Full Year 2016
Welding Certification (E.G. AWS Certified Welder)	66	Welding	381
CDL Class C	16	Mig and Tig Welding	228
Commercial Driver's License	13	Repair	118
Forklift Operator Certification	13	Inspection	96
Certified HIPPA Professional	11	Welding Equipment	78

Source: Labor Insight/Jobs (Burning Glass)

Advertised Education Levels

Exhibit 8 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 67% of job postings did not specify a level of education.

Exhibit 8 – 2016 Online job ads with minimum advertised education requirements for Welding Technology (n=180)



Source: Labor Insight/Jobs (Burning Glass)

Industry Concentration

Welding technology jobs in Los Angeles County are most often found in the commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance industry (9% of total jobs in the industry). Exhibit 9 shows the industries that are the largest employers of welding technology in the Los Angeles County.

Exhibit 9 – Industries with the largest number of welding technology job, 2016

NAICS (6-Digit)	Industry	Occupation Group Jobs in Industry	% of Occupation Group in Industry
811310	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	798	9%
561320	Temporary Help Services	394	5%
332710	Machine Shops	390	5%
332322	Sheet Metal Work Manufacturing	380	4%
332321	Metal Window and Door Manufacturing	176	2%

Source: Economic Modeling Specialists International (EMSI)

Education and Training

Exhibit 10 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. Approximately 28% of the workforce in welding technology occupations have completed some community college education as their highest level of education.

Exhibit 10 – Education and training requirements 2016

SOC	Occupation	Typical entry-level education	Typical on-the-job training	% of Community College Award Holders or Some Postsecondary Coursework
51-4121	Welders, Cutters, Solderers, and Brazers	High school diploma or equivalent	Moderate	28%
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	High school diploma or equivalent	Moderate	28%

Source: Economic Modeling Specialists International, Bureau of Labor Statistics Employment Projections (Educational Attainment)

Currently, there are 10 community colleges in the Los Angeles County that train students in welding technology. Exhibit 11 displays the headcount and annual average community college awards for each of the colleges training in this field. Headcount is the actual number of students enrolled, regardless of credit hours. It is also 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).

Between 2012 and 2015, the total annual average community college awards conferred was 120 (37 associate degrees and 83 certificates) across 1 program: Welding Technology (0956.50).

Exhibit 11 – CCC Student Awards (by TOP and College)

TOP Code	Program	College	2012 – 2015 Annual Average			Total Average CC Awards
			CCC Headcount	CCC Associate Degrees	CCC Certificates	
0956.50	Welding Technology	Cerritos	307	24	39	63
		Compton	136	1	3	4
		El Camino	209	3	3	6
		Glendale	132	N/A	3	3
		LA Pierce	145	N/A	N/A	N/A
		LA Trade	302	3	14	17
		Long Beach	195	1	9	10
		Mt San Antonio	389	5	6	11
		Pasadena	82	N/A	6	6
		Rio Hondo	92	N/A	N/A	N/A
Total			1,989	37	83	120

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 welding technology program (TOP code 0956.50) in Los Angeles County for the 2013-2014 academic year.

- The median annual wage after program completion is \$26,045
- 35% of students are earning a living wage
- 67% of students are employed within six months after completing a program

Source: CTE LaunchBoard

Program Recommendation

This report was compiled by the Los Angeles/Orange County Center of Excellence to provide regional labor market data for the program recommendation of welding technology. This report is to help determine whether there is demand in the local labor market that is not being met by the supply from programs of study (CCC and non-CCC) that align with this occupation group.

Based on the data, the COE has determined there is an unmet need for welding technology in the Los Angeles County region. Reasons include:

- There are 930 annual openings in the region for welding technology occupations.
- On average, 120 awards (associates and certificates) are conferred each year, signaling there is enough job opportunities for graduates.

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

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Notes

Data included in this analysis represents the labor market demand for positions most closely related to welding technology. 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.