



April 2018

LABOR MARKET ANALYSIS

Automotive Technology



Prepared by the Central Valley/Mother Lode Center of Excellence

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INTRODUCTION

The Central Valley/Mother Lode Center of Excellence was asked by Columbia College to provide labor market information for their 094800-AS Drive Train Technician program. Analysis of Taxonomy of Programs (TOP) code-title data provided 094800-Automotive Technology as the appropriate community college program for review.

Since Columbia College is in Tuolumne County, this analysis focuses on the North Central Valley/Northern Mother Lode (NCV/NML) subregion. Demand, supply and wage data for the region are also included for broader applicability and use. Analysis of the program and occupational data related to automotive technology resulted in the identification of two applicable occupations.

The occupational titles and Standard Occupational Classification (SOC) System codes are:

- Electronic Equipment Installers and Repairers, Motor Vehicles (SOC 49-2096) and
- Automotive Service Technicians and Mechanics (SOC 49-3023).

The SOC codes, occupational titles, job descriptions, some sample job titles, and knowledge and skills from the Bureau of Labor Statistics and O*NET OnLine are shown in Exhibit 1.

It is of note that the automotive service technicians and mechanics occupation is broken into two emerging occupations:

- Automotive master mechanics (SOC 49-3023.01) and
- Automotive specialty technicians (SOC 49-3023.02).

A key finding in this report is that there is an undersupply of trained workers at the regional and subregional levels; therefore, it is recommended that Columbia College work with its automotive technology advisory board and local industry in the expansion of its automotive technology program.

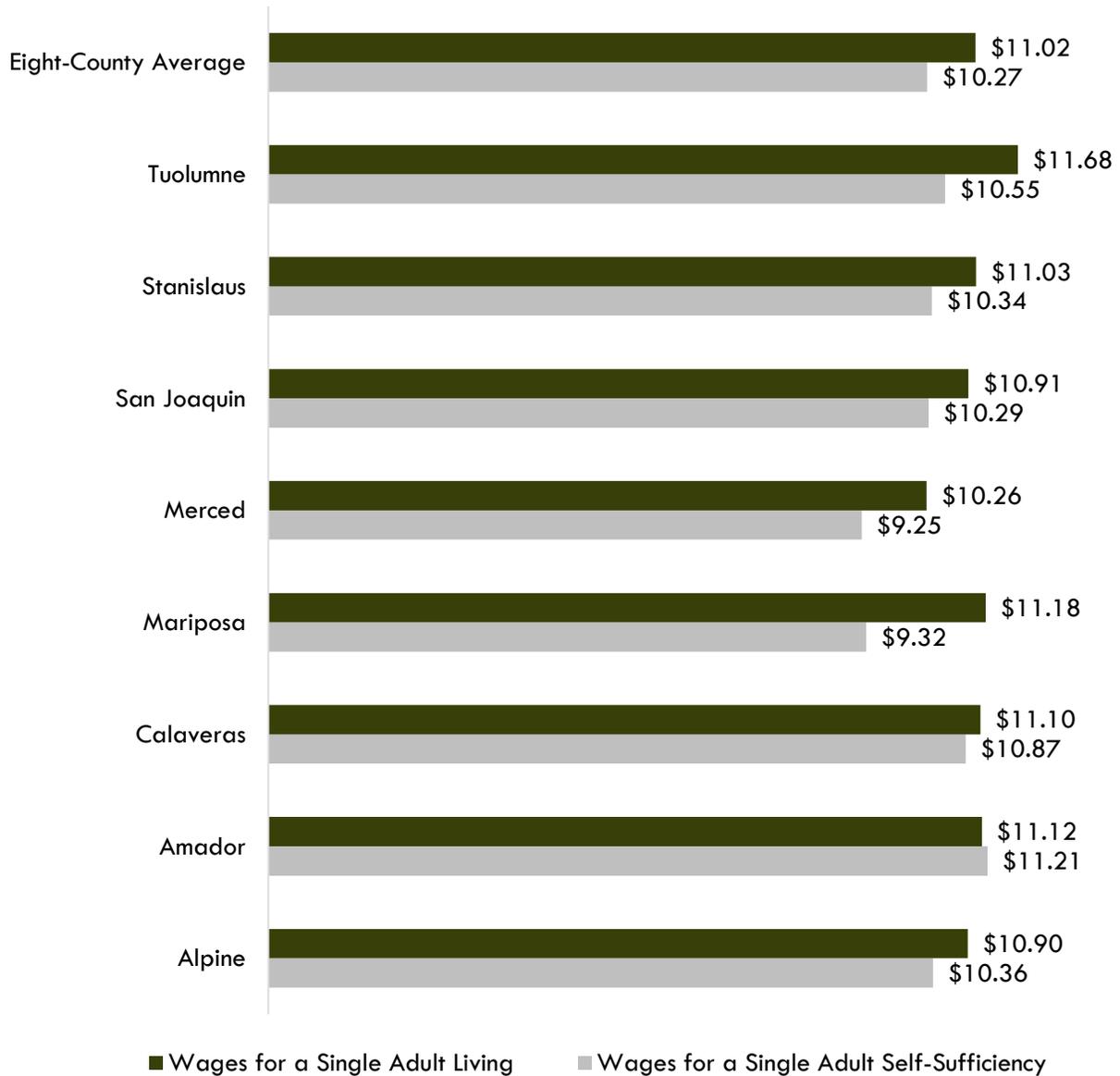
Exhibit 1. Automotive technology-related SOC titles, job descriptions, sample job titles, and knowledge and skills

SOC Title (SOC Code)	Description	Sample Job Titles	Knowledge and Skills
Electronic Equipment Installers and Repairers, Motor Vehicles (49-2096.00)	Install, diagnose, or repair communications, sound, security, or navigation equipment in motor vehicles.	Automotive Technician, Car Audio Installer, Car Electronics Installer, Car Stereo Installer, Electronic Equipment Installer, Electronic Technician, Automotive Technician,	Knowledge
			Mechanical
			Computer & Electronics
			Customer & Personal Service
			English Language
			Mathematics
			Skills
			Repairing
			Troubleshooting
			Critical Thinking
Operation Monitoring			
Active Listening			

SOC Title (SOC Code)	Description	Sample Job Titles	Knowledge and Skills
Automotive Master Mechanics (49-3023.01)	Repair automobiles, trucks, buses, and other vehicles. Master mechanics repair virtually any part on the vehicle or specialize in the transmission system.	Auto Technician, Certified ASE Master Automotive Technician (Certified Automotive Service Excellence, Master Technician, Mechanic, Shop Foreman, Truck Technician	Knowledge Mechanical Engineering & Technology Computer & Electronics Customer & Personal Service English Language Skills Equipment Maintenance Repairing Troubleshooting Equipment Selection Quality Control Analysis
Automotive Specialty Technicians (49-3023.02)	Repair only one system or component on a vehicle, such as brakes, suspension, or radiator.	A/C Technician (Air Conditioning Technician), Automobile Mechanic (Auto Mechanic), Automobile Technician, Drivability Technician, Heavy Line Technician, Lube Technician, Oil Bay Technician, Service Technician	Knowledge Mechanical Customer & Personal Service English Language Computer & Electronics Administration & Management Skills Repairing Troubleshooting Operation & Control Critical Thinking Judgment & Decision Making

The 2014 average self-sufficiency wage for a single adult in the North Central Valley/Northern Mother Lode (NCV/NML) subregion is \$10.27/hour, and the current average living wage for a single adult is \$11.02/hour. Self-sufficiency and living wage data by county and the overall eight-county average are shown in Exhibit 2. In the wages sections of this report, Pct.10 hourly denotes entry-level wages, and median represents experienced wages.

Exhibit 2. Self-sufficiency and living wages in the NCV/NML subregion



OCCUPATIONAL DEMAND

The subregion employed 3,028 automotive technology workers in 2017 (Exhibit 3). The largest occupation is automotive service technicians and mechanics with 2,956 workers in 2017. This occupation also has the greatest number of projected annual openings, 309.

The electronic equipment installers and repairers (motor vehicles) is a very small occupation with only 72 jobs in 2017. Although this occupation is expected to decline, shedding 11 jobs over the next five years, it still is expected to have seven annual openings.

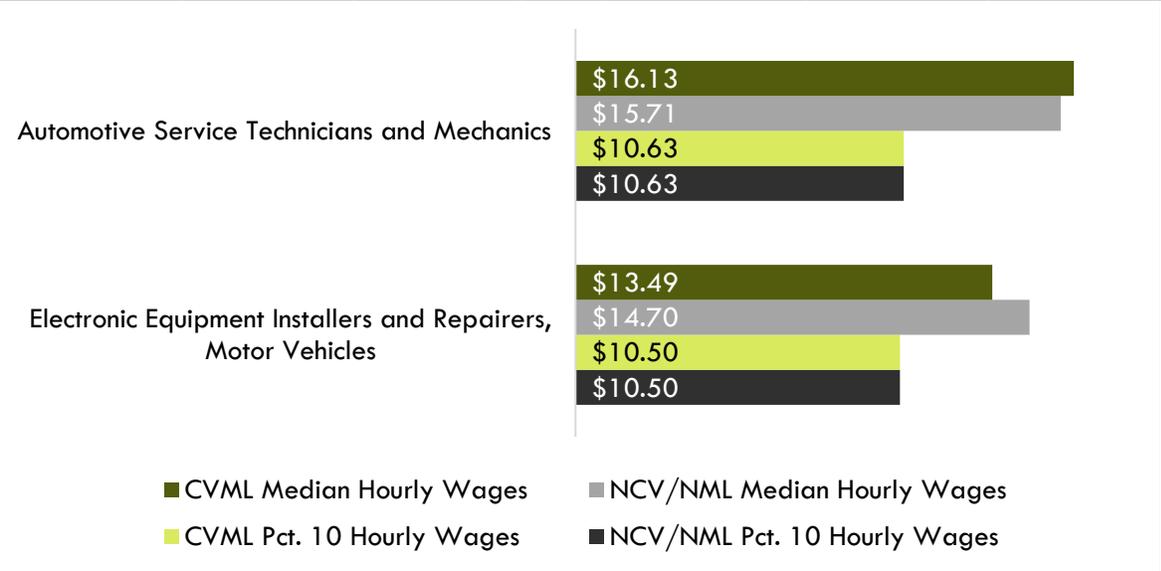
Exhibit 3. Automotive technology occupational projections in the NCV/NML subregion

Occupation	2017 Jobs	5-Year Change	5-Year % Change	Annual Openings
Automotive Service Technicians and Mechanics	2,956	148	5%	309
Electronic Equipment Installers and Repairers, Motor Vehicles	72	(11)	(15%)	7
TOTAL	3,028	137	5%	316

WAGES

Exhibit 4 compares the entry-level and experienced wages of the two automotive technology occupations. The entry-level wages for automotive service technicians, and electronic equipment installers and repairers (motor vehicles) exceeds the average self-sufficiency wage for a single adult in the eight-county subregion, \$10.29/hour. However, the entry-level wages for these occupations fall short of the subregional average living wage for a single adult \$11.02/hour.

Exhibit 4. Entry-level and experienced wage comparison in the region and subregion



JOB POSTINGS

There were 284 job postings for automotive technicians and mechanics in the eight counties of the North Central Valley/Northern Mother Lode subregion from April 2017 through March 2018. The top 10 employers advertising jobs are listed in Exhibit 5.

Exhibit 5. Top 10 automotive technology employers by number of job postings

<i>Employer</i>	<i>Job Postings</i>
Pep Boys	19
Vail Resorts Management Company	18
Americas Tire Company	14
Lithia Motors Incorporated	12
Bridgestone / Firestone	11
Tesla Motors	9
Penske	8
Reinalt Thomas Corporation	8
Carmax	7
United Parcel Service Incorporated	7

The 284 job postings for automotive technicians and mechanics in the subregion were distributed across the two sub-occupations with the majority listed under automotive specialty technicians. There were no job postings for electronic equipment installers and repairers (motor vehicle) during the one-year period analyzed (Exhibit 6).

Exhibit 6. Number of postings related to the automotive technology occupational titles

<i>Occupational Title (SOC Code)</i>	<i>Job Postings</i>
Automotive Specialty Technicians (49-3023.02)	273
Automotive Master Mechanics (49-3023.01)	11

Job Titles

Analysis of the 284 advertised job titles for the targeted occupations reveals that most postings are for mechanics followed by auto technicians, service technicians and auto mechanics. Exhibit 7 shows the top 10 job titles among the job postings.

Exhibit 7. Top automotive technology job titles by number of job postings

<i>Title</i>	<i>Job Postings</i>
Mechanic	50
Auto Technician	49
Service Technician	24
Auto Mechanic	16
Detailer	14
Maintenance Mechanic	13
Technician	10
Shop Technician	8
Lube Technician	7
Personal Package Driver	5

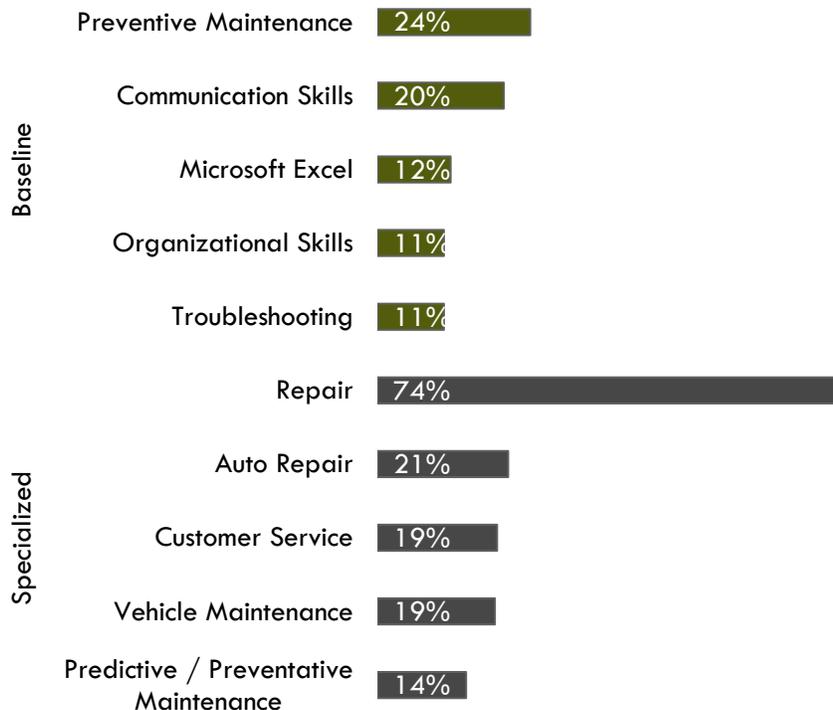


Skills

Exhibit 8 depicts the top baseline and specialized skills for automotive service technicians and mechanics. All 284 of the job postings contained skills data.

The three most important baseline skills are preventive maintenance, 24% of job postings, communication skills, 20%, and Microsoft Office, 12%. The top three specialized skills are repair, 74% of job postings, automotive repair, 21%, and customer service, 19%.

Exhibit 8. Automotive technology baseline and specialized skills

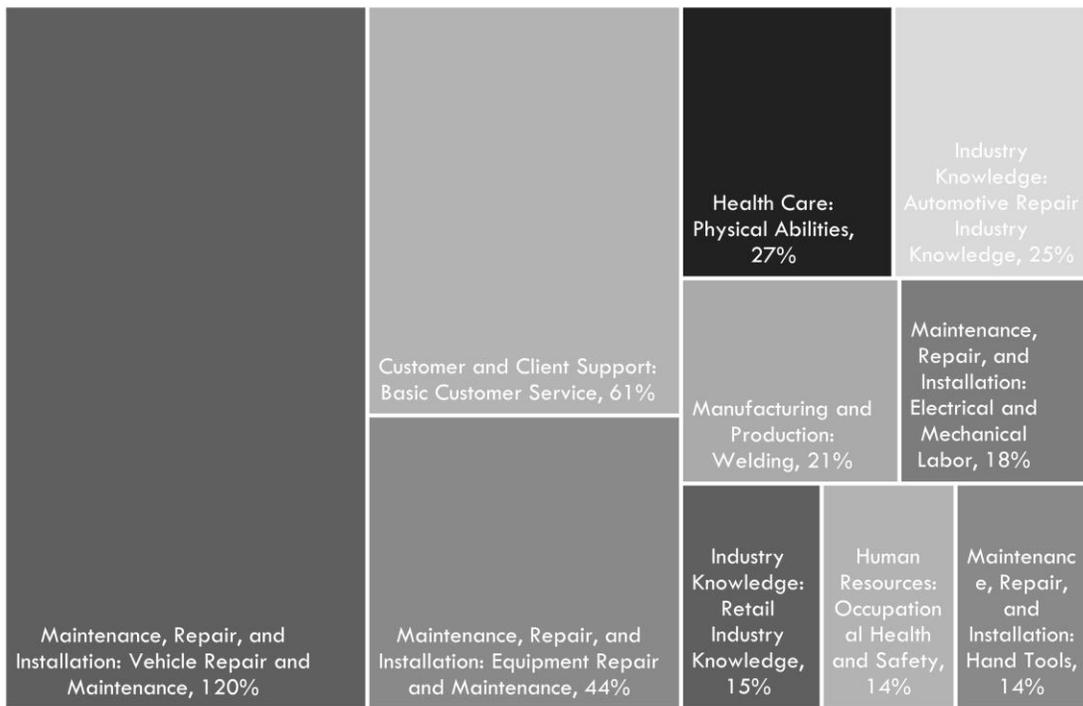


Skill Cluster Projections

Just over half of the 284 automotive technology job postings contain skill cluster projections data. Analysis of this information reveals that each of the 147 postings contains more than one skill cluster indicator. An evaluation of the top skill clusters that will have the greatest gains in level of importance shows that the top area is maintenance, repair and installation: vehicle repair and maintenance, 120%.

Other clusters with large gain projections include customer and client support: basic customer service, 61%; maintenance, repair and installation: equipment repair and maintenance, 44%; and health care: physical abilities 27% (Exhibit 9).

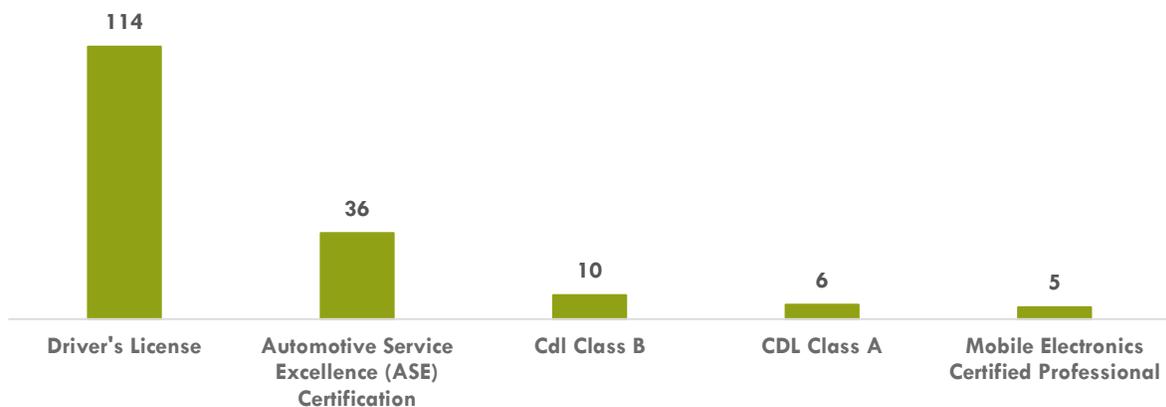
Exhibit 9. Skill cluster projections for automotive technology occupations



Certifications

Just over half of the job postings also contain certification requirements. Of these 151 postings, 114 indicated a need for a driver’s license. Other top certifications are Automotive Service Excellence (ASE) Certification, 36 job postings, Cdl Class B, 36, and CDL class A, 10. (Exhibit 10).

Exhibit 10. Automotive technology certifications requested in job postings



EDUCATION, WORK EXPERIENCE AND TRAINING

The typical entry-level education for automotive service technicians and mechanics is a postsecondary nondegree award.

The typical entry-level education for electronic equipment installers and repairers (motor vehicles) is a high school diploma or the equivalent (Exhibit 11). However, the occupation qualifies as relevant to community colleges due to one or more of the following requirements:

- State of California certification requirements,
- specialized industry knowledge and
- performance of duties that are taught through automotive technology programs offered by local community colleges.

Exhibit 11. Education, work experience, training and Current Population Survey results¹

Occupation	Typical Entry-level Education	Work Experience Required	Typical On-the-job Training	CPS
Electronic Equipment Installers and Repairers, Motor Vehicles	High school diploma or equivalent	None	Moderate-term	50.6%
Automotive Service Technicians and Mechanics	Postsecondary nondegree award	None	Short-term	33.8%

SUPPLY

Analysis of California Community College Chancellor’s Office Curriculum Inventory (COCI) program data shows there are currently eight colleges in the Central Valley/Mother Lode region that have one or more active, draft or submitted 095800-automotive technology program offerings for a total of 42 programs (28 certificate programs, 12 degree programs and two that are unknown). The colleges offering programs are:

- Bakersfield – 13 programs (four certificate and nine degree programs),
- Columbia – six programs (five certificate and one degree program),
- Fresno City – four programs (two certificate and two unknown programs),
- Merced – six programs (five certificate and one degree program),
- Modesto Junior – five programs (four certificate and one degree program),
- Reedley – two programs (one certificate and one degree program),
- San Joaquin Delta – five programs (one certificate and four degrees programs) and
- Sequoias – one degree program.

¹ “Labor Force Statistics from the Current Population Survey,” Bureau of Labor Statistics, accessed February 21, 2018, <https://www.bls.gov/cps/>.

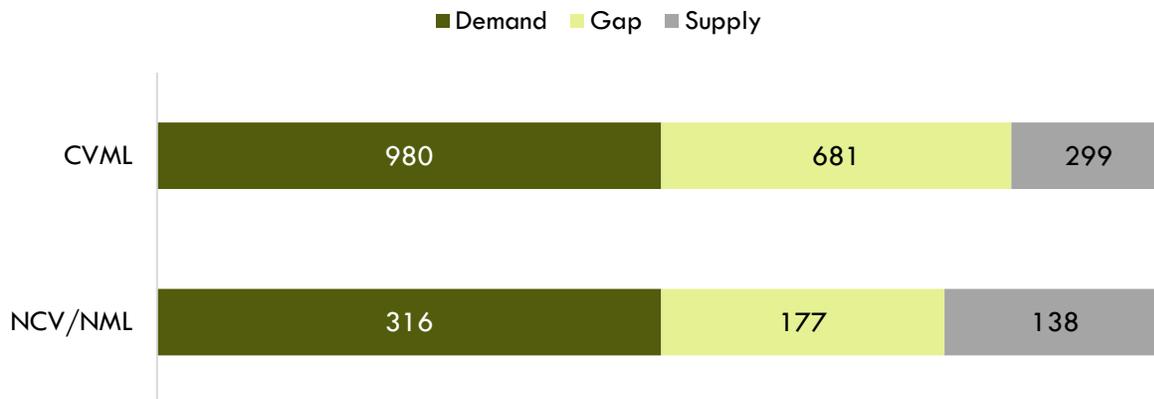
Analysis of the last three years of Taxonomy of Programs data, from 2014 through 2017, showed that, on average, 253 annual certificates and 47 degrees were conferred in the Central Valley/Mother Lode region (Exhibit 12). There were, on average, 119 certificates and 19 degrees conferred in the subregion.

Exhibit 12. Automotive technology supply in the subregion and region

TOP Title and Code	College	3-Year Average	
		Certificates	Degrees
Automotive Technology- 094800	Bakersfield	54	7
	Columbia	42	2
	Fresno City	14	9
	Merced	14	7
	Modesto Junior	21	2
	Reedley	26	5
	San Joaquin Delta	42	7
	Sequoias	39	6
	TOTAL	253	47

A gap in supply appears to exist for the region and subregion. In the region, there is a shortage of 681 trained workers. In the subregion, the shortage is 177 trained workers (Exhibit 13).

Exhibit 13. Automotive technology workforce demand and supply in the subregion and region



CONCLUSION

The entry-level wages for automotive technology occupations exceed the average self-sufficiency wage at the regional and subregional levels, but these wages fall short of the average living wage for a single adult at both levels.

There were 284 job postings in 2017 for automotive service technicians and mechanics in the North Central Valley/Northern Mother Lode subregion.

Analysis of skills and certificate requirements in job postings indicates:

- The top baseline skill requirement is preventative maintenance, and the top specialized skill is repair.
- The top certification is a driver's license.

There are 42 community college automotive technology programs that are contributing to workforce supply in the region, but there remains an undersupply of trained workers, a shortage of 681 in the region and 177 in the subregion.

RECOMMENDATION

It is recommended that Columbia College work with its advisory board and local industry in the expansion of its automotive technology program.



APPENDIX A: 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. (EMSI). EMSI occupational employment data are based on final EMSI industry data and final EMSI 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 EMSI earnings by industry: economicmodeling.com .
Living Wage	A living wage calculator that estimates the cost of living in a specific community or region: livingwage.mit.edu .
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: www.bls.gov/emp/ep_education_tech.htm .
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, http://www.burning-glass.com/
Additional Education Requirements/ Employer Preferences	The O*NET Job Zone database includes over 900 occupations as well as information on skills, abilities, knowledge, work activities and interests associated with specific occupations: www.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. (EMSI) formula that includes historical employment and economic indicators along with national, state and local trends.

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.

Wages Family Compositions: The living wage calculator estimates the living wage needed to support families. For single adult families, the adult is assumed to be employed full time. For two adult families where both adults are in the labor force, both adults are assumed to be employed full time. For two adult families where one adult is not in the labor force, one of the adults is assumed to be employed full time while the other non-wage-earning adult provides full-time child care for the family's children. Full-time work is assumed to be year-round, 40 hours per week for 52 weeks, per adult. Families with one child are assumed to have a 'young child' (4 years old). Families with two children are assumed to have a 'young child' and a 'child' (9 years old). Families with three children are assumed to have a 'young child,' a 'child,' and a 'teenager' (15 years old).