

Automotive Service Technicians and Mechanics

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

This workforce demand report uses state and federal job projection data developed before the economic impact of COVID-19. The COE is monitoring the situation and will provide more information as it becomes available. Please consult with local employers to understand their current employment needs.

Summary

- Instruction provided by community college **automotive technology** and **alternative fuels and advanced transportation technology programs** prepare students for employment as *automotive service technicians and mechanics*. This is an **essential critical infrastructure occupation**.
- Employment for *automotive service technicians and mechanics* is expected to **increase by 4% between 2019 and 2024**. A total of **1,353 annual job openings** will be available each year over the five-year timeframe.
- The **median-level, 50th percentile, hourly wage** for *automotive service technicians and mechanics* is **\$19.32 per hour, below the \$19.94 per hour self-sustainable hourly wage** estimate for a single adult with one child in the region.
- There were **217 awards issued** from regional community college programs related to *automotive service technicians and mechanics* over the last three academic years.
- The COE **recommends** creating new or expanding existing automotive technology programs. See the recommendation section for further information.

Introduction

This report provides employer demand and educational supply data for *automotive service technicians and mechanics* in the Inland Empire/Desert region (IEDR). Subsequent sections in this report detail demand for specialty automotive positions by analyzing online job posting. The California Community College programs that prepare *automotive service technicians and mechanics* for employment are:

- Automotive Technology (TOP 0948.00)
- Alternative Fuels and Advanced Transportation Technology (0948.40)

The **automotive technology program** prepares students for employment through the instruction of the servicing, maintenance, and diagnosis of malfunctions, and repair and overhaul of components and systems in automotive vehicles. The **alternative fuels and advanced transportation technology program** prepares students for employment through instruction related to 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).

Automotive service technicians and mechanics are considered an essential critical infrastructure occupation identified by the Public Policy Institute of California. This classification of occupations is vital in supporting the basic economic and safety needs of California (Bohn et al.). Despite the ongoing pandemic, employment demand should continue due to this occupation's critical nature and the ability to social distance. The description, sample of job titles, entry-level education, and *automotive service technicians and mechanics'* training requirements are listed below.

Automotive Service Technicians and Mechanics (SOC 49-3023)

Diagnose, adjust, repair, or overhaul automotive vehicles.

Sample job titles: ASE Master Mechanic (Automotive Service Excellence Master Mechanic), Automotive Drivability Technician, Automotive Mechanic (Auto Mechanic), Automotive Service Technician, Certified ASE Master Automotive Technician (Certified Automotive Service Excellence Master Automotive Technician), Master Technician, Mechanic, Transmission Rebuilder, A/C Technician (Air Conditioning Technician), Heavy Line Technician, Lube Technician, Oil Bay Technician, Quick Service Technician, Service Technician

Entry-Level Educational Requirement: Postsecondary nondegree award

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

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

Job Opportunities

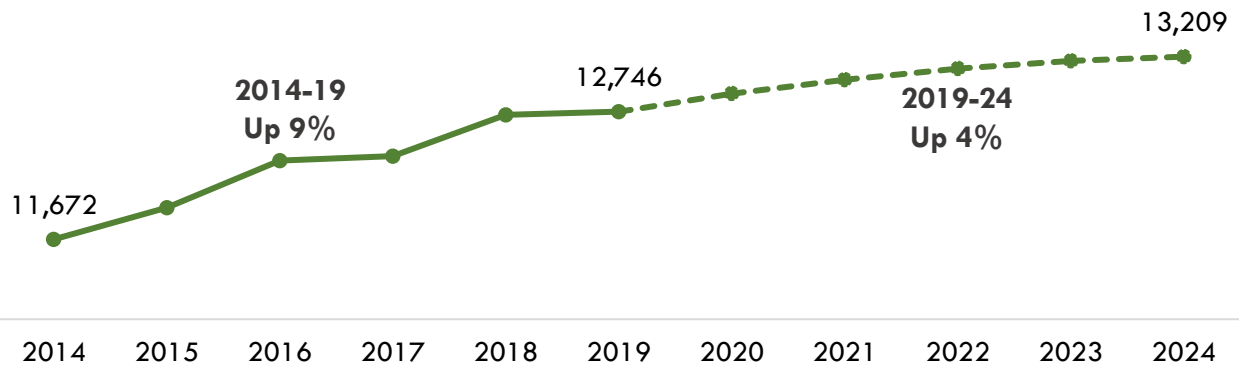
In 2019, there were 12,746 *automotive service technician and mechanic* jobs in the Inland Empire/Desert region (IEDR). This occupation is projected to increase employment by 4% through 2024. Employers are expected to have 6,765 job openings over the next five years to fill new jobs and backfill jobs that workers are permanently vacating (includes occupational transfers and retirements). Exhibit 1 displays five-year projected job growth and annual job openings through 2024, and Exhibit 2 displays historical job growth for the past five years, 2014 to 2019, in addition to projected job growth for the next five years.

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

Occupation	2019 Jobs	2024 Jobs	5-Yr % Change (New Jobs)	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)	% of workers age 55+
Automotive Service Technicians and Mechanics	12,746	13,209	4%	6,765	1,353	22%

Source: EMSI 2020.3

Exhibit 2: Historical and projected jobs for automotive service technicians and mechanics, 2014 – 2024



Source: EMSI 2020.3

Job Postings

Exhibit 3 displays the number of job ads posted during the last 12 months, along with the regional and statewide average time to fill for *automotive service technicians and mechanics*. On average, local employers fill online job postings for *automotive service technicians and mechanics* within 40 days. This regional average is one day shorter than the statewide average of 41 days, indicating that local employers face similar challenges as other employers in California as a whole.

Exhibit 3: Job ads and time to fill, Oct 2019 – Sep 2020

Occupation	Job Ads	Regional Average Time to Fill (Days)	California Average Time to Fill (Days)
Automotive Service Technicians and Mechanics	2,114	40	41

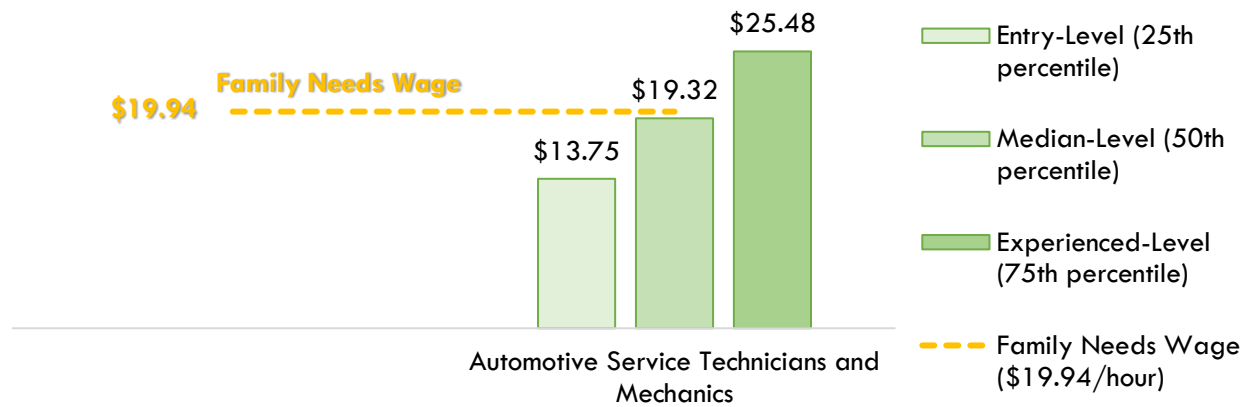
Source: Burning Glass – Labor Insights

Earnings and Benefits

Community colleges should ensure their training programs lead to employment opportunities that provide a self-sustainable level of income. The Family Needs Calculator estimates that a self-sustainable wage for a single adult with one school-age child is \$19.94 per hour or \$41,475 annually (Pearce & Manzer, 2019).

The median-level wage for *automotive service technicians and mechanics* is below the Family Needs Calculator self-sustainability rate. This occupation does not exceed this rate until at the experienced-level. Exhibit 4, on the next page, displays the hourly earnings for *automotive service technicians and mechanics* in the IEDR.

Exhibit 4: Hourly earnings for automotive service technicians and mechanics



Source: EMSI 2020.3

According to occupational guides developed by the California Labor Market Information Division, automotive service technicians and mechanics' benefits may include health insurance, retirement plans, paid holidays, and vacation (Detailed Occupational Guides, 2020).

Employers, Skills, Education, and Work Experience

Exhibit 5 displays the employers who posted more than 20 job ads for *automotive service technicians and mechanics* during the last 12 months in the IEDR.

Exhibit 5: Employers posting the most job ads for automotive service technicians and mechanics, Oct 2019 – Sep 2020

Occupation	Employers
Automotive Service Technicians and Mechanics (n=2,114)	<ul style="list-style-type: none"> • Pep Boys • Allstate • Bridgestone/Firestone • Chrysler • Jiffy Lube • Goodyear Tire and Rubber Company • Les Schwab Tire Centers • American Medical Response, Inc. • Lithia Motors, Inc. • Icahn Automotive Group LLC • Tire Choice Auto Service Centers • Honda Motor Company • Toyota Motor Corporation • Chevrolet

Source: Burning Glass – Labor Insights

Exhibit 6, on the next page, displays a sample of specialized and employability skills employers seek when looking for *automotive service technicians and mechanics*. 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 often referred to as "soft skills." The skills requested in job postings may be utilized as a helpful guide for curriculum development.

Exhibit 6: Sample of in-demand skills from employer job ads, Oct 2019 – Sep 2020

Occupation	Specialized Skills	Employability Skills
Automotive Service Technicians and Mechanics (n=1,813)	<ul style="list-style-type: none"> Automotive Repair Customer Service Oil Changes Tire Repair Vehicle Inspection 	<ul style="list-style-type: none"> Communication Skills Physical Abilities Organizational Skills Teamwork/Collaboration Troubleshooting

Source: Burning Glass – Labor Insights

Exhibit 7 displays the entry-level education typically required to become an *automotive service technician and mechanic* 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 real-time minimum advertised education requirement from employer job ads.

Exhibit 7: Typical entry-level education, educational attainment, and minimum advertised education requirements for automotive service technicians and mechanics, Oct 2019 – Sep 2020

Occupation	Typical Entry-Level Education Requirement	CC-Level Educational Attainment*	Real-Time Minimum Advertised Education Requirement			
			Number of Job Ads	High school diploma or vocational training	Associate degree	Bachelor's degree or higher
Automotive Service Technicians and Mechanics	Postsecondary nondegree award	35%	977	97%	3%	-

Source: EMSI 2020.3, Burning Glass – Labor Insights

*Percentage of incumbent workers with a Community College Credential or Some Postsecondary Coursework

Exhibit 8 displays the work experience typically required to be an *automotive service technician and mechanic* and the real-time work experience requirements from employer job ads. The majority of employers were looking for a candidate with zero to two years of work experience.

Exhibit 8: Work experience required and real-time work experience requirements, Oct 2019 – Sep 2020

Occupation	Work Experience Typically Required	Real-Time Work Experience			
		Number of Job Ads	0 – 2 years	3 – 5 years	6+ years
Automotive Service Technicians and Mechanics	None	935	61%	34%	5%

Source: EMSI 2020.3, Burning Glass – Labor Insights

Certifications

Exhibit 9 displays the certifications required by employers posting job ads for *automotive service technicians and mechanics* in the IEDR. Approximately 14% of job postings for *automotive service technicians and mechanics* sought individuals with their Automotive Service Excellence (ASE) certification. The National Institute for Automotive Service Excellence (ASE), is the testing and certifying agency for automotive professionals. To qualify for the ASE certification, an individual must pass the certification test and have two years of on-the-job training or one year of on-the-job training and a two-year degree in automotive repair (ASE, 2020).

Exhibit 9: Certifications required by employers seeking automotive service technicians and mechanics in the IEDR, Oct 2019 – Sep 2020

Occupations	Certifications
Automotive Service Technicians and Mechanics (n=1,459)	<ul style="list-style-type: none"> Automotive Service Excellence (ASE) Certification

Source: Burning Glass – Labor Insights

Salary

Exhibit 10 displays advertised salary data from *automotive service technician and mechanic* job postings over the last 12 months. Advertised salary information reveals that employers are willing to pay *automotive service technicians and mechanics* \$46,000 annually, which is above the \$42,475 (\$19.94 hourly) required annually for a family of one adult with a school-age child, to be self-sufficient in Riverside County (\$40,539 annually in San Bernardino County). Consider the salary information with caution since only 35% (740 out of 2,114) online job postings provided salary information. The salary figures are prorated to reflect full-time, annual wage status.

Exhibit 10: Advertised salary information, Oct 2019 – Sep 2020

Job Title	Number of job postings	Real-Time Salary Information				Average Annual Salary
		Less than \$35,000	\$35,000 to \$49,999	\$50,000 to \$74,999	More than \$75,000	
Automotive Service Technicians and Mechanics	740	27%	37%	31%	5%	\$46,000

Source: Burning Glass – Labor Insights

Specialty Automotive Service Technicians and Mechanics

The following sections of this report detail demand for specialty *automotive service technician and mechanic* jobs by analyzing online job postings.

Automotive Hybrid Technology

A keyword filter was applied to the automotive service technician and mechanic job posting search to determine the demand specific to hybrid vehicle automotive service technicians and mechanics. There were only four (4) job postings listed over the last twelve months for hybrid automotive service technicians and mechanics in the IEDR. To ensure sufficient job advertisements to obtain real-time information, statewide advertisements have been added to the job posting search to provide generalizable results. Over the last twelve months, there were 83 job advertisements listed in the state. Approximately 30% (25 ads) of job ads sought candidates with their ASE certification.

Exhibit 11 displays the employers who posted three or more job ads for hybrid automotive service technicians and mechanics during the last 12 months in the state. Tesla sought automotive mechanics with hybrid experience to work on their electric vehicles. The employers listed below account for 41% (34 ads) of employers posting job ads for hybrid automotive service technicians and mechanics.

Exhibit 11: Employers posting the most job ads for hybrid automotive service technicians and mechanics, Oct 2019 – Sep 2020

Occupation	Employers
Hybrid Automotive Service Technicians and Mechanics (n=83)	<ul style="list-style-type: none"> United Parcel Service (UPS) Tesla Motors Hustead's Auto Body Long Beach Transit Toyota Motor Corporation

Source: Burning Glass – Labor Insights

Exhibit 12 displays a sample of specialized and employability skills employers seek for hybrid automotive service technicians and mechanics.

Exhibit 12: Sample of in-demand skills from employer job ads, Oct 2019 – Sep 2020

Occupation	Specialized Skills	Employability Skills
Hybrid Automotive Service Technicians and Mechanics (n=78)	<ul style="list-style-type: none"> Automotive Repair Hand Tools Compressed Natural Gas Fleet Preventive Maintenance Power Plants 	<ul style="list-style-type: none"> Troubleshooting Communication Skills Computer Literacy Organizational Skills Problem Solving

Source: Burning Glass – Labor Insights

Exhibit 13 displays advertised salary data from hybrid automotive service technician and mechanic job postings over the last 12 months. Advertised salary information reveals that statewide employers are offering hybrid automotive service technicians and mechanics \$63,000 annually, which is above the average advertised wage for traditional automotive service technicians and mechanics in the IEDR, who can expect to earn \$46,000 annually. Consider the salary information with caution since only this information only reflects 42 job postings. The salary figures are prorated to reflect full-time, annual wage status.

Exhibit 13: Advertised salary information, Oct 2019 – Sep 2020

Job Title	Number of job postings	Real-Time Salary Information				Average Annual Salary
		Less than \$35,000	\$35,000 to \$49,999	\$50,000 to \$74,999	More than \$75,000	
Hybrid Automotive Service Technicians and Mechanics	42	2%	19%	60%	19%	\$63,000

Source: Burning Glass – Labor Insights

Automotive Air Conditioning and Heating

A keyword filter was applied to the *automotive service technician and mechanic* job posting search to determine the demand specific to workers with heating, ventilation, and air conditioning (HVAC) skills or experience. Over the last twelve months, there were 148 job advertisements listed for automotive service technicians and mechanics with HVAC skills in the IEDR. Approximately 51% (75 ads) of job postings sought candidates with their ASE certification.

Exhibit 14 displays the employers who posted five or more job ads for automotive service technicians and mechanics with HVAC skills or experience during the last 12 months in the IEDR.

Exhibit 14: Employers posting the most job ads for automotive service technicians and mechanics with HVAC skills or experience, Oct 2019 – Sep 2020

Occupation	Employers
Automotive Service Technicians and Mechanics (n=148)	<ul style="list-style-type: none"> • Bridgestone/Firestone • Pep Boys • Chrysler • CarMax • Riverside County • Daimler • Car Doctors of Loma Linda

Source: Burning Glass – Labor Insights

Exhibit 15 displays a sample of specialized and employability skills employers seek when looking for automotive service technicians and mechanics with HVAC skills or experience.

Exhibit 15: Sample of in-demand skills from employer job ads, Oct 2019 – Sep 2020

Occupation	Specialized Skills	Employability Skills
Automotive Service Technicians and Mechanics (n=146)	<ul style="list-style-type: none"> Automotive Repair Customer Service Electrical Systems Engine Repair Diagnosis of Drivability 	<ul style="list-style-type: none"> Writing Communication Skills Troubleshooting Physical Abilities Teamwork/Collaboration

Source: Burning Glass – Labor Insights

Exhibit 16 displays advertised salary data from automotive service technician and mechanic job postings with HVAC skills information over the last 12 months. Advertised salary information reveals that employers are willing to pay automotive service technicians and mechanics with HVAC skills or experience \$55,000 annually, which is above the average advertised wage for traditional automotive service technicians and mechanics, who can expect to earn \$46,000 annually. Consider the salary information with caution since only this information only reflects 49 job postings. The salary figures are prorated to reflect full-time, annual wage status.

Exhibit 16: Advertised salary information, Oct 2019 – Sep 2020

Job Title	Number of job postings	Real-Time Salary Information				Average Annual Salary
		Less than \$35,000	\$35,000 to \$49,999	\$50,000 to \$74,999	More than \$75,000	
Automotive Service Technicians and Mechanics	49	4%	31%	57%	8%	\$55,000

Source: Burning Glass – Labor Insights

Automotive Suspension, Steering, and Brakes

A keyword filter was applied to the *automotive service technician and mechanic* job posting search to determine the demand specific to workers with suspension, steering, and brake repair skills or experience. Over the last twelve months, there were 617 job advertisements listed for automotive service technicians and mechanics with suspension, steering, and brake repair skills in the IEDR. Approximately 21% (127 ads) of job postings included a desire for the ASE certification.

Exhibit 17 displays the employers who posted ten or more job ads for automotive service technicians and mechanics with suspension, steering, and brake repair skills or experience during the last 12 months in the IEDR.

Exhibit 17: Employers posting the most job ads for automotive service technicians and mechanics with suspension, steering, and brake repair skills or experience, Oct 2019 – Sep 2020

Occupation	Employers	
Automotive Service Technicians and Mechanics (n=617)	<ul style="list-style-type: none"> • Pep Boys • Bridgestone/Firestone • Les Schwab Tire Centers • Icahn Automotive Group 	<ul style="list-style-type: none"> • Chrysler • Tire Choice Auto Service Centers • American Medical Response • Cox Automotive Group

Source: Burning Glass – Labor Insights

Exhibit 18 displays a sample of specialized and employability skills employers seek when looking for automotive service technicians and mechanics with suspension, steering, and brake repair skills or experience.

Exhibit 18: Sample of in-demand skills from employer job ads, Oct 2019 – Sep 2020

Occupation	Specialized Skills	Employability Skills
Automotive Service Technicians and Mechanics (n=582)	<ul style="list-style-type: none"> • Automotive Repair • Customer Service • Oil Changes • Tire Mounting • Brake Work 	<ul style="list-style-type: none"> • Physical Abilities • Organizational Skills • Teamwork/Collaboration • Communication Skills • Work Area Maintenance

Source: Burning Glass – Labor Insights

Exhibit 19 displays advertised salary data from automotive service technician and mechanic job postings with suspension, steering, and brake repair skills or experience information over the last 12 months. Advertised salary information reveals that employers are willing to pay automotive service technicians and mechanics with suspension, steering, and brake repair skills or experience \$48,000 annually, which is slightly above the average advertised wage for traditional automotive service technicians and mechanics can expect to earn \$46,000 annually. Consider the salary information with caution since only 28% (171 out of 617) online job postings provided salary information. The salary figures are prorated to reflect full-time, annual wage status.

Exhibit 19: Advertised salary information, Oct 2019 – Sep 2020

Job Title	Number of job postings	Real-Time Salary Information				Average Annual Salary
		Less than \$35,000	\$35,000 to \$49,999	\$50,000 to \$74,999	More than \$75,000	
Automotive Service Technicians and Mechanics	171	23%	36%	38%	3%	\$48,000

Source: Burning Glass – Labor Insights

Automotive Advanced Technology

A certification filter was applied to the *automotive service technician and mechanic* job posting search to determine the demand specific to the advanced automotive service technician and mechanic workers with their Automotive Service Excellence (ASE) certification. Over the last twelve months, there were 287 job advertisements listed for automotive service technicians and mechanics with ASE certifications in the IEDR. Approximately 11% (33 ads) sought automotive service technicians with their ASE Master Technician certification. To obtain Master Technician status, an individual must pass six test series that reflect knowledge far beyond traditional automotive technicians; this test series includes automobile, collision repair, medium-heavy truck, school bus, transit bus, and truck equipment (ASE, 2020a).

Exhibit 20 displays the employers who posted more than five job ads for ASE certified automotive service technicians and mechanics during the last 12 months in the IEDR.

Exhibit 20: Employers posting the most job ads for ASE certified automotive service technicians and mechanics, Oct 2019 – Sep 2020

Occupation	Employers
Automotive Service Technicians and Mechanics (n=287)	<ul style="list-style-type: none"> • Bridgestone/Firestone • Tire Choice Auto Service Centers • Chrysler • Pep Boys • Daimler • Anderson Auto Group • FedEx

Source: Burning Glass – Labor Insights

Exhibit 21 displays a sample of specialized and employability skills employers seek when looking for ASE certified automotive service technicians and mechanics.

Exhibit 21: Sample of in-demand skills from employer job ads, Oct 2019 – Sep 2020

Occupation	Specialized Skills	Employability Skills
Automotive Service Technicians and Mechanics (n=239)	<ul style="list-style-type: none"> • Automotive Repair • Customer Service • Electrical Systems • Diagnosis of Drivability • Oil Changes 	<ul style="list-style-type: none"> • Writing • Troubleshooting • Physical Abilities • Communication Skills • Organizational Skills

Source: Burning Glass – Labor Insights

Exhibit 22 displays advertised salary data from ASE certified automotive service technicians and mechanics over the last 12 months. Advertised salary information reveals that employers are willing to pay ASE certified automotive service technicians and mechanics \$50,000 annually, which is slightly above the average advertised wage for all other automotive service technicians and mechanics, who can expect to

earn \$46,000 annually. Consider the salary information with caution since only 35% (100 out of 287) online job postings provided salary information. The salary figures are prorated to reflect full-time, annual wage status.

Exhibit 22: Advertised salary information, Oct 2019 – Sep 2020

Job Title	Number of job postings	Real-Time Salary Information				Average Annual Salary
		Less than \$35,000	\$35,000 to \$49,999	\$50,000 to \$74,999	More than \$75,000	
Automotive Service Technicians and Mechanics	100	8%	48%	40%	4%	\$50,000

Source: Burning Glass – Labor Insights

Program Completions and Outcomes

Exhibits 23 and 24 display annual average completion data for the California Community College *automotive technology* and *alternative fuels and advanced transportation* programs, based on the most recent three academic years.

Exhibit 23: 2016-19, Annual average community college awards for the automotive technology program in the IEDR

0948.00 – Automotive Technology	Associate of Science (A.S.)	Certificate requiring 30 to <60 semester units	Certificate requiring 18 to <30 semester units	Certificate requiring 6 to <18 semester units	CCC Annual Average Awards, Academic Years 2016-19
Barstow	4	-	4	-	7
Chaffey	14	6	36	-	56
Copper Mountain	0	1	-	0	2
Desert	6	-	26	-	33
Mt. San Jacinto	5	8	-	-	13
Palo Verde	1	-	7	9	17
Riverside	14	-	36	-	51
San Bernardino	6	6	4	1	18
Victor Valley	5	3	8	-	16
Total	56	24	122	11	213

Source: MIS Data Mart

Exhibit 24: 2016-19, Annual average community college awards for the alternative fuels and advanced transportation program in the IEDR

0948.40 – Alternative Fuels and Advanced Transportation	Associate of Science (A.S.)	Certificate requiring 30 to <60 semester units	Certificate requiring 18 to <30 semester units	CCC Annual Average Awards, Academic Years 2016-19
Copper Mountain	-	1	-	1
Desert	2	-	1	3
Total	2	1	1	4

Source: MIS Data Mart

California program outcome data may provide a useful insight into the likelihood of success for the proposed program. Community college student outcome information based on the selected TOP codes and region is provided in Exhibits 25 and 26. The outcome methodology is available in the appendix section of this report.

Exhibit 25: 0948.00 – Automotive technology strong workforce program outcomes

Strong Workforce Program Metrics: 0948.00 – Automotive Technology Academic Year 2017-18, unless noted otherwise	Inland Empire/Desert Region	California
Unduplicated count of enrolled students (2018-19)	2,413	17,927
Completed 9+ career education units in one year (2018-19)	28%	34%
Perkins Economically disadvantaged students (2018-19)	86%	79%
Students who attained a noncredit workforce milestone in a year (2018-19)	23%	49%
Students who earned a degree, certificate, or attained apprenticeship (2018-19)	111	1,761
Transferred to a four-year institution (transfers)	16	154
Job closely related to the field of study (2016-17)	71%	68%
Median annual earnings (all exiters)	\$25,564	\$28,488
Median change in earnings (all exiters)	46%	45%
Attained a living wage (completers and skills-builders)	51%	44%

Sources: LaunchBoard Community College Pipeline and Strong Workforce Program Metrics

Dashes indicate there were too few students from which to obtain outcome information.

Exhibit 26: 0948.40 – Alternative fuels and advanced transportation strong workforce program outcomes

Strong Workforce Program Metrics: 0948.40 – Alternative Fuels and Advanced Transportation Academic Year 2017-18, unless noted otherwise	Inland Empire/Desert Region	California
Unduplicated count of enrolled students (2018-19)	140	639
Completed 9+ career education units in one year (2018-19)	38%	45%
Perkins Economically disadvantaged students (2018-19)	94%	78%
Students who attained a noncredit workforce milestone in a year (2018-19)	-	-
Students who earned a degree, certificate, or attained apprenticeship (2018-19)	-	34
Transferred to a four-year institution (transfers)	-	-
Job closely related to the field of study (2016-17)	-	81%
Median annual earnings (all exiters)	\$20,288	\$32,216
Median change in earnings (all exiters)	-	52%
Attained a living wage (completers and skills-builders)	48%	41%

Sources: LaunchBoard Community College Pipeline and Strong Workforce Program Metrics

Recommendation

Instruction provided by community college automotive technology and alternative fuels and advanced transportation technology programs prepare students for employment as *automotive service technicians and mechanics*. This occupation is considered an essential critical infrastructure occupation. Despite the ongoing pandemic, employment demand should continue due to this occupation's critical nature and the ability to social distance. *Automotive service technicians and mechanics* are expected to have 1,353 annual job openings, increasing employment by 4%. The *automotive service technicians and mechanics* occupation offers a median hourly wage of \$19.32 per hour, just below the \$19.94 per hour self-sustainability standard for a single adult with one child. Most employer job ads were seeking a candidate with vocational training as a minimum education requirement. The Automotive Service Excellence (ASE) certification was mentioned in approximately 14% of overall job ads for this occupation but was mentioned more frequently for specialty automotive repair jobs.

Nine (9) IEDR community colleges offer automotive technology programs (TOP 0948.00), conferring 213 annual average awards over the last three academic years. The median wage for all exiters was \$25,564 annually, and 51% attained a living wage. Two (2) IEDR community colleges offer alternative fuels and advanced transportation programs (TOP 0948.40), conferring four (4) annual average awards

over the last three academic years. The median wage for all exiters was \$20,288 annually, and 48% attained a living wage.

The COE recommends creating new or expanding existing automotive technology programs based on the high number of annual job openings and the critical nature of this occupation's services. Colleges should partner with relevant employers to document the required knowledge, skills, abilities, and certifications needed to secure employment in this field and achieve a minimum hourly wage that meets the \$19.94 per hour self-sustainability standard.

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Appendix: Program Completion and Outcome Methodology

Exhibits 23 and 24 display the average annual California Community College (CCC) awards conferred during the three academic years between 2016 and 2019, from the California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart. Awards 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.

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, completers' outcomes 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, 2020a).

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 associate degree, and only 40 to 60 percent of openings for high school diploma holders appear online" (Carnevale et al., 2014). Online job postings often do not reveal employers' hiring intentions; it is unknown if employers plan to hire one or multiple workers from a single online job posting or collect resumes for future hiring needs. A closed job posting may not be the result of a hired worker.