

Automotive Clean Vehicle Technology

Inland Empire/Desert Region (Riverside and San Bernardino counties combined)

Summary

- Employment for automotive service technicians and mechanics is expected to **increase by 3% between 2018 and 2023**. A total of **1,217 annual job openings** will be available each year over the five-year timeframe.
- The 50th percentile, median hourly wage for automotive service technicians and mechanics is **\$19.51**, above the regional living wage standard for a two-adult household (both working) with one child.
- There was an average of **three credentials issued annually** from regional community college training programs over the last three academic years.

Introduction

The California Community College program that most closely relates to automotive clean vehicle technology is the alternative fuels and advanced transportation technology (TOP 0948.40) program. The alternative fuels and advanced transportation technology program provides students with instruction of the conversion to, installation of, and maintenance of electric vehicles, liquefied petroleum gas, compressed natural gas, hybrid fuel technologies and related systems (Taxonomy of Programs, 2012). Traditional labor market data combines both gasoline engines, clean fuels, and specialized system *automotive service technicians and mechanics* into a single occupation due to their shared task, knowledge, skill, abilities, and activities. This report will review traditional labor market research, in addition to employer job postings to illuminate employer demand for alternative/clean fuel workers. The occupational description and a sample of job titles for *automotive service technicians and mechanics* are listed below.

Automotive Service Technicians and Mechanics (49-3023)

Diagnose, adjust, repair, or overhaul automotive vehicles.

Sample job titles: Auto Clutch Rebuilder, Auto Clutch Specialist, Auto Radiator Specialist, Auto Suspension and Steering Mechanic, Auto Transmission Specialist, Automotive Alignment Specialist, Automotive Brake Adjuster, Automotive Brake Specialist, Automotive Brake Technician, Automotive Fuel Injection Servicer, Automotive Fuel Systems Converter, Automotive Specialty Technician, Hybrid Car Mechanic, Motor Tune-Up Specialist

Entry-Level Educational Requirement: Postsecondary nondegree award

Training Requirement: Less than one-month on-the-job training

Work Experience Required: None

Incumbent workers with a Community College Award or Some Postsecondary Coursework: 35%

Job Opportunities

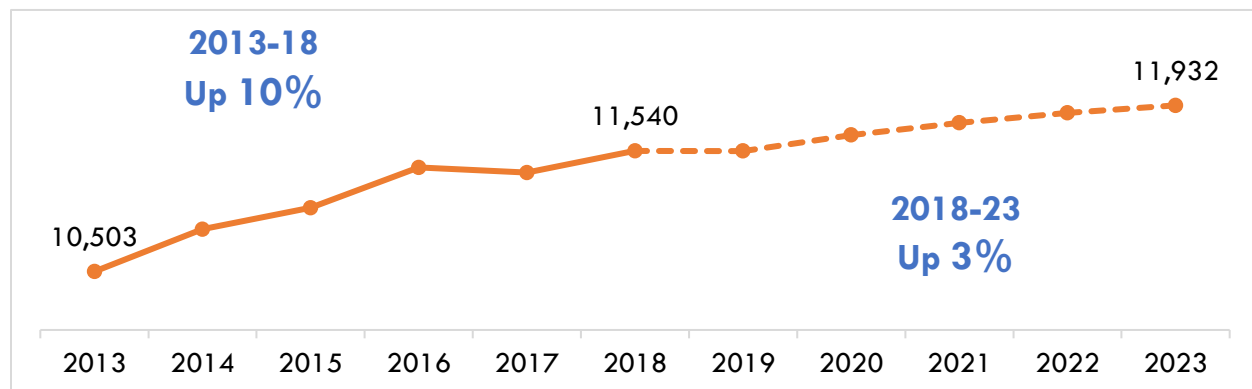
In 2018, there were 11,540 *automotive service technician and mechanic* jobs in the Inland Empire/Desert region (IEDR). This occupation is projected to increase employment by 3% through 2023. Employers are expected to have 6,085 job openings over the next five years to fill new jobs and backfill jobs that workers are permanently vacating (includes occupational transfers and retirements). Exhibit 1 displays five-year projected job growth, and Exhibit 2 displays historical (2013 to 2018) and projected (2018-2023) jobs for *automotive service technicians and mechanics*.

Exhibit 1: Five-year projections for automotive service technicians and mechanics

2018 Jobs	2023 Jobs	5-Yr % Change (New Jobs)	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)	% of workers age 55+
11,540	11,932	3%	6,085	1,217	22%

Source: EMSI 2020.1

Exhibit 2: Historical and projected jobs for automotive service technicians and mechanics in the IEDR, 2013 – 2023



Source: EMSI 2020.1

Job Postings

Real-time labor market information from employer job advertisements is used in this report as a supplemental way to gauge demand for *automotive service technicians and mechanics* and *clean vehicle automotive service technicians and mechanics*. Knowing the job titles, skills, employers, and educational requirements mentioned in employer job ads may provide insight into the training needed to supply

qualified candidates for these positions. A keyword filter was applied to the *automotive service technician and mechanic* job posting search to determine the demand specific to *clean vehicle automotive service technicians and mechanics*. The filters applied to this search include electric vehicle, hybrid, alternative fuel, fuel-cell, natural gas, compressed natural gas (CNG), and clean fuel.

It is important to note limitations when examining employer job ads. Job postings data is limited to the information provided by employers and the ability of artificial intelligence search engines to identify this information. Additionally, preliminary calculations by Georgetown Center on Education and the Workforce found that “just 30 to 40 percent of openings for candidates with some college or an associates degree, and only 40 to 60 percent of openings for high school diploma holders appear online” (Carnevale Et al., 2014).

Exhibit 3 displays the number of job ads posted during the last 12 months along with the local and statewide average time to fill for clean vehicle and traditional *automotive service technicians and mechanics*. There were 27 job postings for *clean vehicle technicians and mechanics*, representing less than 2% of job ads for *automotive service technicians and mechanics*. On average, regional employers fill online job postings for clean vehicle and traditional *automotive service technicians and mechanics* within 42 days. This is one day shorter than the statewide average of 43 days, indicating that local employers face similar hiring challenges as other employers in California. Job posting information for *automotive service technicians and mechanics* appears in green, while clean vehicle information appears in blue in the following tables.

Exhibit 3: Job ads and time to fill for automotive service technicians and mechanics, Feb 2019- Jan 2020

Occupation	Job Ads	Regional Average Time to Fill (Days)	California Average Time to Fill (Days)
Automotive Service Technicians and Mechanics	1,855	42	43
Clean Vehicle Automotive Service Technicians and Mechanics	27	42	43

Source: Burning Glass – Labor Insights

Earnings

The MIT Living Wage Calculator measures the wage an individual must earn to support his or herself and their family (Glasmeier, 2020). The entry-level wage for *automotive service technicians and mechanics* in the IEDR is higher than the MIT Living Wage estimate of \$12.39 per hour for a single adult living in the IEDR. The average IEDR household had 3.3 residents in 2017 (American Factfinder, 2018). This entry-level wage

is also above the MIT Living Wage estimate of \$14.75 for a two-adult household, both working with one child living in the IEDR. Variations of the hourly and annual earnings necessary to support a three-person household are displayed in Exhibit 4.

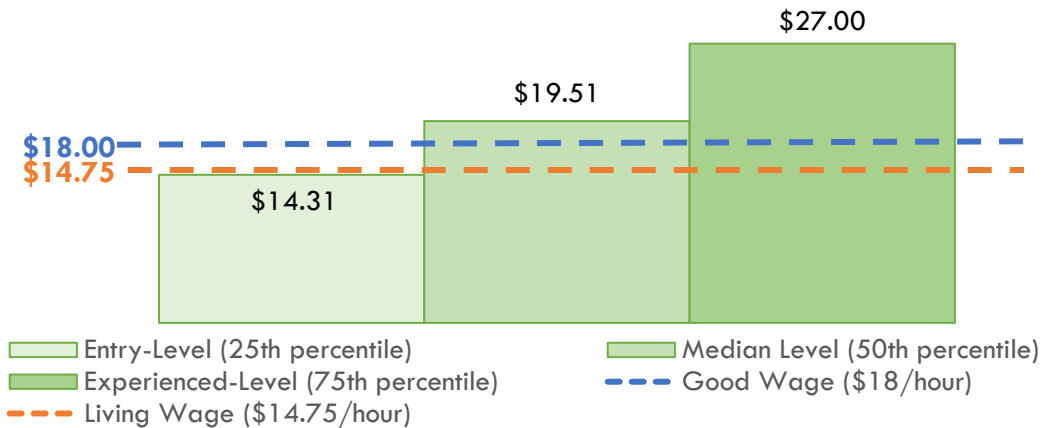
Exhibit 4: Variations in hourly and annual MIT Living Wage estimates for three resident households

Three Resident Household	Hourly Wage	Annual Wage
2 Adults (Both Working), 1 Child	\$14.75 (each adult)	\$30,700 (each adult)
2 Adults (1 Working), 1 Child	\$24.58	\$51,100
1 Adult, 2 Children	\$32.73	\$68,100

Source: MIT Living Wage Calculator

The median wage (50th percentile) for *automotive service technicians and mechanics* above the \$18.00 per hour (\$37,440 per year) “good job” wage established by the Brookings Institute in their *Advancing Opportunity in California’s Inland Empire* report (Shearer, Shah & Gootman, p. 25). Automotive service technicians and mechanics may expect to receive medical and dental insurance in addition to other benefits according to occupational guides developed by the California Labor Market Information Division (Detailed Occupational Guides, 2020). Exhibit 5 displays the hourly earnings for *automotive service technicians and mechanics* in the IEDR.

Exhibit 5: Hourly earnings for automotive service technicians and mechanics



Source: EMSI 2020.1, MIT Living Wage Calculator, Brookings Institute

Job Titles, Employers, Skills, Education, Work Experience, and Certifications

Exhibits 6 and 7 display the job titles most frequently mentioned in job postings for *traditional automotive service technicians and mechanics* and *clean vehicle automotive service technicians and mechanics* over the last 12 months in the IEDR.

Exhibit 6: Job titles for automotive service technicians and mechanics, Feb 2019 – Jan 2020

Automotive Service Technicians and Mechanics Job Titles	Job Ads
Automotive Technician	417
Service Technician	205
Mechanic	201
Lube Technician	132
Auto Mechanic	104
Technician	83
Automotive Service Advisor	65
Automotive Service Technician	57
Shop Technician	31
Brake and Alignment Technician	22
<i>All other job titles</i>	538
Total	1,855

Source: Burning Glass – Labor Insights

Exhibit 7: Job titles for clean vehicle automotive service technicians and mechanics, Feb 2019 – Jan 2020

Clean Vehicle Automotive Service Technicians and Mechanics Job Titles	Job Ads
Mechanic	12
Fleet Technician	5
Utility Service Worker (OmniTrans)	4
Auto Technician	3
Commercial Vehicle Inspection Specialist	1
ASE Technician	1
CNG Technician	1
Total	27

Source: Burning Glass – Labor Insights

Exhibits 8 and 9 display the employers that posted most job ads for *traditional automotive service technicians and mechanics* and *clean vehicle automotive service technicians and mechanics* over the last 12 months in the IEDR.

Exhibit 8: Employers posting the most job ads for automotive service technicians and mechanics, Feb 2019 – Jan 2020

Automotive Service Technicians and Mechanics Employers	Job Ads
Pep Boys	87
Chrysler	70
Bridgestone Corporation	54
Lithia Motors, Inc.	39

Automotive Service Technicians and Mechanics Employers	Job Ads
Goodyear Tire and Rubber Company	35
Les Schwab Tire Centers	34
Jiffy Lube	34
OREMOR Automotive Group	24
Cox Automotive	24
American Medical Response, Inc.	24
Mopar	21
<i>Total for all other employers</i>	<i>1,249</i>
Total	1,855

Source: Burning Glass – Labor Insights

Exhibit 9: Employers posting the most job ads for clean vehicle automotive service technicians and mechanics, Feb 2019 – Jan 2020

Clean Vehicle Automotive Service Technicians and Mechanics Employers	Job Ads
Complete Coach Works	6
OmniTrans	4
City of Riverside	2
City of Corona	2
Jurupa Unified School District	2
Eastern Municipal Water District (EMWD)	2
<i>Total for all other employers</i>	<i>9</i>
Total	27

Source: Burning Glass – Labor Insights

Exhibit 10 displays a sample of specialized and employability skills that employers are seeking when looking for workers to fill traditional and clean *automotive service technician and mechanic* positions. Specialized skills are occupation-specific skills that employers are requesting for industry or job competency. Employability skills are foundational skills that transcend industries and occupations; this category is commonly referred to as “soft skills.” The skills requested in job postings may be utilized as a helpful guide for curriculum development.

Exhibit 10: Sample of in-demand skills from employer job ads for automotive service technicians and mechanics, Feb 2019 – Jan 2020

Occupation	Specialized Skills	Employability Skills
Automotive Service Technicians and Mechanics (n=1,654)	<ul style="list-style-type: none"> Repair Customer Service Automotive Services Industry Knowledge Oil Changes Vehicle Inspection Vehicle Maintenance 	<ul style="list-style-type: none"> Communication Skills Organizational Skills Physical Abilities Troubleshooting Teamwork/Collaboration Preventative Maintenance
Clean Vehicle Automotive Service Technicians and Mechanics (n=27)	<ul style="list-style-type: none"> Repair Welding Brake Work Soldering Compressed Natural Gas (CNG) Alternative Fuels 	<ul style="list-style-type: none"> Communication Skills Troubleshooting Preventative Maintenance Physical Abilities Work Area Maintenance Building Effective Relationships

Source: Burning Glass – Labor Insights

Exhibit 11 displays the entry-level education typically required to enter this occupation according to the Bureau of Labor Statistics (BLS), educational attainment for incumbent workers with “some college, no degree” and an “associate degree” according to the U.S. Census (2016-17) and the minimum advertised education requirement from employer job ads for traditional and clean *automotive service technicians and mechanics*.

Exhibit 11: Typical entry-level education, educational attainment, and minimum advertised education requirements for automotive service technicians and mechanics, Feb 2019 – Jan 2020

Occupation	Typical Entry-Level Education Requirement	Educational Attainment (Percentage of incumbent workers with a Community College Credential or Some Postsecondary Coursework)	Minimum Advertised Education Requirement from Job Ads			
			Number of job postings	High school diploma or vocational training	Associate degree	Bachelor's degree or higher
Automotive Service Technicians and Mechanics	Postsecondary nondegree award	35%	843	98%	2%	-
Clean Vehicle Automotive Service Technicians and Mechanics	-	-	13	100%	-	-

Source: EMSI 2020.1, Burning Glass – Labor Insights

Exhibit 12 displays the typical work experience required and real-time work experience requirements from employer job ads for traditional and clean *automotive service technicians and mechanics* over the last twelve months.

Exhibit 12: Typical work experience required and real-time work experience requirements, last 12 months

Occupation	Work Experience Typically Required	Real-Time Work Experience Required from Job Ads			
		Number of job postings	0 – 2 years	3 – 5 years	6+ years
Automotive Service Technicians and Mechanics	None	903	59%	34%	7%
Clean Vehicle Automotive Service Technicians and Mechanics	-	15	67%	20%	13%

Source: EMSI 2020.1, Burning Glass – Labor Insights

About a fifth (20% - 22%) of job postings with certification information sought candidates with an Automotive Service Excellence (ASE) certification. To become an ASE certified technician, an individual must pass the ASE certification test administered by the National Institute for Automotive Service Excellence. For more information regarding testing and prerequisites, visit the National Institute for Automotive Service Excellence website (National Institute for Automotive Service Excellence, 2020). Exhibit 13 displays the certifications required by employers posting job ads for *automotive service technicians and mechanics* and *clean vehicle automotive service technicians and mechanics* in the IEDR.

Exhibit 13: Certifications required by employer job ads for automotive service technicians and mechanics, Feb 2019 – Jan 2020

Occupation	Certifications
Automotive Service Technicians and Mechanics (n=1,246)	<ul style="list-style-type: none"> Automotive Service Excellence (ASE) (22%)
Clean Vehicle Automotive Service Technicians and Mechanics (n=15)	<ul style="list-style-type: none"> Automotive Service Excellence (ASE) (20%)

Source: Burning Glass – Labor Insights

Student Completions and Program Outcomes

Exhibit 14 displays completion data for the California Community College alternative fuels and advanced transportation (0948.40) program between 2015 and 2018, as well as enrollments in the 2016/17 academic year.

Automotive technology programs also provide training for *automotive service technicians and mechanics* occupation and may contain courses that introduce alternative fuels and advanced transportation technology concepts. This program conferred an annual average of 233 credentials over the last three academic years. The student completion and outcome methodology are available on page 11.

Exhibit 14: Annual average community college credentials and enrollments for the alternative fuels and advanced transportation technology program in the IEDR

0948.40 – Alternative Fuels and Advanced Transportation Technology	Certificate		Associate of Science (A.S.)	CCC Annual Average Credentials, Academic Years 2015-18	CCC Enrollments, Academic Year 2016-17
	18 to <30	30 to <60			
	Semester Units				
Copper Mountain	-	1	-	1	-
Desert	1	-	1	2	156
Victor Valley	-	-	-	-	82
Total	1	1	1	3	241

Source: LaunchBoard, MIS Data Mart

Community college student outcome information based on the selected TOP code and region is provided in Exhibit 15.

Exhibit 15: 0948.40 – Alternative fuels and advanced transportation technology strong workforce program outcomes

Strong Workforce Program Metrics: 0948.40 – Alternative Fuels and Advanced Transportation Technology Academic Year 2016 -17, unless noted otherwise	Inland Empire/Desert Region	California
Course enrollments	241	784
Completed 9+ career education units in one year (2017-18)	54 (43%)	260 (46%)
Economically disadvantaged students	58%	64%
Students who earned a degree, certificate, or attained apprenticeship (2017-18)	-	54
Job closely related to the field of study (2015-16)	-	80%
Median annual earnings (all exiters)	\$30,456	\$30,700
Median change in earnings (all exiters)	22%	32%
Attained a living wage (completers and skills-builders)	63%	44%

Sources: LaunchBoard Community College Pipeline and Strong Workforce Program Metrics

Recommendation

The community college alternative fuels and advanced transportation technology program provides students with instruction of the conversion to, installation of, and maintenance of electric vehicles and other clean alternative fuel vehicles. Students completing this program will have the skills needed to obtain an *automotive service technicians and mechanics* middle-skill job. This occupation is expected to have 1,217 annual job openings and provides a regional living wage of \$19.51 per hour at the median-level. A search of job ads for clean vehicle automotive service technicians and mechanics revealed 27 results (out of 1,855 total job ads) over the last 12 months, between February 2019 and January 2020.

Three community colleges awarded an annual average of three credential awards to students in alternative fuels and advanced transportation technology programs over the last three academic years. Assuming that one credential is awarded to one student, the number of awards conferred is below the expected number of annual regional job openings. Based on this analysis, there appears to be an opportunity to create new or expand existing programs. Please note, the *automotive service technicians and mechanics* occupation is also trained by the community college automotive technology program (TOP 0948.00), potentially sharing a supply of credentialed job seekers. This program conferred 233 annual average credentials over the last three academic years.

Traditional labor market data does not differentiate between standard gasoline engine mechanics and clean vehicle mechanics. Job posting data was limited for clean vehicle technicians alone and should be viewed with the limitations in mind. Colleges considering alternative fuels and advanced transportation technology programs should meet with relevant employers to understand their demand for more workers and the specific skills, licensing, and credentials needed for gainful employment in this field.

Contact

Michael Goss, Director
Center of Excellence, Inland Empire/Desert Region
michael.goss@chaffey.edu
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Appendix: Student Completions and Program Outcome Methodology

Exhibit 14 displays the average annual regional California Community College (CCC) credentials conferred during the three academic years between 2015 and 2018, from the California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart, along with the enrollments from the most recent year available on LaunchBoard. Credentials are the combined total of associate degrees and certificates issued during the timeframe, divided by three in this case to calculate an annual average. This is done to minimize the effect of atypical variation that might be present in a single year. Enrollments are the count of enrollments in courses assigned to the TOP code in the selected year.

Community college student outcome information is from LaunchBoard and based on the selected TOP code and region. These metrics are based on records submitted to the California Community Colleges Chancellor's Office Management Information Systems (MIS) by community colleges, which come from self-reported student information from CCC Apply and the National Student Clearinghouse. Employment and earnings metrics are sourced from records provided by California's Employment Development Department's Unemployment Insurance database. When available, outcomes for completers are reported to demonstrate the impact that earning a degree or certificate can have on employment and earnings. For more information on the types of students included for each metric, please see the web link for LaunchBoard's Strong Workforce Program Metrics Data Element Dictionary in the References section (LaunchBoard, 2020a). Finally, employment in a job closely related to the field of study comes from self-reported student responses on the CTE Employment Outcomes Survey (CTEOS), administered by Santa Rosa Junior College (LaunchBoard, 2017).