



Labor Market Analysis for Program Recommendation Agricultural Manufacturing Occupations Hartnell College

Prepared by the San Francisco Bay Center of Excellence for Labor Market Research
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Recommendation

Based on all available data, there appears to be an “undersupply” of Agricultural Manufacturing workers compared to the demand for this cluster of occupations in the Bay region and in the SC-Monterey sub-region (Monterey, San Benito, Santa Cruz counties). There is a projected annual gap of about 797 students in the Bay region and 93 students in the SC-Monterey Sub-Region.

Introduction

This report provides student outcomes data on employment and earnings in the state and region for three TOP codes: 1) TOP 0934.20 Industrial Electronics, 2) TOP 0199.00 Other Agriculture and Natural Resources and 3) TOP 0116.00 Agricultural Power Equipment Technology. It is recommended that these data be reviewed to better understand how outcomes for students taking courses on these TOP codes compare to potentially similar programs at colleges in the state and region, as well as to outcomes across all CTE programs at Hartnell College and in the region.

This report profiles Agricultural Manufacturing Occupations in the 12 county Bay region and in the SC-Monterey sub-region for a proposed Fundamentals of Advanced Agricultural Manufacturing program at Hartnell College.

- **Electro-Mechanical and Mechatronics Technologists and Technicians (17-3024):** Operate, test, maintain, or calibrate unmanned, automated, servo-mechanical, or electromechanical equipment. May operate unmanned submarines, aircraft, or other equipment at worksites, such as oil rigs, deep ocean exploration, or hazardous waste removal. May assist engineers in testing and designing robotics equipment.
Entry-Level Educational Requirement: Associate’s degree
Training Requirement: None
Percentage of Community College Award Holders or Some Postsecondary Coursework: 51%
- **Electrical and Electronics Repairers, Commercial and Industrial Equipment (49-2094):** Repair, test, adjust, or install electronic equipment, such as industrial controls, transmitters, and antennas. Excludes “Avionics Technicians” (49-2091), “Electronic Equipment Installers and Repairers, Motor Vehicles” (49-2096), and “Electrical and Electronics Installers and Repairers, Transportation Equipment” (49-2093).
Entry-Level Educational Requirement: Postsecondary nondegree award
Training Requirement: Long-term on-the-job training
Percentage of Community College Award Holders or Some Postsecondary Coursework: 52%
- **Industrial Machinery Mechanics (49-9041):** Repair, install, adjust, or maintain industrial production and processing machinery or refinery and pipeline distribution systems. Excludes “Millwrights” (49-9044), “Mobile Heavy Equipment Mechanics, Except Engines” (49-3042), and “Maintenance Workers, Machinery” (49-9043).
Entry-Level Educational Requirement: High school diploma or equivalent

Training Requirement: Long-term on-the-job training

Percentage of Community College Award Holders or Some Postsecondary Coursework: 42%

Occupational Demand

Table 1. Employment Outlook for Agricultural Manufacturing Occupations in Bay Region

| Occupation | 2020 Jobs | 2025 Jobs | 5-yr Change | 5-yr % Change | 5-yr Total Openings | Annual Openings | 25% Hourly Earning | Median Hourly Wage |
|---|--------------|--------------|-------------|---------------|---------------------|-----------------|--------------------|--------------------|
| Electro-Mechanical and Mechatronics Technologists and Technicians | 554 | 574 | 19 | 4% | 311 | 62 | \$25 | \$52 |
| Electrical and Electronics Repairers, Commercial and Industrial Equipment | 1,363 | 1,393 | 30 | 2% | 599 | 120 | \$27 | \$60 |
| Industrial Machinery Mechanics | 5,123 | 5,696 | 572 | 11% | 3,291 | 658 | \$30 | \$60 |
| Total | 7,040 | 7,663 | 623 | 9% | 4,201 | 840 | | |

Source: EMSI 2021.3

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 Agricultural Manufacturing Occupations in SC-Monterey Sub-region

| Occupation | 2020 Jobs | 2025 Jobs | 5-yr Change | 5-yr % Change | 5-yr Total Openings | Annual Openings | 25% Hourly Earning | Median Hourly Wage |
|---|------------|------------|-------------|---------------|---------------------|-----------------|--------------------|--------------------|
| Electro-Mechanical and Mechatronics Technologists and Technicians | 64 | 72 | 8 | 13% | 43 | 9 | \$26 | \$51 |
| Electrical and Electronics Repairers, Commercial and Industrial Equipment | 116 | 119 | 3 | 3% | 52 | 10 | \$30 | \$69 |
| Industrial Machinery Mechanics | 592 | 652 | 59 | 10% | 372 | 74 | \$29 | \$60 |
| Total | 772 | 843 | 71 | 9% | 467 | 93 | | |

Source: EMSI 2021.3

SC-Monterey Sub-Region includes: Monterey, San Benito, Santa Cruz Counties

Job Postings in Bay Region and SC-Monterey Sub-Region

Table 3. Number of Job Postings by Occupation for latest 12 months (Apr 2021 - Mar 2022)

| Occupation | Bay Region | SC-Monterey |
|---|------------|-------------|
| Industrial Machinery Mechanics | 1,088 | 81 |
| Electro-Mechanical Technicians | 801 | 34 |
| Robotics Technicians | 197 | 0 |
| Electrical and Electronics Repairers, Commercial and Industrial Equipment | 24 | 0 |

Source: Burning Glass

**Table 4a. Top Job Titles for Agricultural Manufacturing Occupations for latest 12 months (Apr 2021 - Mar 2022)
Bay Region**

| Title | Bay | Title | Bay |
|--|-----|---------------------------------|-----|
| Maintenance Mechanic | 189 | Mechanic I | 20 |
| Outside Plant Technician | 153 | Industrial Maintenance Mechanic | 18 |
| Mechanic | 104 | Mechanic A | 18 |
| Automotive Adas Calibration Technician | 46 | Product Test Technician | 17 |
| Calibration Technician | 43 | Assembly Technician | 15 |
| Electro Mechanical Assembler | 34 | Master Trainer | 15 |
| Instrument Technician | 29 | Senior Mechanic | 15 |
| Instrumentation Technician | 28 | Mechanic II | 14 |
| Maintenance Mechanic II | 26 | Electronic Mechanical Assembler | 13 |

Source: Burning Glass

**Table 4b. Top Job Titles for Agricultural Manufacturing Occupations for latest 12 months (Apr 2021 - Mar 2022)
SC-Monterey Sub-Region**

| Title | SC-Monterey | Title | SC-Monterey |
|--|-------------|--|-------------|
| Maintenance Mechanic | 12 | Test Technician I Electronics | 3 |
| Outside Plant Technician | 11 | Calibration Technician - Instruments | 2 |
| Mechanic | 10 | Case Erector Operator | 2 |
| Automotive Adas Calibration Technician | 8 | Facilities Maintenance Mechanic Pool | 2 |
| Mechanic I | 5 | Field Service Electro-Mechanic | 2 |
| Calibration Technician | 4 | Lead Operator Sanitation | 2 |
| Electrical Mechanic | 3 | Maintenance Mechanic II | 2 |
| Instrument Technician | 3 | Mechanic - Technician I back To Search Results | 2 |
| Maintenance Mechanic-Swing | 3 | Plant Mechanic | 2 |

Source: Burning Glass

Industry Concentration

Table 5. Industries hiring Agricultural Manufacturing Workers in Bay Region

| Industry - 6 Digit NAICS (No. American Industry Classification) Codes | Jobs in Industry (2020) | Jobs in Industry (2025) | % Change (2020-25) | % Occupation Group in Industry (2020) |
|---|-------------------------|-------------------------|--------------------|---------------------------------------|
| Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance | 557 | 642 | 15% | 8% |
| Semiconductor and Related Device Manufacturing | 412 | 416 | 1% | 6% |
| Natural Gas Distribution | 210 | 230 | 9% | 3% |
| Electronic Computer Manufacturing | 225 | 239 | 6% | 3% |
| Wineries | 218 | 227 | 4% | 3% |
| Automobile Manufacturing | 166 | 319 | 92% | 3% |
| Pharmaceutical Preparation Manufacturing | 220 | 214 | -3% | 3% |
| Federal Government, Military | 185 | 189 | 3% | 3% |
| Industrial Machinery and Equipment Merchant Wholesalers | 183 | 192 | 5% | 3% |
| Semiconductor Machinery Manufacturing | 152 | 198 | 30% | 2% |

Source: EMSI 2021.3

Table 6. Top Employers Posting Agricultural Manufacturing Occupations in Bay Region and SC-Monterey Sub-Region (Apr 2021 - Mar 2022)

| Employer | Bay | Employer | SC-Monterey |
|---------------------------------|-----|-------------------------------|-------------|
| Protech Automotive | 52 | Threshold Enterprises Limited | 8 |
| Sysco Corporation | 22 | Protech Automotive | 8 |
| Johnson & Johnson | 22 | Nestle USA Incorporated | 6 |
| Amentum | 21 | Seametrics Inc | 4 |
| Department of Veterans Affairs | 19 | Granite Construction Company | 4 |
| Office Depot | 17 | Westrock | 3 |
| Lucid Motors Inc | 16 | City Santa Cruz | 3 |
| Bass Pro Shops | 15 | San Lorenzo Valley Unified | 2 |
| Jones Lang Lasalle Incorporated | 14 | Ocean Mist Farms | 2 |
| 24 Hour Fitness | 14 | Fresh Express | 2 |

Source: Burning Glass

Educational Supply

There is one (1) community college in the Bay Region issuing 37 awards on average annually (last 3 years ending 2018-19) on TOP 0934.20 Industrial Electronics. In the SC-Monterey Sub-Region, there are no community colleges that issued awards on average annually (last 3 years) on this TOP code.

Table 7a. Community College Awards on TOP 0934.20 Industrial Electronics in Bay Region

| College | Subregion | Associate | Certificate Low | Total |
|--------------|-----------|-----------|-----------------|-----------|
| Los Medanos | East Bay | 16 | 21 | 37 |
| Total | | 16 | 21 | 37 |

There is one (1) community college in the Bay Region issuing 6 awards on average annually (last 3 years ending 2018-19) on TOP 0199.00 Other Agriculture and Natural Resources. In the SC-Monterey Sub-Region, there are no community colleges that issued awards on average annually (last 3 years) on this TOP code.

Table 7b. Community College Awards on TOP 0199.00 Other Agriculture and Natural Resources in Bay Region

| College | Subregion | Associate | Certificate Low | Total |
|--------------|-----------|-----------|-----------------|----------|
| Santa Rosa | North Bay | 4 | 2 | 6 |
| Total | | 4 | 2 | 6 |

Source: Data Mart

Note: The annual average for awards is 2016-17 to 2018-19.

There are no community colleges in the Bay Region or SC-Monterey Sub-Region issuing awards on average annually (last 3 years ending 2018-19) on TOP 0116.00 Agricultural Power Equipment Technology.

Gap Analysis

Based on the data included in this report, there is a labor market gap in the Bay region with 840 annual openings for the Agricultural Manufacturing occupational cluster and 43 annual (3-year average) awards (combined for TOP 0934.20 and TOP 0199.00) for an annual undersupply of 797 students. In the SC-Monterey Sub-Region, there is also a gap with 93 annual openings and no annual (3-year average) awards (for TOP 0934.20 and TOP 0199.00) for an annual undersupply of 93 students.

Student Outcomes

Table 8a. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0934.20 Industrial Electronics

| Metric Outcomes | Bay All CTE Programs | Hartnell All CTE Programs | State 0934.20 | Bay 0934.20 | SC-Monterey 0934.20 | Hartnell 0934.20 |
|---|----------------------|---------------------------|---------------|-------------|---------------------|------------------|
| Students with a Job Closely Related to Their Field of Study | 74% | 66% | 75% | 81% | N/A | N/A |
| Median Annual Earnings for SWP Exiting Students | \$47,419 | \$92,128 | \$46,526 | \$56,796 | N/A | N/A |
| Median Change in Earnings for SWP Exiting Students | 23% | 5% | 44% | 47% | N/A | N/A |
| Exiting Students Who Attained the Living Wage | 52% | 73% | 68% | 77% | N/A | N/A |

Source: Launchboard Strong Workforce Program Median of 2017 to 2020.

Table 8b. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0199.00 Other Agriculture and Natural Resources

| Metric Outcomes | Bay All CTE Programs | Hartnell All CTE Programs | State 0199.00 | Bay 0199.00 | SC-Monterey 0199.00 | Hartnell 0199.00 |
|---|----------------------|---------------------------|---------------|-------------|---------------------|------------------|
| Students with a Job Closely Related to Their Field of Study | 74% | 66% | 46% | N/A | N/A | N/A |
| Median Annual Earnings for SWP Exiting Students | \$47,419 | \$92,128 | \$26,571 | \$43,312 | N/A | N/A |
| Median Change in Earnings for SWP Exiting Students | 23% | 5% | 34% | N/A | N/A | N/A |
| Exiting Students Who Attained the Living Wage | 52% | 73% | 56% | N/A | N/A | N/A |

Source: Launchboard Strong Workforce Program Median of 2017 to 2020.

Table 8c. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0116.00 Agricultural Power Equipment Technology

| Metric Outcomes | Bay All CTE Programs | Hartnell All CTE Programs | State 0116.00 | Bay 0116.00 | SC-Monterey 0116.00 | Hartnell 0116.00 |
|---|----------------------|---------------------------|---------------|-------------|---------------------|------------------|
| Students with a Job Closely Related to Their Field of Study | 74% | 66% | 78% | N/A | N/A | 75% |
| Median Annual Earnings for SWP Exiting Students | \$47,419 | \$92,128 | \$34,836 | \$41,869 | \$41,869 | \$41,869 |
| Median Change in Earnings for SWP Exiting Students | 23% | 5% | 57% | N/A | N/A | N/A |
| Exiting Students Who Attained the Living Wage | 52% | 73% | 71% | 62% | N/A | N/A |

Source: Launchboard Strong Workforce Program Median of 2017 to 2020.

Skills, Certifications and Education

Table 9. Top Skills for Agricultural Manufacturing Occupations in Bay Region (Apr 2021 - Mar 2022)

| Skill | Posting | Skill | Posting |
|-------------------------------------|---------|-------------------------|---------|
| Repair | 1,425 | Power Tools | 193 |
| Predictive/Preventative Maintenance | 555 | Plumbing | 182 |
| Hand Tools | 463 | Motor Vehicle Operation | 177 |
| Calibration | 354 | Forklift Operation | 170 |
| Machinery | 320 | Customer Service | 161 |
| Schematic Diagrams | 298 | Packaging | 158 |
| Welding | 296 | Vaccination | 158 |

| Skill | Posting | Skill | Posting |
|-------------------------------------|---------|--|---------|
| Lifting Ability | 256 | Mechanical Maintenance | 139 |
| Test Equipment | 250 | Good Manufacturing Practices (GMP) | 135 |
| Scheduling | 224 | Quality Assurance and Control | 130 |
| Robotics | 218 | Cleaning | 125 |
| Wiring | 212 | Electrical Systems | 125 |
| Soldering | 211 | Customer Contact | 123 |
| Personal Protective Equipment (PPE) | 193 | Industrial Operations Industry Knowledge | 111 |

Source: Burning Glass

Table 10. Certifications for Agricultural Manufacturing Occupations in Bay Region (Apr 2021 - Mar 2022)

| Certification | Posting | Certification | Posting |
|---|---------|--|---------|
| Driver's License | 570 | Air Brake Certified | 11 |
| CDL Class A | 94 | American Society For Quality (ASQ) Certification | 9 |
| Security Clearance | 33 | Basic Cardiac Life Support Certification | 8 |
| Welding Certification | 29 | Wastewater Treatment Plant Operator | 7 |
| Cdl Class C | 25 | Certified Calibration Technician (CCT) | 7 |
| Automotive Service Excellence (ASE) Certification | 23 | Project Management Certification | 5 |
| OSHA Forklift Certification | 20 | First Aid Cpr Aed | 5 |
| IPC Certification | 16 | Personal Fitness Trainer Certification | 4 |
| Electrician Certification | 13 | Electrical Contractor | 4 |
| Industrial Technology | 12 | Department of Transportation (DOT) Medical Certification | 4 |

Source: Burning Glass

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

Table 11. Education Requirements for Agricultural Manufacturing Occupations in Bay Region

| Education (minimum advertised) | Latest 12 Mos. Postings | Percent 12 Mos. Postings |
|------------------------------------|-------------------------|--------------------------|
| High school or vocational training | 865 | 76% |
| Associate's degree | 163 | 14% |
| Bachelor's degree and higher | 117 | 10% |

| Education (minimum advertised) | Latest 12 Mos. Postings | Percent 12 Mos. Postings |
|--------------------------------|-------------------------|--------------------------|
|--------------------------------|-------------------------|--------------------------|

Source: Burning Glass

Note: 46% of records have been excluded because they do not include a degree level. As a result, the chart above may not be representative of the full sample.

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 CCCCCO Data Mart.

Sources

- O*Net Online
- Labor Insight/Jobs (Burning Glass)
- Economic Modeling Specialists International (EMSI)
- CTE LaunchBoard 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

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