



Labor Market Analysis for Program Recommendation

Agricultural Manufacturing Occupations

Hartnell College

Prepared by the San Francisco Bay Center of Excellence for Labor Market Research
April 2022

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

0934, 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

Skill	Posting	Skill	Posting
Welding	296	Vaccination	158
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%

Education (minimum advertised)	Latest 12 Mos. Postings	Percent 12 Mos. Postings
Associate's degree	163	14%
Bachelor's degree and higher	117	10%

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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