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Labor Market Analysis

Automotive Electric Vehicle Technology



Prepared by Central Valley/Mother Lode Center of Excellence



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COVID-19 Statement: This report includes employment projection data by Lightcast. Lightcast’s projections are modeled on recorded (historical) employment figures and incorporate several underlying assumptions, including the assumption that the economy during the projection period will be at approximately full employment or potential output. To the extent that a recession or labor shock, such as the economic effects of COVID-19, can cause long-term structural change, they may impact the projections. At this time, it is not possible to quantify the impact of COVID-19 on projections of industry and occupational employment. Other measures such as unemployment rates and monthly industry employment estimates will reflect the most recent information on employment and jobs in the state and, in combination with input from local employers, may help validate current and future employment needs as depicted here.

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Summary

The Central Valley/Mother Lode Center of Excellence developed this report for Modesto Junior College to determine whether there is demand in the local labor market that is not being met by the supply from two-year college programs. This report summarizes labor market demand, wages, skills, and postsecondary supply for *Automotive Electric Vehicle Technology*, which includes:

- Automotive Service Technicians and Mechanics (SOC 49-3023)

Key Findings

- **Occupational Demand** — *Automotive Electric Vehicle Technology* has a labor market demand of 344 annual job openings in the North Central Valley/Northern Mother Lode (NCV/NML) subregion. Automotive service technicians and mechanics has a projected growth rate of 12% over the next five years.
- **Wages** — Automotive service technicians and mechanics earn an entry-level wage of \$17.66/hour which is higher than the living wage in the NCV/NML subregion, which is \$12.65/hour for a single adult.¹
- **Employers and Occupational Titles** — Employers in the NCV/NML subregion include Les Schwab Tire Center, Walmart, and Pep Boys. The most common occupational title and job title in job postings in the subregion is Automotive Service Technicians and Mechanics.
- **Skills and Certifications** — The top baseline skill is customer service, the top specialized skill is tires, and the top software skill is inventory control systems.
- **Education** — A postsecondary nondegree award is typically required for automotive service technicians and mechanics.
- **Supply and Demand Analysis** — Based on 344 annual openings (i.e., demand), and 192 postsecondary degrees awarded (i.e., supply), an analysis of supply and demand suggests there is an undersupply of 152 workers in the NCV/NML subregion. In the CVML region, 417 awards were conferred suggesting an undersupply of 446 workers.

Recommendation

Based on a comparison of demand and supply, there is an undersupply of trained workers in *Automotive Electric Vehicle Technology* in the NCV/NML subregion and the CVML region. The Center of Excellence recommends that Modesto Junior College work with the regional directors, the college's advisory board, and local industry in the development of programs to address the shortage of *Automotive Electric Vehicle Technology* workers in the region.

¹ The term "living wage" in Center of Excellence reports is calculated by averaging the self-sufficiency wages from the Insight Center's California Family Needs Calculator for each county in the subregion: <https://insightccd.org/tools-metrics/self-sufficiency-standard-tool-for-california/>.

Introduction

The Central Valley/Mother Lode Center of Excellence developed this report to provide Modesto Junior College with labor market information for *Automotive Electric Vehicle Technology*. The geographical focus for this report is the North Central Valley/Northern Mother Lode (NCV/NML) subregion, but regional demand and supply data has been included for broader applicability and use. Analysis of the program and occupational data related to *Automotive Electric Vehicle Technology* is included in the report. The Standard Occupational Classification (SOC) System code and occupational title used in this report from the Bureau of Labor Statistics and O*NET OnLine is shown below.

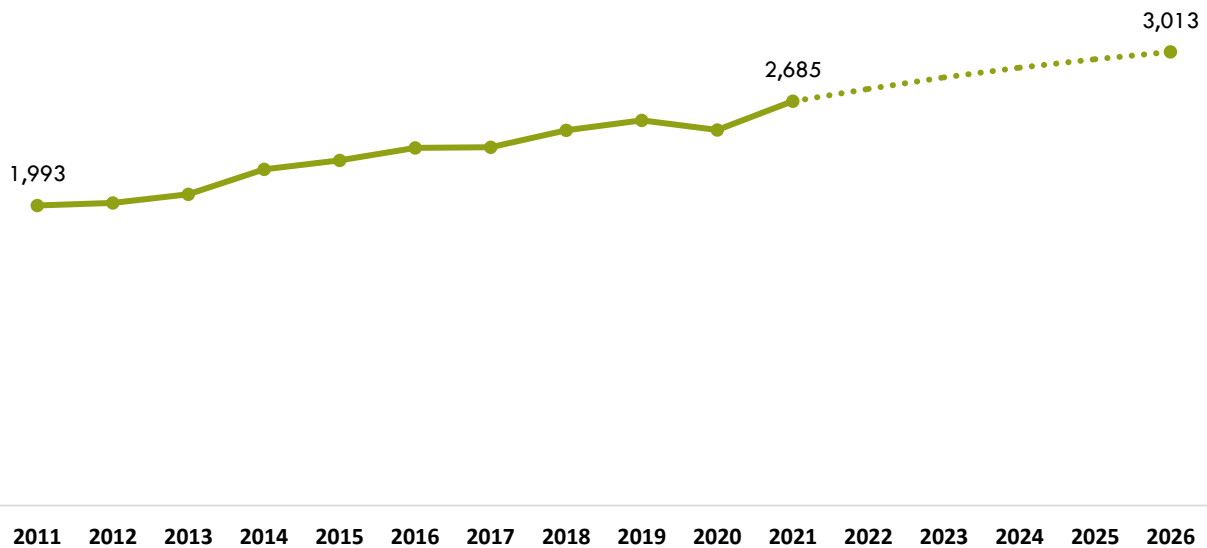
Automotive Service Technicians and Mechanics (SOC 49-3023)

- **Job Description:** Diagnose, adjust, repair, or overhaul automotive vehicles
- **Knowledge:** Mechanical, Computers and Electronics, Customer and Personal Service, Engineering and Technology
- **Skills:** Repairing, Troubleshooting, Critical Thinking, Operations Monitoring, Equipment Maintenance

Occupational Demand

Exhibit 1a shows trends for *Automotive Electric Vehicle Technology* in the NCV/NML subregion. Between 2021 to 2026, the number of jobs for *Automotive Electric Vehicle Technology* is projected to increase by 328 jobs, or 12 percent.

Exhibit 1a. Occupational projections for *Automotive Electric Vehicle Technology* in the NCV/NML subregion



Between 2021 to 2026, *Automotive Electric Vehicle Technology* in the NCV/NML subregion employed 2,685 workers (Exhibit 1b). Automotive service technicians and mechanics are projected to grow by 12% over the next five years and have projected annual openings of 344.

Exhibit 1b. Occupational projections for *Automotive Electric Vehicle Technology* in the NCV/NML subregion

Occupation	2021 Jobs	2026 Jobs	5-Year Change	5-Year % Change	Annual Openings
Automotive Service Technicians and Mechanics	2,685	3,013	328	12%	344
TOTAL	2,685	3,013	328	12%	344

Wages

The average living wage for a single adult in the NCV/NML subregion is \$12.65/hour.² Exhibit 2 shows the entry-hourly wages for automotive service technicians and mechanics related to *Automotive Electric Vehicle Technology*, which is \$17.66/hour.³ Please note 10th and 25th percentiles are considered entry-level wages while 75th and 90th are considered experienced wages, either by gained by long-term employment, extra training, etc.

Exhibit 2. Hourly wages for *Automotive Electric Vehicle Technology* in the NCV/NML subregion

Occupation	Pct. 25 Hourly Earnings	Median Hourly Earnings	Pct. 75 Hourly Earnings
Automotive Service Technicians and Mechanics	\$17.66	\$22.92	\$28.53

² The term “living wage” in Center of Excellence reports is calculated by averaging the self-sufficiency wages from the Insight Center’s California Family Needs Calculator for each county in the subregion: <https://insightccd.org/tools-metrics/self-sufficiency-standard-tool-for-california/>.

³ Entry-level wages are derived from the 25th percentile.

Job Postings

There were 1,318 job postings for *Automotive Electric Vehicle Technology* in the NCV/NML subregion from September 2022 to February 2023.⁴

Top Employers

The top employers with the most job postings are listed in Exhibit 3. The top employers in online job postings were Les Schwab Tire Center, Walmart, and Pep Boys.

Exhibit 3. Top employers of *Automotive Electric Vehicle Technology* by number of job postings

Employer
Les Schwab Tire Center
Walmart
Pep Boys
Jiffy Lube
Chrysler
Lithia Motors
Chevrolet
Goodyear
Toyota Motors
Monro Auto Service and Tire Centers

Top Occupational Titles

Exhibit 4 shows the O*NET OnLine occupational titles for *Automotive Electric Vehicle Technology* in the NCV/NML subregion. Common job titles in postings include: Service Technicians, Automotive Technicians, and Lube Technicians.

Exhibit 4. Top occupational titles in job postings for *Automotive Electric Vehicle Technology*

Occupational Title
Automotive Service Technicians and Mechanics

⁴ Other than occupation titles and job titles, the categories below can be counted one or multiple times per job posting, and across several areas in a single posting. For example, a skill can be counted in two different skill types, and an employer can indicate more than one education level.

Education

Of the 1,318 job postings, 596 listed a preferred or minimum educational requirement for the position being filled. Among those, 40% requested High school or GED, 3% requested an associate degree, and 2% requested a bachelor's degree (Exhibit 5).

Exhibit 5. Education levels requested in job postings for Automotive Electric Vehicle Technology

Education Level	Job Postings	% of Job Postings
High school or GED	523	40%
Associate degree	40	3%
Bachelor's degree	28	2%
Master's degree	4	0%
Ph.D. or professional degree	1	0%

Baseline, Specialized, and Software Skills

Exhibit 6 depicts the top baseline, specialized, and software skills in job postings. The three most important baseline skills are Customer Service, Communications, and Troubleshooting. The top three specialized skills are Tires, Batteries, and Automotive Services. The top software is Inventory Control Systems.

Exhibit 6. In-demand baseline, specialized, and software skills for Automotive Electric Vehicle Technology

Baseline Skills	Specialized Skills	Software Skills
Customer Service	Tires	Inventory Control Systems
Communications	Batteries	Disassembler
Troubleshooting (Problem Solving)	Automotive Services	Linux
Management	Brakes	Business Software
Operations	Vehicle Maintenance	Spreadsheets

Education, Work Experience, & Training

A postsecondary nondegree award is typically required for automotive service technicians and mechanics (Exhibit 7).

Exhibit 7. Education, work experience, training, and Current Population Survey results for Automotive Electric Vehicle Technology⁵

Occupation	Typical Entry-level Education	Work Experience Required	Typical On-The-Job Training	CPS
Automotive Service Technicians and Mechanics	Postsecondary nondegree award	None	Short-term	35.7%

⁵ "Labor Force Statistics from the Current Population Survey," Bureau of Labor Statistics, <https://www.bls.gov/cps/>.

Supply

An analysis of program data from the Integrated Postsecondary Education Data System (IPEDS) for the last three program years shows that, on average, 192 awards were conferred in the NCV/NML subregion (Exhibit 8 and 9).

Exhibit 8. TOP and CIP codes for Automotive Electric Vehicle Technology

TOP Titles	CIP Titles
094840 - Alternative Fuels and Advanced Transportation Technology	470614 - Alternative Fuel Vehicle Technology/Technician

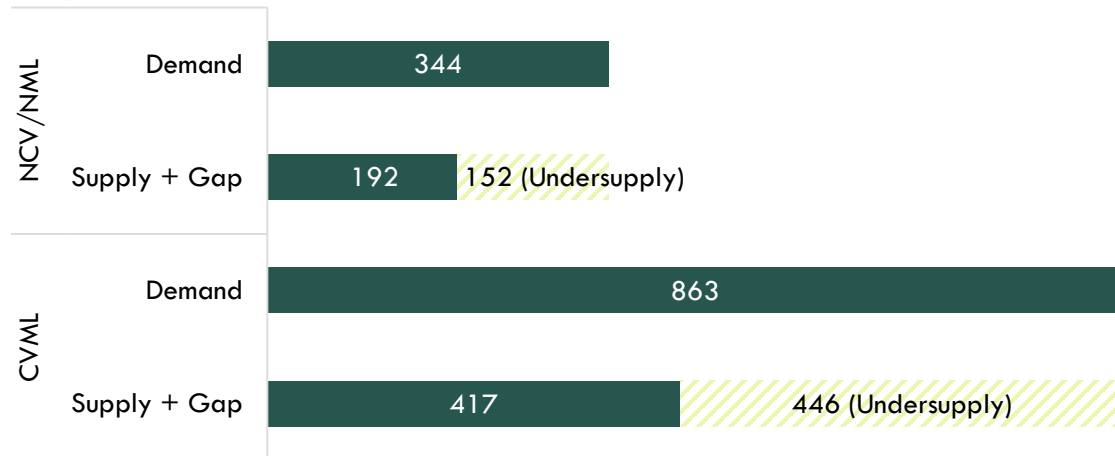
Exhibit 9. Postsecondary supply for Automotive Electric Vehicle Technology

TOP/CIP Code- Title	College	Associate Degree	Certificate 12 < 18 Semester Units	Certificate 16 < 30 Semester Units	Certificate 18 < 30 Semester Units	Certificate 30 < 60 Semester Units	Certificate 6 < 18 Semester Units	Certificate 60+ Semester Units	Certificate 8 < 16 Semester Units	Noncredit Award 960+ Hours	Total
094800 - Automotive Technology	Bakersfield	10		19	61	20	0				110
	Columbia	2	6		3	3	7		1		22*
	Fresno City	12						1		6	19
	Merced	8		9	29	32					78*
	Modesto	7	4	2	4	8			2		27*
	Reedley College	9				43					52
	San Joaquin Delta	10		7	18	30					65*
	Sequoias	6					1	37			44
NCV/NML TOTAL		27	10	18	54	73	7	0	3	0	192
CVML TOTAL		64	10	37	115	137	44	1	3	6	417

*NCV/NML awards

There is an undersupply of 152 *Automotive Electric Vehicle Technology* workers in the NCV/NML subregion and an undersupply of 446 workers in the region (Exhibit 10).

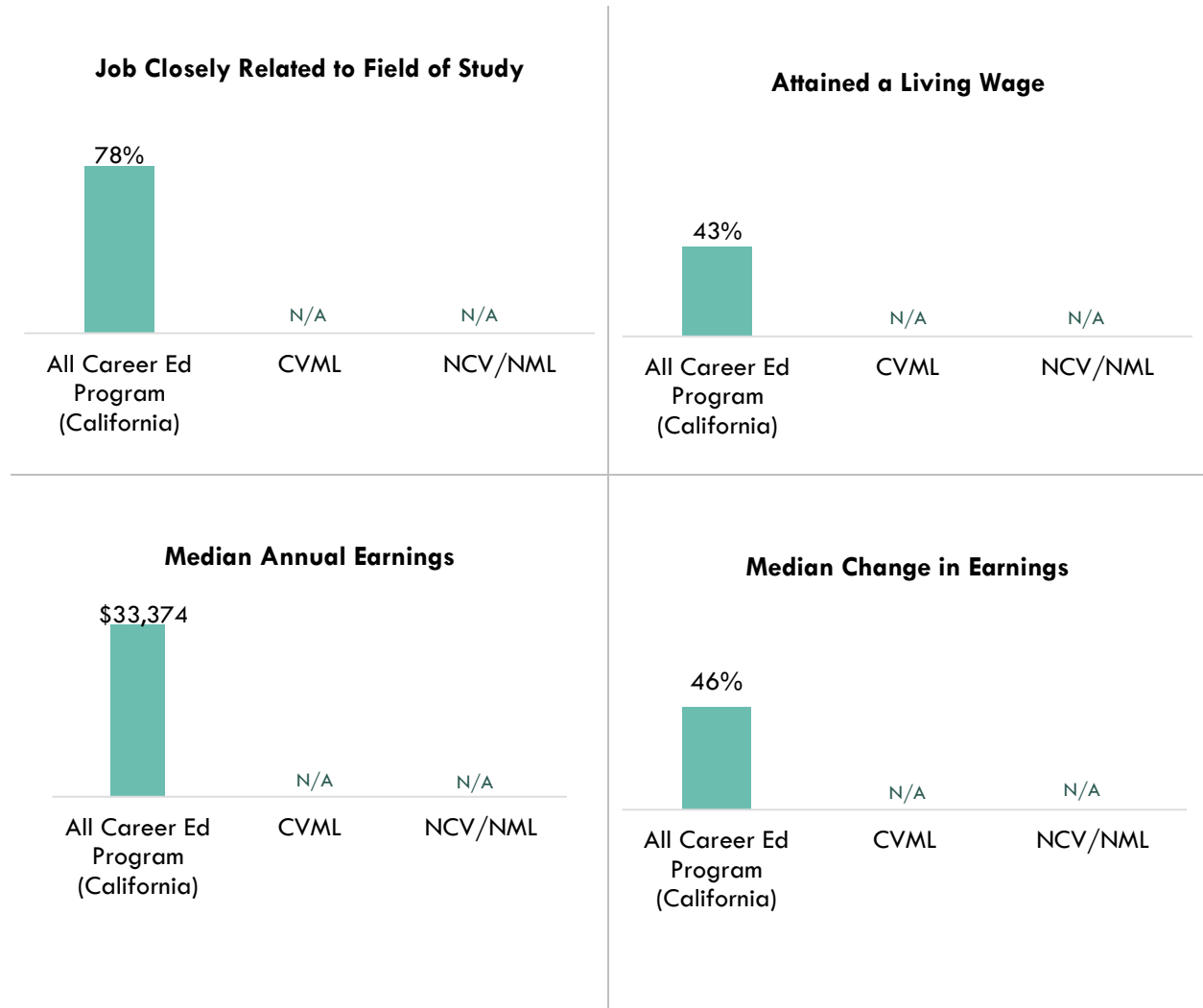
Exhibit 10. *Automotive Electric Vehicle Technology* workforce demand (annual job openings), postsecondary awards (supply), and additional students needed to fill gap in the NCV/NML subregion and region



Student Outcomes

Exhibits 11 summarize outcomes from California Community College Chancellor’s Cal-PASS Plus LaunchBoard for TOP codes related to *Automotive Electric Vehicle Technology*. Notably, there was no data available for either students who obtained a job closely related to their field of study or students who attained a living wage in the subregion.

Exhibit 11. Metrics for TOP 094840 - Alternative Fuels and Advanced Transportation Technology



Recommendation

This report suggests there is a shortage of 152 workers in the NCV/NML subregion and a shortage of 446 workers in the CVML region for *Automotive Electric Vehicle Technology*. Based on these findings, it is recommended that Modesto Junior College work with the regional directors, the college’s advisory board, and local industry in the development of programs to address the shortage of *Automotive Electric Vehicle Technology* workers in the region.

Appendix: Methodology & Data Sources

Data Sources

Labor market and educational supply data compiled in this report derive from a variety of sources. Data were drawn from external sources, including the Economic Modeling Specialists, Inc., the California Community Colleges Chancellor’s Office Management Information Systems Data Mart and the National Center for Educational Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS). Below is the summary of the data sources found in this study.

Data Type	Source
Labor Market Information/Population Estimates and Projections/Educational Attainment	Economic Modeling Specialists, Intl. (LIGHTCAST). LIGHTCAST occupational employment data are based on final LIGHTCAST industry data and final LIGHTCAST staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates also affected by county-level LIGHTCAST earnings by industry: economicmodeling.com .
Typical Education Level and On-the-job Training	Bureau of Labor Statistics (BLS) uses a system to assign categories for entry-level education and typical on-the-job training to each occupation for which BLS publishes projections data: https://www.bls.gov/emp/tables/educational-attainment.htm .
LaunchBoard	Chancellor’s Cal-PASS Plus LaunchBoard. https://www.calpassplus.org/LaunchBoard/SWP.aspx
Labor Force, Employment and Unemployment Estimates	California Employment Development Department, Labor Market Information Division: labormarketinfo.edd.ca.gov .
Job Posting and Skills Data	Burning Glass: burning-glass.com/ .
Additional Education Requirements/ Employer Preferences	The O*NET Job Zone database includes over 900 as well as information on skills, abilities, knowledge, work activities and interests associated with specific occupations: onetonline.org .

Key Terms and Concepts

Annual Job Openings: Annual openings are calculated by dividing the number of years in the projection period by total job openings.

Education Attainment Level: The highest education attainment level of workers age 25 years or older.

Employment Estimate: The total number of workers currently employed.

Employment Projections: Projections of employment are calculated by a proprietary Economic Modeling Specialists, Intl. (LIGHTCAST) formula that includes historical employment and economic indicators along with national, state and local trends.

LaunchBoard (Attained the Living Wage): Among SWP students who exited college and did not transfer to any postsecondary institution, the proportion who attained the district county living wage for a single adult measured immediately following academic year of exit

LaunchBoard (Median Annual Earnings): Among SWP students who exited the community college system and who did not transfer to any postsecondary institution, median earnings following the academic year of exit.

LaunchBoard (Median Change in Earnings): Among SWP students who exited and who did not transfer to any postsecondary institution, median change in earnings between the second quarter prior to the beginning of the academic year of entry and the second quarter after the end of the academic year of exit from the last college attended.

LaunchBoard (Job Closely Related to Field of Study): Among SWP students who responded to the CTE Outcomes Survey and did not transfer to any postsecondary institution, the proportion who reported that they are working in a job very closely or closely related to their field of study.

Living Wage: The cost of living in a specific community or region for one adult and no children. The cost increases with the addition of children.

Occupation: An occupation is a grouping of job titles that have a similar set of activities or tasks that employees perform.

Percent Change: Rate of growth or decline in the occupation for the projected period; this does not factor in replacement openings.

Replacements: Estimate of job openings resulting from workers retiring or otherwise permanently leaving an occupation. Workers entering an occupation often need training. These replacement needs, added to job openings due to growth, may be used to assess the minimum number of workers who will need to be trained for an occupation.

Total Job Openings (New + Replacements): Sum of projected growth (new jobs) and replacement needs. When an occupation is expected to lose jobs, or retain the current employment level, number of openings will equal replacements.

Typical Education Requirement: represents the typical education level most workers need to enter an occupation.

Typical On-The-Job Training: indicates the typical on-the-job training needed to attain competency in the skills needed in the occupation.