**Welding Technology Occupations**

**Labor Market Information Report**

**Santa Rosa Junior College**

Prepared by the San Francisco Bay Center of Excellence

for Labor Market Research

March 2020

# Recommendation

Based on all available data, there appears to be an undersupply of Welding Technology workers compared to the demand for this cluster of occupations in the Bay region and in the North Bay sub-region (Solano, Marin, Napa, and Sonoma). There is a projected annual gap of about 830 students in the Bay region and 157 students in the North Bay Sub-Region.

This report also provides student outcomes data on employment and earnings for programs on TOP 0956.50 - Welding Technology in the state and region. It is recommended that these data be reviewed to better understand how outcomes for students taking courses on this TOP code compare to potentially similar programs at colleges in the state and region, as well as to outcomes across all CTE programs at Santa Rosa Junior College and in the region.

# Introduction

This report profiles Welding Technology Occupations in the 12 county Bay region and in the North Bay sub-region for a proposed new program at Santa Rosa Junior College. Labor market information (LMI) is not available at the eight-digit SOC Code level for Welders, Cutters and Welder Fitters (51-4121.06) or Solderers and Brazers (51-4121.07), therefore, the data shown in Tables 1 and 2 is for Welders, Cutters, Solderers, and Brazers (at the six digit SOC level) and likely overstates demand for Welders, Cutters and Welder Fitters and Solderers and Brazers. Tables 3, 4, 6, 9, 10 and 11 use job postings data from Burning Glass at the eight-digit SOC Code level for Welders, Cutters and Welder Fitters (51-4121.06) and Solderers and Brazers (51-4121.07).

|  |
| --- |
| * **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. |
| Entry-Level Educational Requirement: High school *diploma or equivalent* |
| Training Requirement: Moderate-term *on-the-job training* |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 30% |
|  |
| * **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. |
| Entry-Level Educational Requirement: High *school* diploma *or equivalent* |
| Training Requirement: Moderate-term *on-the-job training* |
| Percentage of Community College Award Holders *or Some Postsecondary Coursework: 30%* |
|  |
| * **Structural Metal Fabricators and Fitters** **(SOC 51-2041):** Fabricate, position, align, and fit parts of structural metal products. Shipfitters are included in “Layout Workers, Metal and Plastic” (51-4192). |
| Entry-Level *Educational Requirement: High school diploma or equivalent* |
| Training Requirement: Moderate-term *on-the-job training* |
| Percentage of Community College Award Holders or Some *Postsecondary Coursework: 33%* |

# Occupational Demand

**Table 1. Employment Outlook for Welding Technology Occupations in Bay Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation | 2018 Jobs | 2023 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Average Annual Open-ings | 25% Hourly Wage | Median Hourly Wage |
| Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders | 587 | 600 | 13 | 2% | 349 | 70 | $17.50 | $21.55 |
| Welders, Cutters, Solderers, and Brazers | 5,231 | 5,685 | 454 | 9% | 3,459 | 692 | $18.30 | $23.62 |
| Structural Metal Fabricators and Fitters | 1,151 | 1,160 | 8 | 1% | 648 | 130 | $13.92 | $18.38 |
| **Total** | **6,969** | **7,444** | **475** | **7%** | **4,456** | **891** | **$17.51** | **$22.58** |

*Source: EMSI 2019.4*

**Bay Region** includes Alameda, Contra Costa, Marin, Monterey, Napa, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano and Sonoma Counties

**Table 2. Employment Outlook for Welding Technology Occupations in North Bay Sub-Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation | 2018 Jobs | 2023 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Average Annual Open-ings | 25% Hourly Wage | Median Hourly Wage |
| Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders | 50 | 54 | 4 | 8% | 33 | 7 | $24.69 | $30.06 |
| Welders, Cutters, Solderers, and Brazers | 957 | 1,081 | 124 | 13% | 683 | 137 | $18.39 | $24.51 |
| Structural Metal Fabricators and Fitters | 289 | 294 | 5 | 2% | 167 | 33 | $11.76 | $14.28 |
| **TOTAL** | **1,296** | **1,429** | **133** | **10%** | **884** | **177** | **$17.63** | **$22.91** |

*Source: EMSI 2019.4*

**North Bay Sub-Region** includes Solano, Marin, Napa, and Sonoma

### Job Postings in Bay Region and North Bay Sub-Region

**Table 3. Number of Job Postings by Occupation for latest 12 months (March 2019 - February 2020)**

| Occupation | Bay Region | North Bay |
| --- | --- | --- |
| Welders, Cutters, and Welder Fitters | 405 | 43 |
| Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders | 35 | 0 |
| Structural Metal Fabricators and Fitters | 10 | 1 |
| Solderers and Brazers | 10 | 3 |
| **TOTAL** | **460** | **47** |

*Source: Burning Glass*

**Table 4a. Top Job Titles for Welding Technology Occupations for latest 12 months (March 2019 - February 2020) Bay Region**

|  |  |  |  |
| --- | --- | --- | --- |
| Common Title | Bay | Common Title | Bay |
| Welder | 252 | Technician | 4 |
| Soldering Technician | 20 | Tank Welding Inspector | 4 |
| TIG Welder | 19 | Foreman | 4 |
| Certified Welding Inspector | 19 | Certified Weld Technician | 4 |
| Certified Welding Inspector, Structural | 14 | Welding Inspector | 3 |
| MIG Welder | 12 | Senior Fabricator | 3 |
| Operator | 11 | Welding Specialist | 2 |
| Mechanic | 9 | Technician/Assembler | 2 |
| Weld Technician | 8 | Smt Set | 2 |
| Solderer | 7 | Ship Fitters | 2 |
| Welding Technician | 6 | Pcb Soldering | 2 |
| Quality Control Inspector | 6 | Fabricator | 2 |
| Structural Welder | 5 | Combowelder | 2 |
| Production Welder | 5 | Wire Bond | 1 |

**Table 4b. Top Job Titles for Welding Technology Occupations for latest 12 months (March 2019 - February 2020) North Bay Sub-Region**

|  |  |  |  |
| --- | --- | --- | --- |
| Common Title | North Bay | Common Title | North Bay |
| Welder | 32 | Solder | 1 |
| Mechanic | 4 | Production Welder | 1 |
| Welding Inspector | 2 | MIG Welder | 1 |
| Solderer | 2 | Fabricator | 1 |
| TIG Welder | 1 | Aluminum Fabricator | 1 |
| Tankwelder | 1 |  |  |

*Source: Burning Glass*

# Industry Concentration

**Table 5. Industries hiring Welding Technology Workers in Bay Region**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Industry – 6 Digit NAICS (No. American Industry Classification) Codes | Jobs in Industry (2018) | Jobs in Industry (2022) | % Change (2018-22) | % in Industry (2018) |
| Sheet Metal Work Manufacturing (332322) | 639 | 687 | 8% | 9% |
| Semiconductor Machinery Manufacturing (333242) | 523 | 597 | 14% | 8% |
| Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance (811310) | 409 | 414 | 1% | 6% |
| Machine Shops (332710) | 353 | 346 | -2% | 5% |
| Temporary Help Services (561320) | 248 | 254 | 2% | 3% |
| Fabricated Structural Metal Manufacturing (332312) | 261 | 281 | 8% | 3% |
| Semiconductor and Related Device Manufacturing (334413) | 207 | 192 | -7% | 3% |
| Commercial and Institutional Building Construction (236220) | 148 | 179 | 21% | 2% |
| Automobile Manufacturing (336111) | 142 | 198 | 39% | 2% |
| Ornamental and Architectural Metal Work Manufacturing (332323) | 141 | 153 | 9% | 2% |
| Electronic Computer Manufacturing (334111) | 140 | 149 | 6% | 2% |
| Plumbing, Heating, and Air-Conditioning Contractors (238220) | 139 | 162 | 17% | 2% |
| Structural Steel and Precast Concrete Contractors (238120) | 105 | 122 | 16% | 1% |
| Other Industrial Machinery Manufacturing (333249) | 92 | 115 | 25% | 1% |
| Water and Sewer Line and Related Structures Construction (237110) | 93 | 105 | 13% | 1% |
| Framing Contractors (238130) | 96 | 98 | 2% | 1% |
| Metal Window and Door Manufacturing (332321) | 73 | 71 | -3% | 1% |
| Metal Can Manufacturing (332431) | 69 | 72 | 4% | 1% |
| Glass and Glazing Contractors (238150) | 69 | 77 | 12% | 1% |
| Optical Instrument and Lens Manufacturing (333314) | 71 | 67 | -6% | 1% |

*Source: EMSI 2019.4*

**Table 6. Top Employers Posting Welding Technology Occupations in Bay Region and North Bay Sub-Region (March 2019 - February 2020)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Employer | Bay | Employer | Bay | Employer | North Bay |
| Northrop Grumman | 18 | Mcnichols Company | 3 | Winchester Interconnect | 1 |
| TIG Civil Engineers And Land Planners | 14 | Fieldcore | 3 | Vulcan Materials Company | 1 |
| Amtec Incorporated | 14 | Delta Star Incorporated | 3 | Veteran Equipment Sales | 1 |
| TIG Professional Consulting Services | 8 | Construction Services Inc | 3 | United Rentals | 1 |
| Bay Ship Yacht Company | 5 | Arc'teryx | 3 | Scottag Llc | 1 |
| Tipsy Barrel | 4 | Airtronics Metal Products Inc | 3 | Schlumberger | 1 |
| Sanmina Corporation | 4 | Xyant Technology Inc | 2 | Pauli Systems Inc | 1 |
| Mass Precision | 4 | West Cork Welding | 2 | Napa Auto Parts | 1 |
| United Airlines | 3 | Valmont Industries | 2 | Moose Boats | 1 |
| Triple Metals | 3 | Unlimited Outdoor Kitchen | 2 | Laco Associates | 1 |
| Tri Fab Associates Inc | 3 | United | 2 | CCI | 1 |
| Tempo Automation | 3 | US Army | 2 | Bulldog Services Inc | 1 |
| Schnitzer Steel Industries | 3 | Supply Network Inc | 2 | Artizen Incorporated | 1 |
| Sanmina SCI | 3 | Spectra360 | 2 | Ameriforce | 1 |
| Robeck's Welding & Fabrication, Inc | 3 | Sanmina | 2 |  |  |
| Pmg Incorporated | 3 | Rd Technical Services Inc | 2 |  |  |
| Mizuho OSI | 3 | Paramit Corporation | 2 |  |  |

*Source: Burning Glass*

# Educational Supply

There are nine (9) community colleges in the Bay Region issuing 61 awards on average annually (last 3 years) on TOP 0956.50 - Welding Technology. There are three colleges in the North Bay Sub-Region issuing 20 awards on average annually (last 3 years) on this TOP code.

**Table 7. Awards on TOP 0956.50 - Welding Technology in Bay Region**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| College | Sub-Region | Associates | Certificate 18+ Units | Certificate Low Unit | Total |
| Cabrillo College | Santa Cruz-Monterey |  |  | 2 | 2 |
| Chabot College | East Bay | 2 |  | 1 | 3 |
| Hartnell College | Santa Cruz-Monterey | 3 | 2 |  | 5 |
| Laney College | East Bay | 3 | 6 |  | 9 |
| Las Positas College | East Bay | 4 | 3 |  | 7 |
| Los Medanos College | East Bay | 2 | 2 | 11 | 15 |
| Napa Valley College | North Bay | 3 |  |  | 3 |
| Santa Rosa Junior College | North Bay |  |  | 11 | 11 |
| Solano College | North Bay | 2 | 4 |  | 6 |
| **Total Bay Region** | | **19** | **17** | **25** | **61** |
| **Total North Bay Sub-Region** | | **5** | **4** | **11** | **20** |

# *Source: Data Mart*

Note: The annual average for awards is 2015-16 to 2017-18.

# Gap Analysis

Based on the data included in this report, there is a labor market gap in the Bay region with 891 annual openings for the Welding Technology occupational cluster and 61 annual (3-year average) awards for an annual undersupply of 830 students. In the North Bay Sub-Region, there is also a gap with 177 annual openings and 20 annual (3-year average) awards for an annual undersupply of 157 students.

# Student Outcomes

**Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0956.50 - Welding Technology**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2015-16 | Bay  (All CTE Programs) | Santa Rosa Junior College (All CTE Programs) | State (09565.50) | Bay (0956.50) | North Bay (0956.50) | Santa Rosa Junior College (0956.50) |
| % Employed Four Quarters After Exit | 74% | 76% | 69% | 75% | 78% | 85% |
| Median Quarterly Earnings Two Quarters After Exit | $10,550 | $9,839 | $7,731 | $8,919 | $8,449 | $8,518 |
| Median % Change in Earnings | 46% | 50% | 57% | 68% | 63% | 122% |
| % of Students Earning a Living Wage | 63% | 62% | 54% | 62% | 59% | 61% |

*Source: Launchboard Pipeline (version available on 3/10/20)*

# Skills, Certifications and Education

**Table 9. Top Skills for Welding Technology Occupations in Bay Region (March 2019 - February 2020)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Skill | Postings | Skill | Postings | Skill | Postings |
| Welding | 385 | Hand Tools | 37 | Occupational Health and Safety | 20 |
| MIG and TIG Welding | 139 | Machinery | 37 | Arc Welding | 18 |
| Repair | 89 | Schematic Diagrams | 35 | Pipe Welding | 18 |
| Gas-metal Arc Welding (GMAW) | 78 | Onboarding | 34 | Microscope | 17 |
| Gas-tungsten Arc Welding (GTAW) | 70 | Technical Writing / Editing | 34 | Quality Management | 16 |
| Shielded Metal Arc Welding (SMAW) | 66 | Hand Trucks | 33 | Stick Welding | 16 |
| Welding Equipment | 65 | Flux Core Welding | 28 | Cleaning | 15 |
| Recruiting | 54 | Masonry | 28 | Civil Engineering | 14 |
| Forklift Operation | 45 | Scheduling | 27 | Quality Assurance and Control | 12 |
| Soldering | 45 | Shop Drawings | 27 | Machining | 11 |
| Lifting Ability | 44 | Nondestructive Testing (NDT) | 25 | Personal Protective Equipment (PPE) | 11 |
| Pipe Installation | 43 | Geotechnical Engineering | 22 | Calculation | 10 |
| Engineering Drawings | 41 | Hammering | 22 | Lathes | 9 |
| Manual Dexterity | 38 | Materials Testing | 22 | Pipe Laying | 9 |
| Grinders | 37 | Submerged Arc Welding | 22 | Portable Grinders | 9 |

*Source: Burning Glass*

**Table 10. Certifications for Welding Technology Occupations in Bay Region (March 2019 - February 2020)**

Note: 65% of records have been excluded because they do not include a certification. As a result, the chart below may not be representative of the full sample.

|  |  |  |  |
| --- | --- | --- | --- |
| Certification | Postings | Certification | Postings |
| Welding Certification | 100 | Forklift Operator Certification | 3 |
| Certified Welding Inspector (CWI) | 39 | Aci Field Testing Technician | 3 |
| AWS D1.1 | 29 | AWS D1.2 | 3 |
| Radiation Safety Certified | 22 | OSHA Safety 10 Hour | 2 |
| Radiation Safety Certification | 22 | Soldering Certification | 1 |
| Security Clearance | 19 | Phlebotomy Certification | 1 |
| Driver's License | 17 | Leadership In Energy And Environmental Design (LEED) Certified | 1 |
| IPC Certification | 10 | First Aid CPR AED | 1 |
| American Society of Mechanical Engineers (ASME) Certified | 10 | Certified Instrument Specialist (CIS) | 1 |
| Certified Lead Inspector | 6 | CDL Class A | 1 |
| Asme Section 9 | 6 | American Board of Surgery Certification (ABS) | 1 |
| Sheet Metal Certification | 3 | AWS Certified Welder | 1 |

*Source: Burning Glass*

**Table 11. Education Requirements for Welding Technology Occupations in Bay Region**

Note: 69% of records have been excluded because they do not include a degree level. As a result, the chart below may not be representative of the full sample.

|  |  |  |
| --- | --- | --- |
| Education (minimum advertised) | Latest 12 Mos. Postings | Percent 12 Mos. Postings |
| High school or vocational training | 132 | 92% |
| Associate Degree | 5 | 3% |
| Bachelor’s Degree or Higher | 5 | 5% |

*Source: Burning Glass*

# Methodology

Occupations for this report were identified by use of skills listed in O\*Net descriptions and job descriptions in Burning Glass. Labor demand data is sourced from Economic Modeling Specialists International (EMSI) occupation data and Burning Glass job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CTE Launchboard and CCCCO Data Mart.

# Sources

O\*Net Online

Labor Insight/Jobs (Burning Glass)

Economic Modeling Specialists International (EMSI)

CTE LaunchBoard [www.calpassplus.org/Launchboard/](http://www.calpassplus.org/Launchboard/)

Statewide CTE Outcomes Survey

Employment Development Department Unemployment Insurance Dataset

Living Insight Center for Community Economic Development

Chancellor’s Office MIS system

# Contacts

For more information, please contact:

* Doreen O’Donovan, Research Analyst, for Bay Area Community College Consortium (BACCC) and Centers of Excellence (CoE), [doreen@baccc.net](mailto:doreen@baccc.net) or (831) 479-6481
* John Carrese, Director, San Francisco Bay Center of Excellence for Labor Market Research, [jcarrese@ccsf.edu](mailto:jcarrese@ccsf.edu) or (415) 267-6544