

Labor Market Analysis for Program Modification: 0956.00/Manufacturing and Industrial Technology (Advanced Manufacturing Technician Associate of Science)

CVML Center of Excellence, March 2025



Summary

Program LMI Endorsement	Endorsed: All LMI Criteria Met <input type="checkbox"/>	Endorsed: Some LMI Criteria Met <input checked="" type="checkbox"/>	Not LMI Endorsed <input type="checkbox"/>
-------------------------	---	---	---

Program LMI Endorsement Criteria

	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Supply Gap:	<p><i>Comments:</i> There are projected to be 114 annual job openings throughout the SCV/SML subregion for the <i>manufacturing-related occupations</i>, which are less than the 374 awards conferred by educational institutions (CC + Non-CC).</p> <p>NOTE: The nine programs considered in this report also crosswalk to 20+ occupations such as <i>Civil Engineering Technologists and Technicians; Electrical and Electronics Repairers, Commercial and Industrial Equipment; and Installation, Maintenance, and Repair Workers, All Other</i>; these three occupations alone yield an additional 312 annual openings in the SCV/SML subregion. Therefore, the supply is overstated.</p>	
Living Wage: (Entry-Level, 25 th)	<p><i>Comments:</i> All five occupations in this report have an entry-level hourly wage above the SCV/SML living wage of \$16.08.</p>	
Education:	<p><i>Comments:</i> The typical entry-level education for the <i>manufacturing-related occupations</i> is an associate degree. Between 49% and 57% have completed some college or an associate degree as their highest level of education.</p>	

Emerging Occupation(s)

Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<i>Comments:</i> N/A	

The Central Valley/Mother Lode Center of Excellence for Labor Market Research (CVML COE) prepared this report to determine whether there is a supply gap in the South Central Valley/Southern Mother Lode regional labor market related to the following middle-skill occupations:

- Electrical and Electronic Engineering Technologists and Technicians (SOC 17-3023)
- Electro-Mechanical and Mechatronics Technologists and Technicians (SOC 17-3024)
- Industrial Engineering Technologists and Technicians (SOC 17-3026)
- Mechanical Engineering Technologists and Technicians (SOC 17-3027)
- Calibration Technologists and Technicians (SOC 17-3028)

Middle-skill occupations typically require a community college education while above middle-skill occupations typically require at least a bachelor's degree.

Based on the available data, there does not appear to be a supply gap for the five *manufacturing-related occupations* included in this report. This is because the nine programs considered in this report also crosswalk to occupations such as *Civil Engineering Technologists and Technicians; Electrical and Electronics Repairers, Commercial and Industrial Equipment; and Installation, Maintenance, and Repair Workers, All Other*; these occupations are not included in this report, yet they have an additional 312 annual openings in the SCV/SML subregion. Therefore, the supply is overstated. Moreover, all five occupations have entry-level wages above the subregion’s living wage and have a typical entry level education of an associate degree. **Therefore, due to some of the regional labor market criteria being met, the COE endorses this proposed program.**

Exhibit 1 lists the occupational demand, supply, typical entry-level education, and educational attainment for the five *manufacturing-related occupations*.

Exhibit 1: Labor Market Endorsement Summary

Occupation (SOC)	Demand (Annual Openings)	Supply (CC and Non-CC)	Entry-Level Hourly Earnings (25th percentile)	Typical Entry-Level Education	Community College Educational Attainment
Electrical and Electronic Engineering Technologists and Technicians (17-3023)	NCV/NML: 21 SCV/SML: 80	NCV/NML: 58 SCV/SML: 374	NCV/NML: \$23.81 SCV/SML: \$33.73	Associate degree	57%
Electro-Mechanical and Mechatronics Technologists and Technicians (17-3024)	NCV/NML: 4 SCV/SML: 8		NCV/NML: \$21.74 SCV/SML: \$21.32	Associate degree	49%
Industrial Engineering Technologists and Technicians (17-3026)	NCV/NML: 13 SCV/SML: 14		NCV/NML: \$25.25 SCV/SML: \$25.18	Associate degree	49%
Mechanical Engineering Technologists and Technicians (17-3027)	NCV/NML: 6 SCV/SML: 8		NCV/NML: \$22.25 SCV/SML: \$26.11	Associate degree	49%
Calibration Technologists and Technicians (17-3028)	NCV/NML: 3 SCV/SML: 4		NCV/NML: \$22.27 SCV/SML: \$24.00	Associate degree	49%
Total	161	432			

Demand:

- The number of jobs related to the five *manufacturing-related occupations* is projected to increase 5% through 2028, equating to 114 annual job openings (SCV/SML).
- All five occupations have an entry-level hourly wage above the living wage of \$16.08 in the SCV/SML subregion.
- There were 401 online job postings for the five *manufacturing-related occupations* over the past 12 months.
- The typical entry-level education is an associate degree for all five *manufacturing-related occupations*.
- Between 49% and 57% of workers in the field have some community college training or an associate degree as their highest level of education.

Supply:

- Between 2020 and 2023, there were 322 awards conferred by community colleges in the SCV/SML subregion.
- Between 2019 to 2022, non-community college institutions in the SCV/SML region conferred 52 awards in relevant programs.

Demand

Occupational Projections:

Exhibit 2 shows the annual percent change in jobs for the five *manufacturing-related* occupations from 2018 through 2028. Employment in these occupations experienced a 3% increase in 2022 (SCV/SML), compared to the 5% increase across all CA occupations. Employment projections through 2028 for *manufacturing-related* occupations are projected to remain slightly steady in the SCV/SML subregion.

Exhibit 2: Annual Percent Change in Jobs for Manufacturing-Related Occupations, 2018-2028

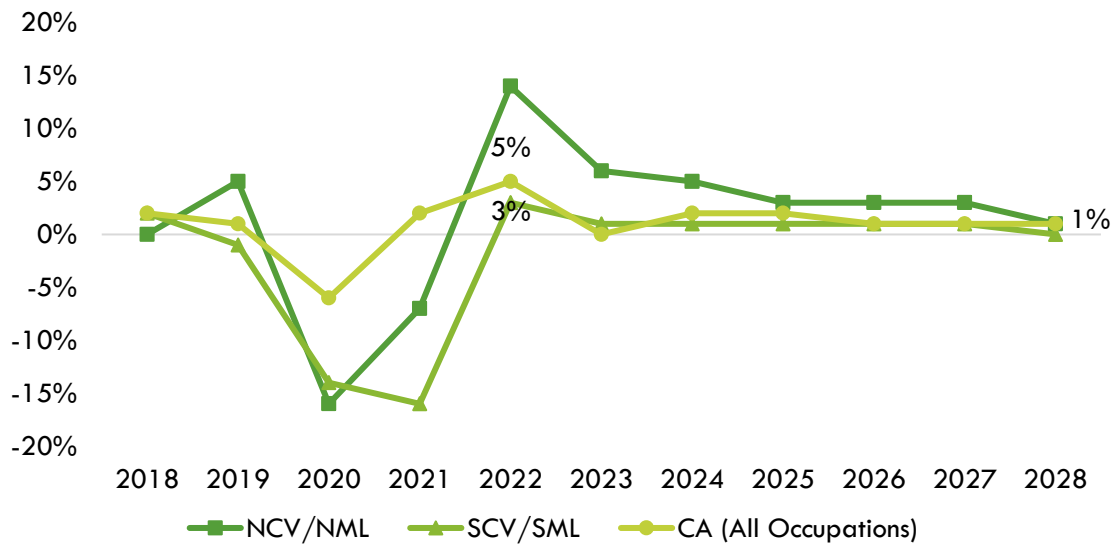


Exhibit 3 shows the five-year occupational demand projections for *manufacturing-related* occupations. In the SCV/SML subregion, the number of jobs for *manufacturing-related* occupations is projected to increase by 5% through 2028. There are projected to be 114 jobs available annually in the SCV/SML region.

Exhibit 3: Occupational Demand in NCV/NML, SCV/SML and CVML¹

Geography	2023 Jobs	2028 Jobs	2023-2028 Change	2023-2028 % Change	Annual Openings
NCV/NML	357	413	56	16%	47
SCV/SML	1,078	1,127	49	5%	114
CVML	1,435	1,540	105	7%	161

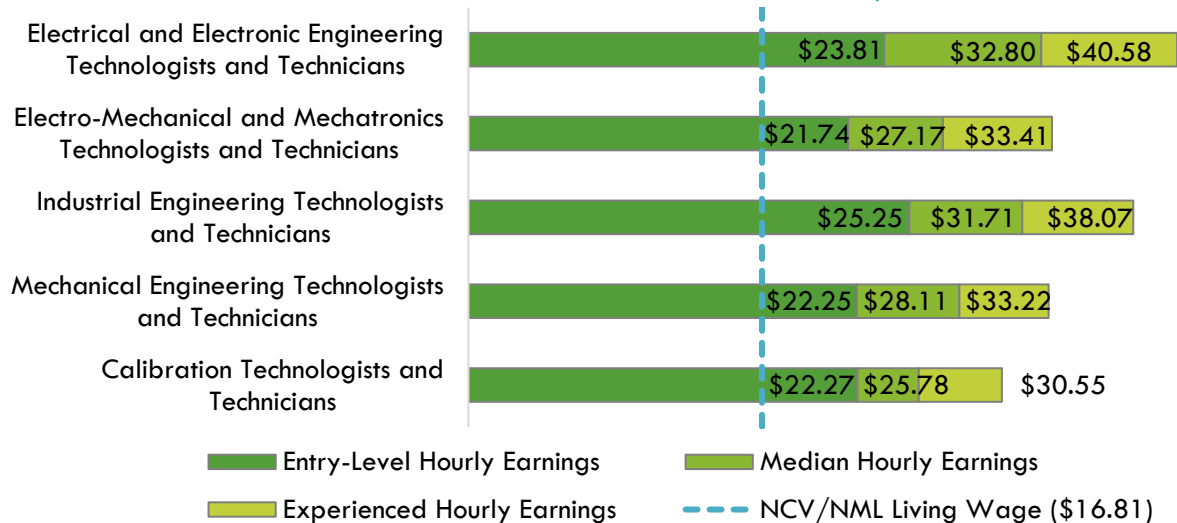
¹ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

Wages:

The labor market endorsement in this report considers the entry-level hourly wages for *manufacturing-related occupations* as they relate to the subregions and region's living wage. NCV/NML, SCV/SML and CVML wages are included below to provide a complete analysis of the subregions and region.

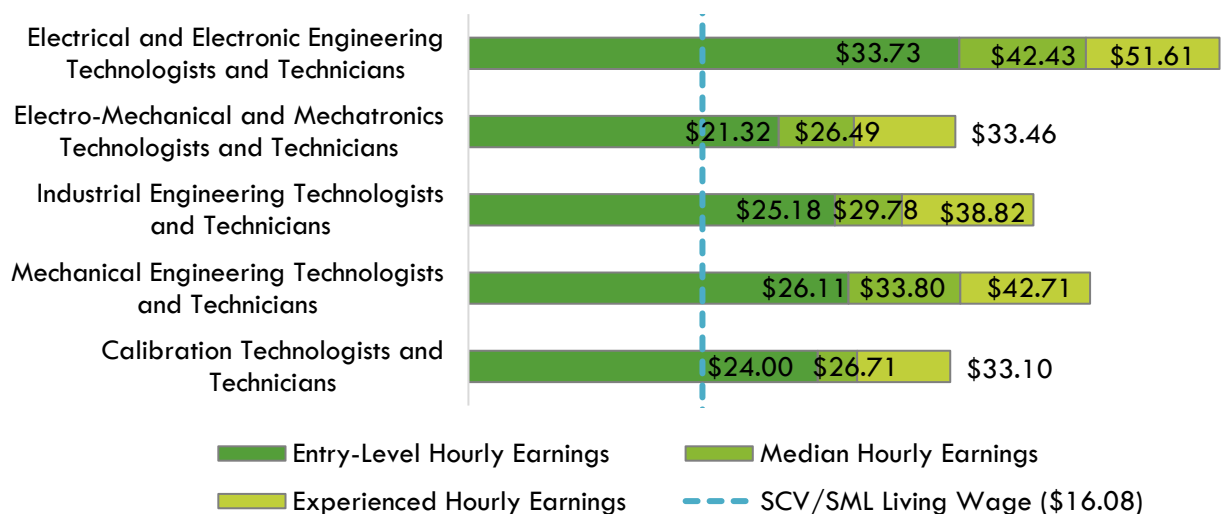
All five occupations have an entry-level hourly wage above the living wage for one adult in the NCV/NML subregion (\$16.81). The NCV/NML average wage for these occupations is \$32.72, which is below the average statewide wage of \$40.13. Exhibit 4a shows the wage range for *manufacturing-related occupations* and how they compare to the NCV/NML subregion's living wage.

Exhibit 4a: Wages by Occupation in NCV/NML



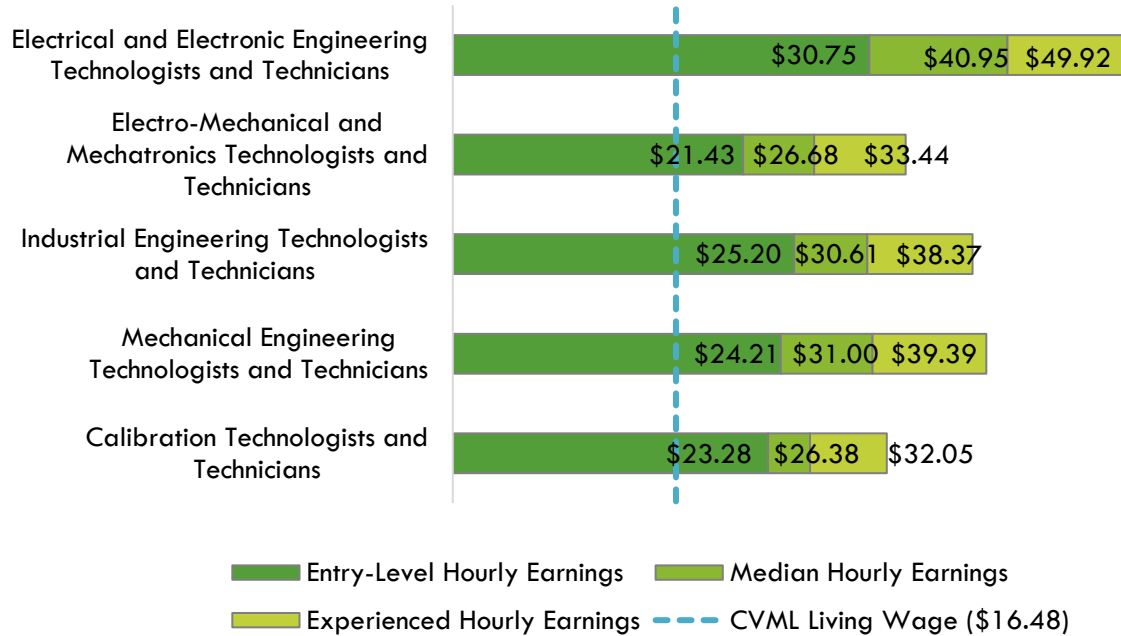
All five occupations have an entry-level hourly wage above the living wage for one adult in the SCV/SML subregion (\$16.08). The SCV/SML average wage for these occupations is \$40.47, which is slightly above the average statewide wage of \$40.13. Exhibit 4b shows the wage range for *manufacturing-related occupations* and how they compare to the SCV/SML subregion's living wage.

Exhibit 4b: Wages by Occupation in SCV/SML



All five occupations have an entry-level hourly wage above the living wage for one adult in the CVML region (\$16.48). The CVML average wage for these occupations is \$38.54, which is below the average statewide wage of \$40.13. Exhibit 5 shows the wage range for *manufacturing-related occupations* and how they compare to the CVML region’s living wage.

Exhibit 5: Wages by Occupation in CVML



Job Postings:

Important Online Job Postings Data Note: Online job postings data is sourced from Lightcast, a labor market analytics firm that scrapes, collects, and organizes data from online job boards such as LinkedIn, Indeed, Glassdoor, Monster, GovernmentJobs.com, and thousands more. Lightcast uses natural language processing (NLP) to determine the related company, industry, occupation, and other information for each job posting. However, NLP has limitations that include understanding contextual words of phrases; determining differences in words that can be used as nouns, verbs, and/or adjectives; and misspellings or grammatical errors.² For these reasons, job postings could be assigned to the wrong employer, industry, or occupation within Lightcast’s database.

Additionally, there are several limitations when analyzing job postings. A single job posting may not represent a single job opening, as employers may be creating a pool of candidates for future openings or hiring for multiple positions with a single posting. Additionally, not all jobs are posted online, and jobs may be filled through other methods such as internal promotion, word-of-mouth advertising, physical job boards, or a variety of other channels.

There were 401 online job postings for manufacturing-related occupations listed in the past 12 months. Exhibit 6 shows the job postings for each of the five occupations in this report.

Exhibit 6: Number of Job Postings by Occupation (n=401)

Occupation	Job Postings	Percentage of Job Postings
Electrical and Electronic Engineering Technologists and Technicians	210	52%
Industrial Engineering Technologists and Technicians	159	40%
Electro-Mechanical and Mechatronics Technologists and Technicians	22	5%
Mechanical Engineering Technologists and Technicians	5	1%
Calibration Technologists and Technicians	5	1%

² K. R. Chowdhary, *Fundamentals of Artificial Intelligence* (Basingstoke: Springer Nature, 2020), <https://link.springer.com/book/10.1007/978-81-322-3972-7>.

The top employers in the region for *manufacturing-related occupations* by number of job postings, are shown in Exhibit 7.

Exhibit 7: Top Employers by Number of Job Postings (n=401)

Employer	Job Postings	Percentage of Job Postings
Aerotek	14	3%
Insight Global	9	2%
Grimmway Enterprises	9	2%
EMCOR Group	6	1%
AT&T	6	1%
Kaiser Permanente	6	1%
Saputo Cheese USA	5	1%
WestRock	5	1%
Nestle	5	1%
CyberCoders	5	1%

The top specialized, common, and software skills for *manufacturing-related occupations* listed by those most frequently mentioned in job postings (denoted in parentheses) are shown in Exhibit 8.

Exhibit 8: Top Skills by Number of Job Postings (n=401)

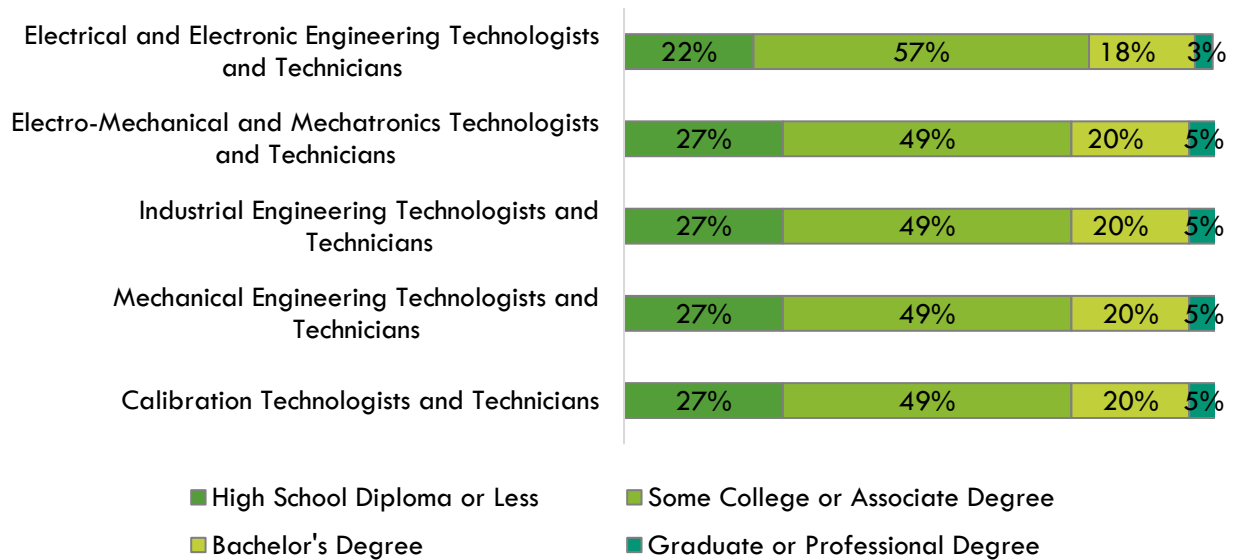
Top Specialized Skills	Top Common Skills	Top Software Skills
Automation (78)	Troubleshooting (Problem Solving) (214)	Microsoft Office (32)
Preventive Maintenance (63)	Communication (118)	Microsoft Excel (28)
Machinery (61)	Operations (115)	Microsoft Outlook (25)
Instrumentation (56)	Management (88)	Microsoft Word (13)
Electrical Wiring (55)	Problem Solving (81)	Inventory Control Systems (11)
Programmable Logic Controllers (53)	Lifting Ability (64)	Spreadsheets (9)
Blueprinting (48)	Detail Oriented (51)	Microsoft PowerPoint (9)
Hand Tools (46)	Computer Literacy (49)	Database Software (8)
Control Systems (46)	Self-Motivation (42)	SAP Applications (7)
Electrical Systems (44)	English Language (42)	Microsoft Access (6)

Educational Attainment:

The Bureau of Labor Statistics (BLS) lists an associate degree as the typical entry-level education for all five *manufacturing-related occupations*. National-level educational attainment data indicates that between 49% and 57% of workers in the field have completed some college or an associate degree as their highest level of education. Exhibit 9 shows the educational attainment for *manufacturing-related occupations*.

Of the 401 online job postings, 61% (equivalent to 246 postings) of cumulative job postings for *manufacturing-related occupations* listed a minimum education requirement in the SCV/SML subregion, and 58% (142) requested a high school diploma or GED.

Exhibit 9: National-level Educational Attainment for Manufacturing-Related Occupations



Educational Supply

Community College Supply:

Exhibits 10a and 10b show the annual and three-year average number of awards conferred by community colleges in the programs that have historically trained for the occupations included in this report. The colleges with the most completions are Fresno City (South) and Bakersfield (South).

Exhibit 10a: NCV/NML Community College Awards (Certificates and Degrees) 2020-21 through 2022-23

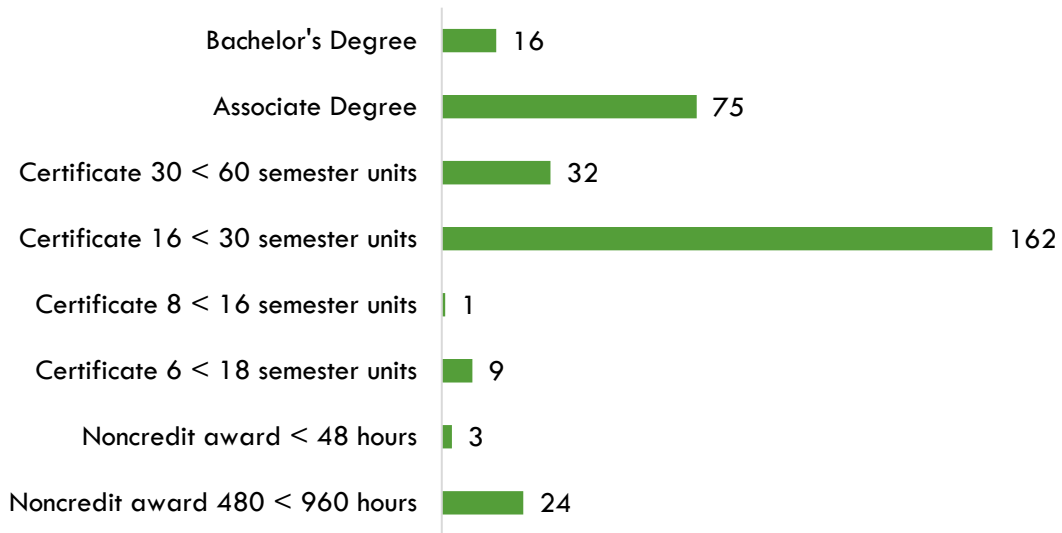
TOP Code	Program	College	2020-2021 Awards	2021-2022 Awards	2022-2023 Awards	3-Year Award Average
0924.00	Engineering Technology, General (requires Trigonometry)	Merced	2	2	2	2
Subtotal/Average			2	2	2	2
0934.00	Electronics and Electric Technology	Merced	-	2	1	1
		San Joaquin Delta	1	1	1	1
Subtotal/Average			1	3	2	2
0934.10	Computer Electronics	Merced	13	7	8	9
		Modesto	3	4	8	5
Subtotal/Average			16	11	16	14
0934.20	Industrial Electronics	Modesto	17	17	27	20
Subtotal/Average			17	17	27	20
0935.00	Electro-Mechanical Technology	San Joaquin Delta	3	4	4	4
Subtotal/Average			3	4	4	4
0943.00	Instrumentation Technology	Merced	2	-	-	1
		Modesto	1	2	13	5
Subtotal/Average			3	2	13	6
0956.00	Manufacturing and Industrial Technology	Modesto	6	5	19	10
Subtotal/Average			6	5	19	10
NCV/NML Supply Grand Total			48	44	83	58

Exhibit 10b: SCV/SML Community College Awards (Certificates and Degrees)
2020-21 through 2022-23

TOP Code	Program	College	2020-2021 Awards	2021-2022 Awards	2022-2023 Awards	3-Year Award Average
0924.00	Engineering Technology, General (requires Trigonometry)	Bakersfield	-	3	3	2
Subtotal/Average			-	3	3	2
0934.00	Electronics and Electric Technology	Bakersfield	34	36	26	32
		Fresno City	85	83	116	95
Subtotal/Average			119	119	142	127
0934.20	Industrial Electronics	Fresno City	11	9	6	9
Subtotal/Average			11	9	6	9
0935.00	Electro-Mechanical Technology	Bakersfield	51	68	96	72
		Fresno City	4	-	6	3
Subtotal/Average			55	68	102	75
0956.00	Manufacturing and Industrial Technology	Bakersfield	4	4	7	5
		Fresno City	24	29	34	29
		Madera	2	16	1	6
		Porterville	9	3	-	4
		Reedley	55	53	47	52
Subtotal/Average			94	105	89	96
0956.70	Industrial and Occupational Safety and Health	Bakersfield	2	3	13	6
		Taft	9	6	6	7
Subtotal/Average			11	9	19	13
0999.00	Other Engineering and Related Industrial Technologies	Taft	2	-	-	1
Subtotal/Average			2	-	-	1
SCV/SML Supply Grand Total			292	313	361	322

Exhibit 11 shows the annual average community college awards by type from 2020-21 through 2022-23. Of the 322 awards conferred in the SCV/SML subregion, 50% (162) of the awards were for a certificate 16 < 30 semester units.

Exhibit 11: Annual Average Community College Awards by Type, 2020-2023



Community College Student Outcomes:

Exhibit 12 shows the Strong Workforce Program (SWP) metrics for the Manufacturing and Industrial Technology program at State Center Community College District (SCCCD), the SCV/SML subregion, the CVML region, and California. Of the 5,495 manufacturing and industrial technology students statewide in the 2022-23 academic year, 12% (650) attended a CVML institution.

CVML students that exited manufacturing and industrial technology programs in the 2021-22 academic year had median annual earnings (\$43,982), which is below the statewide median annual earnings (\$56,086). Notably, 70% of SCV/SML manufacturing and industrial technology students attained a living wage, which is slightly lower than the percentage of students who attained a living wage statewide (71%).

Exhibit 12: Manufacturing and Industrial Technology (0956.00) Strong Workforce Program Metrics

SWP Metric	SCCCD	SCV/SML Region	CVML Region	California
SWP Students	206	459	650	5,495
SWP Students Who Earned 9 or More Career Education Units in the District in a Single Year	52%	54%	53%	41%
SWP Students Who Completed a Noncredit CTE or Workforce Preparation Course	56%	79%	68%	23%
SWP Students Who Earned a Degree or Certificate or Attained Apprenticeship Journey Status	36%	17%	15%	5%
SWP Students Who Transferred to a Four-Year Postsecondary Institution	N/A	N/A	N/A	2%
SWP Students with a Job Closely Related to Their Field of Study	N/A	71%	68%	71%
Median Annual Earnings for SWP Exiting Students	\$38,508 (\$18.51)	\$41,536 (\$19.97)	\$43,982 (\$21.15)	\$56,086 (\$26.96)
Median Change in Earnings for SWP Exiting Students	39%	37%	50%	39%
SWP Exiting Students Who Attained the Living Wage	60%	70%	74%	71%



2022-23



2021-22



2020-21



N/A

Non-Community College Supply:

For a comprehensive regional supply analysis, it is also important to consider the supply from other institutions in the region that provide training programs for the five occupations studied in this report. Exhibits 13a and 13b show the annual and three-year average number of awards conferred by non-community college institutions in programs that have historically trained for the occupations of interest. Between 2019 and 2022, non-community colleges in the SCV/SML subregion conferred an average of 52 awards annually in related training programs. However, there were no awards conferred in the NCV/NML subregion.

Exhibit 13a: NCV/NML Subregional Non-Community College Awards, 2019-2022

No awards conferred in the NCV/NML region

Exhibit 13b: SCV/SML Subregional Non-Community College Awards, 2019-2022

CIP Code	Program	College	2019-2020 Awards	2020-2021 Awards	2021-2022 Awards	3-Year Award Average
15.0612	Industrial Technology/Technician	California State University-Fresno	48	59	50	52
		Subtotal/Average	48	59	50	52
SCV/SML Supply Grand Total			48	59	50	52

Appendix A: Methodology

The CVML COE prepared this report by analyzing data from occupations and education programs.

Occupational data is derived from Lightcast, a labor market analytics firm that consolidates data from the California Employment Development Department (EDD), U.S. Bureau of Labor Statistics (BLS) and other government agencies. Program supply data is drawn from two systems: Taxonomy of Programs (TOP) and Classification of Instructional Programs (CIP).

Using a TOP-SOC crosswalk, the CVML COE identified middle-skill jobs for which programs within these TOP codes train. Middle-skill jobs include:

- All occupations that require an educational requirement of some college, associate degree or apprenticeship;
- All occupations that require a bachelor's degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or
- All occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training where multiple community colleges have existing programs.

The CVML COE determined labor market supply for an occupation or SOC code by analyzing the number of program completers or awards in a related TOP or CIP code. The COE developed a "supply table" with this information, which is the source of the program supply data for this report. TOP code data comes from the California Community Colleges Chancellor's Office MIS Data Mart (datamart.cccco.edu) and CIP code data comes from the Integrated Postsecondary Education Data System (nces.ed.gov/ipeds/use-the-data), also known as IPEDS. TOP is a system of numerical codes used at the state level to collect and report information on California community college programs and courses throughout the state that have similar outcomes. CIP codes are a taxonomy of academic disciplines at institutions of higher education in the United States and Canada. Institutions outside of the California Community College system do not use TOP codes in their reporting systems.

Data included in this analysis represent the labor market demand for relevant positions most closely related to the proposed program as expressed by the requesting college in consultation with the CVML COE. 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 which 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.

All representations have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. The most recent data available at the time of the analysis was examined; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and findings; however, neither the Centers of Excellence for Labor Market Research (COE), COE host district, nor California Community Colleges Chancellor's Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.

Appendix B: Data Sources

Data Type	Source
Occupational Projections, Wages, and Job Postings	<p>Traditional labor market information data is sourced from Lightcast, a labor market analytics firm. Lightcast occupational employment data are based on final Lightcast industry data and final Lightcast staffing patterns. Wage estimates are based on Occupational Employment Statistics and the American Community Survey. For more information, see https://lightcast.io/</p>
Living Wage	<p>The living wage is derived from the Insight Center's California Family Needs Calculator, which measures the income necessary for an individual of family to afford basic expenses. The data assesses the cost of housing, food, childcare, health care, transportation, and taxes. For more information, see: https://selfsufficiencystandard.org/California/</p> <p>Wage figures are used by the CCCCCO to calculate the percentage of students that attained the regional living wage.</p>
Typical Education and Training Requirements, and Educational Attainment	<p>The Bureau of Labor Statistics (BLS) provides information about education and training requirements for hundreds of occupations. BLS uses a system to assign categories for entry-level education, work experience in a related occupation, and typical on-the-job training to each occupation for which BLS publishes projections data. For more information, see https://www.bls.gov/emp/documentation/education/tech.htm</p>
Emerging Occupation Descriptions, Additional Education Requirements, and Employer Preferences	<p>The O*NET database includes information on skills, abilities, knowledges, work activities, and interests associated with occupations. For more information, see https://www.onetonline.org/help/online/</p>
Educational Supply	<p>The CCCCCO Data Mart provides information about students, courses, student services, outcomes and faculty and staff. For more information, see: https://datamart.cccco.edu</p> <p>The National Center for Education Statistics (NCES) Integrated Postsecondary Integrated Data System (IPEDS) collects data on the number of postsecondary awards earned (completions). For more information, see https://nces.ed.gov/ipeds/use-the-data/survey-components/7/completions</p>
Student Metrics and Demographics	<p>DataVista, a statewide data system supported by the California Community Colleges Chancellor's Office and hosted by Cal-PASS Plus, provides data on progress, success, employment, and earnings outcomes for California community college students. For more information, see: https://datavista.cccco.edu/</p>

Data Type	Source
Population and Occupation Demographics	<p>The Census Bureau's American Community Survey (ACS) is the premier source for detailed population and housing information. For more information, see: https://www.census.gov/programs-surveys/acs</p> <p>Data is sourced from IPUMS USA, a database providing access to ACS and other Census Bureau data products. For more information, see: https://usa.ipums.org/usa/about.shtml</p>

For more information, please contact the Central Valley/Mother Lode Center of Excellence:

Patricia Salinas, Interim District Director

patricia.salinas@scccd.edu

Ignacio Faria, Senior Research and Planning Analyst

ignacio.faria@scccd.edu

Angela Steitz, Program Specialist

angela.steitz@scccd.edu



March 2025