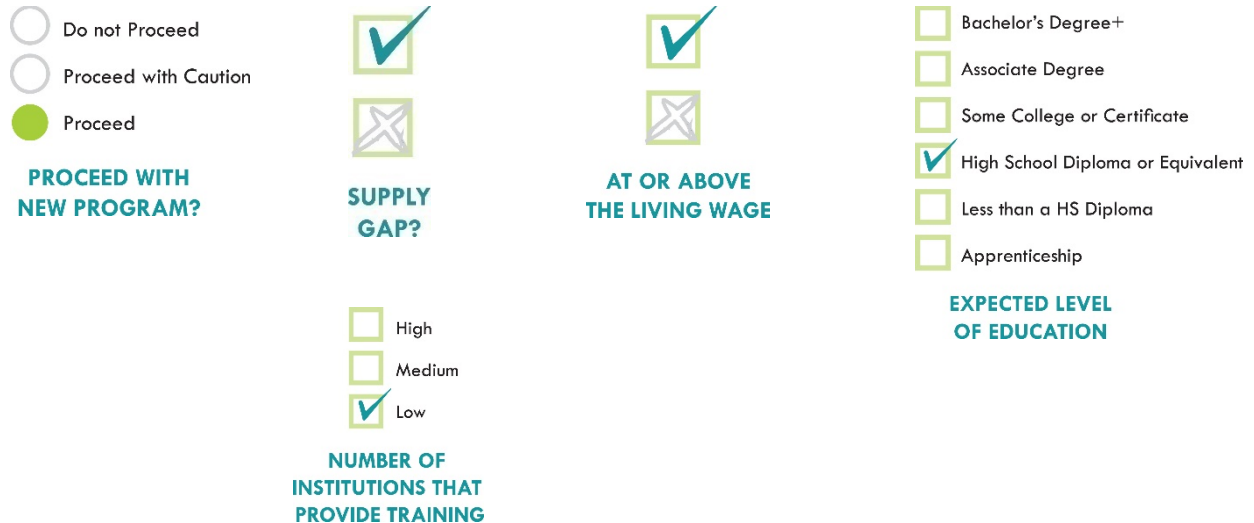


Welding Technology

Labor Market Analysis for San Diego Continuing Education

September 2019

Summary



This report provides labor market information for occupation(s) selected by San Diego Continuing Education for its *Welding* program. The training provided by this program is likely to lead to employment as *Welders, Cutters, Solderers, and Brazers* and *Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders*. According to available labor market information, these occupations have a labor market demand of 445 annual job openings, while average demand for an occupation in San Diego County is 277 annual job openings. One community college supplies the region with 51 for-credit awards (primarily certificates with 6 to < 18 units): Palomar College. Only San Diego Continuing Education supplies noncredit awards for this occupation, which averaged 43 awards over the past three program years. In short, the region supplies 94 for-credit and noncredit awards for 445 annual job openings, suggesting that there is a labor market supply gap. Additionally, these occupations' entry-level and median wages are above the living wage, suggesting that students who successfully complete a program and obtain employment in a related field may earn a living wage. The highest expected level of education for these occupations is a high school diploma or equivalent.

Introduction

This report provides labor market information (LMI) in San Diego County for occupations related to the six-digit Taxonomy of Programs¹ (TOP) code, Welding Technology (TOP 095650). The purpose of this brief is to assist noncredit program providers in the region, such as San Diego Continuing Education (SDCE), with program development and review. SDCE identified two occupations from the Standard Occupational Classification (SOC)² system for *Welding Technology*, which will be the focus of this report:

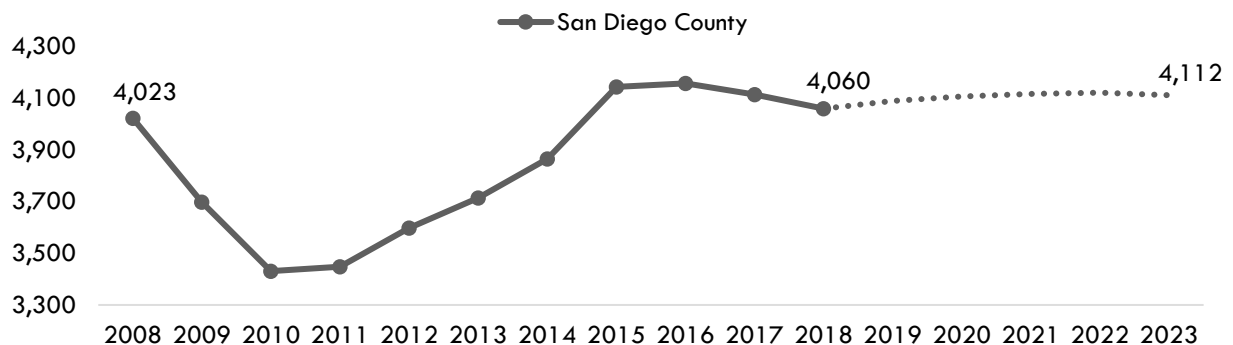
- **Welders, Cutters, Solderers, and Brazers** (SOC 51-4121): Use hand-welding, flame-cutting, hand soldering, or brazing equipment to weld or join metal components or to fill holes, indentations, or seams of fabricated metal products.
- **Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders** (SOC 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.

For the purpose of this report, these occupations are collectively referred to as *Welding Technology Occupations*.

Projected Occupational Demand

Between 2018 and 2023, *Welding Technology Occupations* are projected to increase by **52 net jobs** or **one percent** (Exhibit 1a). Employers in San Diego County will need to hire **445** workers annually to fill new jobs and backfill jobs due to attrition caused by turnover and retirement, for example.

Exhibit 1a: Number of Jobs for Welding Technology Occupations (2008-2023)³



¹ Taxonomy of Programs (TOP) is a system of codes used by the California Community Colleges for the purpose of collecting, calculating, or disseminating data about similar training programs.

² The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating or disseminating data. [bls.gov/soc](https://www.bls.gov/soc).

³ Emsi 2019.03; QCEW, Non-QCEW, Self-Employed.

Exhibit 1b breaks down the projected number of jobs change by occupation more specifically. As Exhibit 1b shows, *Welders, Cutters, Solderers, and Brazers* has the largest labor market demand, with 427 job openings projected to be available annually between 2018 and 2023.

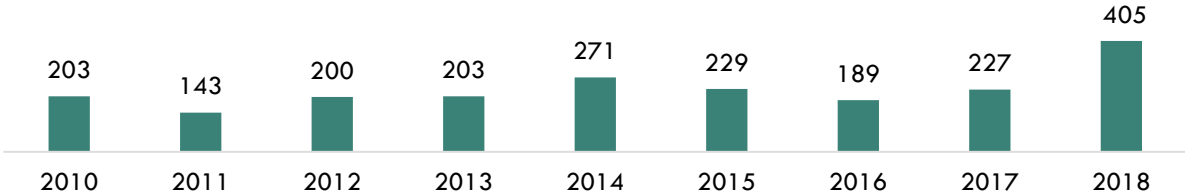
Exhibit 1b: Number of Jobs for Welding Technology Occupations in San Diego County (2018-2023)

Occupational Title	2018 Net Jobs	2023 Net Jobs	2018 - 2023 Net Change	2018-2023 % Net Change	Annual Job Openings (Demand)
Welders, Cutters, Solderers, and Brazers	3,883	3,942	59	2%	427
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	176	171	(5)	(3%)	18
Total	4,059	4,113	54	1%	445

Online Job Postings

This report analyzes not only historical and projected (traditional LMI) data, but also recent data from online job postings (real-time LMI). Online job postings may provide additional insight about recent changes in the labor market demand that are not captured by historical data. Between 2010 and 2018, there was an average of 230 online job postings per year for *Welding Technology Occupations* in San Diego County (Exhibit 2).

Exhibit 2: Number of Online Job Postings for Welding Technology Occupations in San Diego County (2010-2018)⁴



⁴ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2010-2018.

Earnings

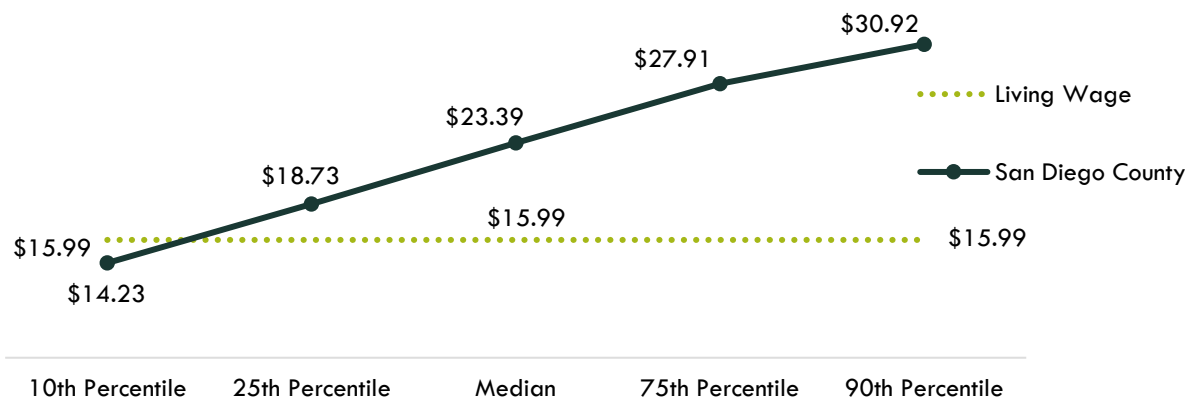
The median hourly earnings of *Welding Technology Occupations* range from \$23.22 to \$23.55 (Exhibit 3a).

Exhibit 3a: Hourly Earnings for Welding Technology Occupations in San Diego County

Occupational Title	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	\$19.44	\$23.55	\$27.70
Welders, Cutters, Solderers, and Brazers	\$18.02	\$23.22	\$28.12

On average, the median hourly earnings for *Welding Technology Occupations* is \$23.39; this is more than the living wage for a single adult in San Diego County, which is \$15.99 per hour (Exhibit 3b).⁵

Exhibit 3b: Average Hourly Earnings⁶ for Welding Technology Occupations in San Diego County⁷



⁵ "California Family Needs Calculator." Insight Center for Community Economic Development, last updated 2018. insightcced.org/2018-family-needs-calculator.

⁶ 10th and 25th percentiles could be considered entry-level wages, and 75th and 90th percentiles could be considered experienced wages for individuals who may have been in the occupation longer, received more training than others, etc.

⁷ Emsi 2019.03; QCEW, Non-QCEW, Self-Employed.

Educational Supply

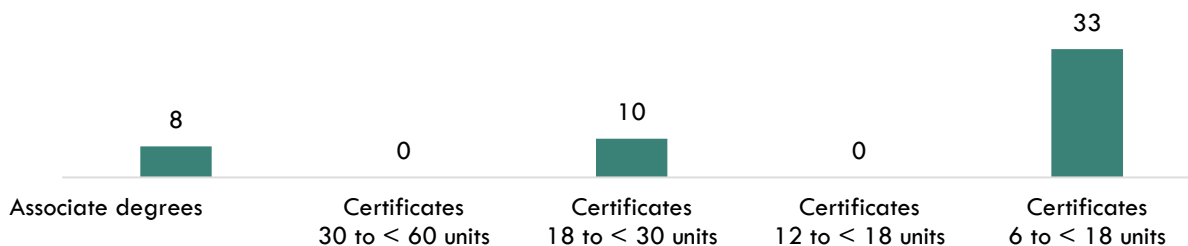
Educational supply for an occupation can be estimated by analyzing the number of awards conferred by a course or program in related Taxonomy of Programs (TOP) or Classification of Instructional Programs (CIP) codes.⁸ According to TOP and CIP⁹ data, one community college supplies the region with for-credit awards for Welding Technology (TOP 095650): Palomar College (Exhibit 4a).

Exhibit 4a: Number of Awards (Certificates and Degrees) Conferred by Postsecondary Institutions (Program Years 2015-16 through 2017-18)

College	Award Type	PY 15-16	PY 16-17	PY 17-18	3-Year Avg
Palomar	Associate of Science (A.S.) degree	0	7	10	6
	Associate of Arts (A.A.) degree	6	0	0	2
	Certificate 18 to < 30 units	10	10	10	10
	Certificate 6 to < 18 units	23	39	37	33
Total		39	56	57	51

Broken down by award type, the colleges supplied the most awards in certificates with 6 to < 18 units (33), followed by certificates with 18 to < 30 units (10), and so forth (Exhibit 4b).

Exhibit 4b: Total Number of Awards by Type for Welding Technology (TOP 095650) in San Diego County (Three-Year Average 2015-16 through 2017-18)



⁸ TOP data comes from the California Community Colleges Chancellor's Office MIS Data Mart (datamart.cccco.edu) and CIP data comes from the Integrated Postsecondary Education Data System (nces.ed.gov/ipeds/use-the-data)

⁹ There are three CIP codes related to Welding Technology (TOP 095650): Welding Engineering Technology/Technician (CIP 150614), Welding Technology/Welder (CIP 480508), and Metal Fabricator (CIP 480511).

In terms of noncredit awards, only San Diego Continuing Education provides noncredit awards for Welding Technology (TOP 095650), with an average of 43 noncredit awards between program years 2015-16 and 2017-18 (Exhibit 5).

Exhibit 5: Number of Noncredit Awards (Certificates and Degrees) Conferred by SDCE (Program Years 2015-16 through 2017-18)

Program Title	Award Type	PY 15-16	PY 16-17	PY 17-18	3-Year Avg
Gas Metal and Flux Cored Arc Welding; Gas Tungsten Arc Welding; Pipe Welding; Shielded Metal Arc Welding; Structural Welding	Program Award	36	41	53	43

Demand vs. Supply

In short, the region supplies 94 for-credit and noncredit awards for 445 annual job openings, suggesting that there is a labor market supply gap (Exhibit 6).

Exhibit 6: Labor Demand (Annual Openings) Compared with Labor Supply (Average Annual Awards)

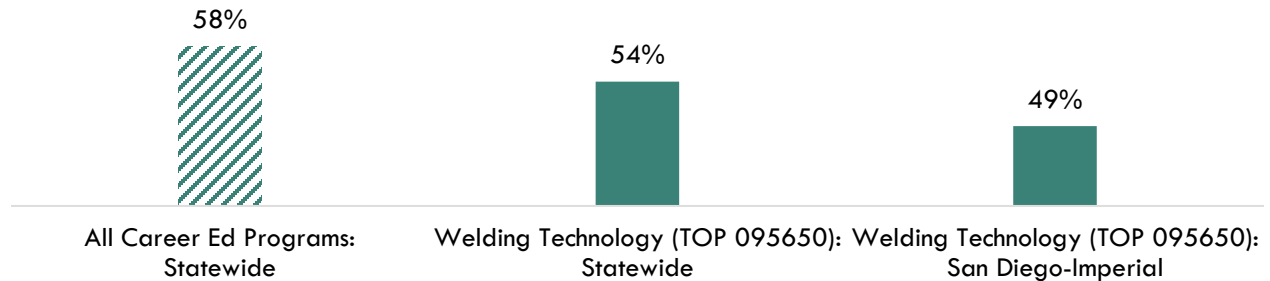
TOP6 Program	Demand (Annual Openings)	Supply (Total Annual Average Supply)		Supply Gap or Oversupply
		Noncredit	For-Credit	
Welding Technology (TOP 095650)	445	43	51	351

Please note: This is a basic analysis of supply and demand of labor. The data does not include workers currently in the labor force who could fill these positions or workers who are not captured by publicly available data. This data should be used to discuss the potential gaps or oversupply of workers; however, it should not be the only basis for determining whether or not a program should be developed.

Student Outcomes and Regional Comparisons

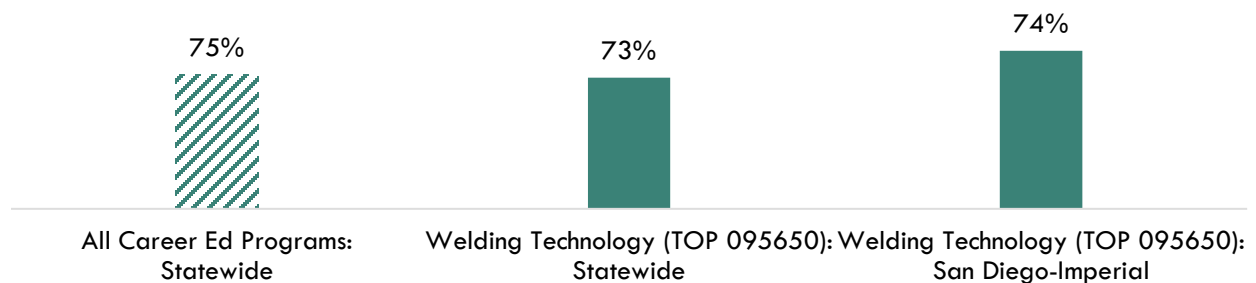
According to the California Community Colleges LaunchBoard, 49 percent of students in the San Diego-Imperial region earned a living wage after completing a Welding Technology (TOP 095650) program, compared to 54 percent statewide and 58 percent of students in Career Education programs in general across the state (Exhibit 7a).

Exhibit 7a: Proportion of Students Who Earned a Living Wage, PY2015-16¹⁰



According to the California Community Colleges LaunchBoard, 74 percent of students in the San Diego-Imperial region obtained a job closely related to their field of study after completing a Welding Technology (TOP 095650), compared to 73 percent statewide and 75 percent of students in Career Education programs in general across the state (Exhibit 7b).

Exhibit 7b: Percentage of Students in a Job Closely Related to Field of Study, PY2014-15¹¹



¹⁰ Among completers and skills builders who exited, the proportion of students who attained a living wage.

¹¹ Most recent year with available data is Program Year 2014-15. Percentage of Students in a Job Closely Related to Field of Study: Among students who responded to the CTEOS, the percentage reporting employment in the same or similar field as their program of study.

Top Employers and Work Locations

Between January 1, 2016 and December 31, 2018, the top five employers in San Diego County for these occupations were [General Dynamics](#), [Epsilon Systems Solutions Incorporated](#), [BAE Systems](#), [Propulsion Controls Engineering](#), and [GKN](#) (Exhibit 8).

Exhibit 8: Top Employers in San Diego County for Welding Technology Occupations¹²

Top Employers	
<ul style="list-style-type: none">• General Dynamics• Epsilon Systems Solutions Incorporated• BAE Systems• Propulsion Controls Engineering• GKN	<ul style="list-style-type: none">• U.S. Navy• Weldmac Maritime San Diego• Bombardier• Praxiar• Mobile Mini Incorporated

Skills, Education, and Certifications

Welding Technology Occupations has an educational requirement of a [high school diploma or equivalent](#) (Exhibit 9a).

Exhibit 9a: National Educational Requirements for Welding Technology Occupations¹³

Occupational Title	Typical Entry-Level Education
Automotive Service Technicians and Mechanics	High school diploma or equivalent
Electrical and Electronics Repairers, Commercial and Industrial Equipment	High school diploma or equivalent

¹² Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2016-2018.

¹³ Emsi 2019.03; QCEW, Non-QCEW, Self-Employed.

Based on online job postings between January 1, 2016 and December 31, 2018, the top listed educational requirement for *Welding Technology Occupations* was a [high school or vocational training](#) (Exhibit 9b).¹⁴

Exhibit 9b: Educational Requirements for *Welding Technology Occupations* in San Diego County in Online Job Postings¹⁵

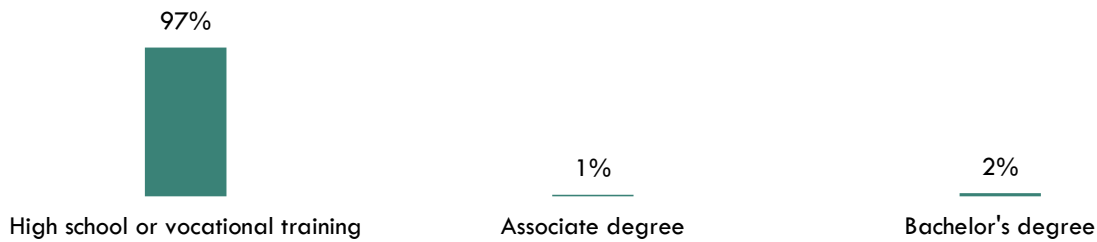


Exhibit 10 lists the top specialized, soft, and software skills that appeared in online job postings between January 1, 2016 and December 31, 2018.

Exhibit 10: Top Skills for *Welding Technology Occupations* in San Diego County¹⁶

Specialized Skills	Soft Skills	Software Skills
<ul style="list-style-type: none"> • Welding • Repair • Mig and Tig Welding • Shielded Metal Arc Welding • Gas-metal Arc Welding 	<ul style="list-style-type: none"> • Physical Abilities • Communication Skills • English • Organizational Skills • Writing 	<ul style="list-style-type: none"> • Active Server Pages (ASP) • Microsoft Excel • Microsoft Operating Systems • Word Processing • SAP

¹⁴ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2016-2018.

¹⁵ "Educational Attainment for Workers 25 Years and Older by Detailed Occupation," Bureau of Labor Statistics, last modified October 18, 2018. bls.gov/emp/tables/educational-attainment.htm.

¹⁶ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2016-2018.

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Important Disclaimers

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