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Labor Market Analysis

Caterpillar Dealer Service Technician



Prepared by Central Valley/Mother Lode Center of Excellence



POWERED BY



Table of Contents

- Summary..... 2
 - Key Findings 2
 - Recommendation..... 2
- Introduction 3
- Employment..... 4
- Wages 5
- Job Postings 6
 - Top Employers..... 6
 - Top Occupational Titles 6
 - Salaries..... 7
 - Education 7
 - Baseline, Specialized, and Software Skills 7
 - Certifications 8
- Education, Work Experience, & Training 8
- Supply 9
- Student Outcomes 10
- Recommendation 11
- Appendix: Methodology & Data Sources..... 12

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 San Joaquin Delta College to determine whether there is demand in the local labor market that is not being met by the supply from postsecondary education. This report summarizes labor market demand, wages, skills, and postsecondary supply for *Caterpillar Dealer Service Technician*, which includes:

- Bus and Truck Mechanics and Diesel Engine Specialists (SOC 49-3031)
- Mobile Heavy Equipment Mechanics, Except Engines (SOC 49-3042)
- Maintenance Workers, Machinery (SOC 49-9043)

Key Findings

- **Occupational Demand** — *Caterpillar Dealer Service Technicians* have a labor market demand of 324 annual job openings in the North Central Valley/Northern Mother Lode (NCV/NML) subregion. Between 2021 and 2026, bus and truck mechanics and diesel engine specialists are projected to have the most demand with 197 annual job openings and jobs are projected to grow by nine percent.
- **Wages** — Average entry-level earnings of \$21.90/hour for *Caterpillar Dealer Service Technicians* are higher than the living wage in the NCV/NML subregion, which is \$12.65/hour for a single adult.¹ Mobile heavy equipment mechanics, except engines earn the highest entry-level wage, \$24.11/hour.
- **Employers and Occupational Titles** — Employers in the NCV/NML subregion include Sysco, Penske Automotive Group, and Foster Farms. The most common occupational title in job postings in the subregion is bus and truck mechanics and diesel engine specialists. The most common job title is diesel mechanics.
- **Skills and Certifications** — The top baseline skill is computer literacy, the top specialized skill is diesel engines, and the top software skill is Inventory Control Systems. The most in-demand certification is an Automotive Service Excellence (ASE) Certification.
- **Education** — A high school diploma or equivalent is typically required for *Caterpillar Dealer Service Technicians*.
- **Supply and Demand Analysis** — Based on 324 annual openings (i.e., demand), and 61 postsecondary degrees awarded (i.e., supply), an analysis of supply and demand suggests there is an undersupply of 265 workers in the NCV/NML subregion. In the CVML region, 61 awards were conferred suggesting an undersupply of 695 workers.

Recommendation

Based on a comparison of demand and supply, there is an undersupply of trained workers in the NCV/NML subregion and the CVML region. The Center of Excellence recommends that San Joaquin Delta College work with the regional directors, the college's advisory board, and local industry in the expansion of programs to address the shortage of *Caterpillar Dealer Service Technician* workers.

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 San Joaquin Delta College with labor market information for *Caterpillar Dealer Service Technicians*. 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 *Caterpillar Dealer Service Technicians* 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.

Bus and Truck Mechanics and Diesel Engine Specialists (SOC 49-3031)

- **Job Description:** Diagnose, adjust, repair, or overhaul buses and trucks, or maintain and repair any type of diesel engines. Includes mechanics working primarily with automobile or marine diesel engines.
- **Knowledge:** Mechanical, Transportation, Education and Training, English Language, Public Safety and Security
Skills: Repairing, Troubleshooting, Operations Monitoring, Equipment Maintenance, Critical Thinking

Mobile Heavy Equipment Mechanics, Except Engines (SOC 49-3042)

- **Job Description:** Diagnose, adjust, repair, or overhaul mobile mechanical, hydraulic, and pneumatic equipment, such as cranes, bulldozers, graders, and conveyors, used in construction, logging, and mining.
- **Knowledge:** Mechanical, Customer and Personal Service, Mathematics, Computers and Electronics, Building and Construction
- **Skills:** Repairing, Troubleshooting, Equipment Maintenance, Operations Monitoring, Operations and Control

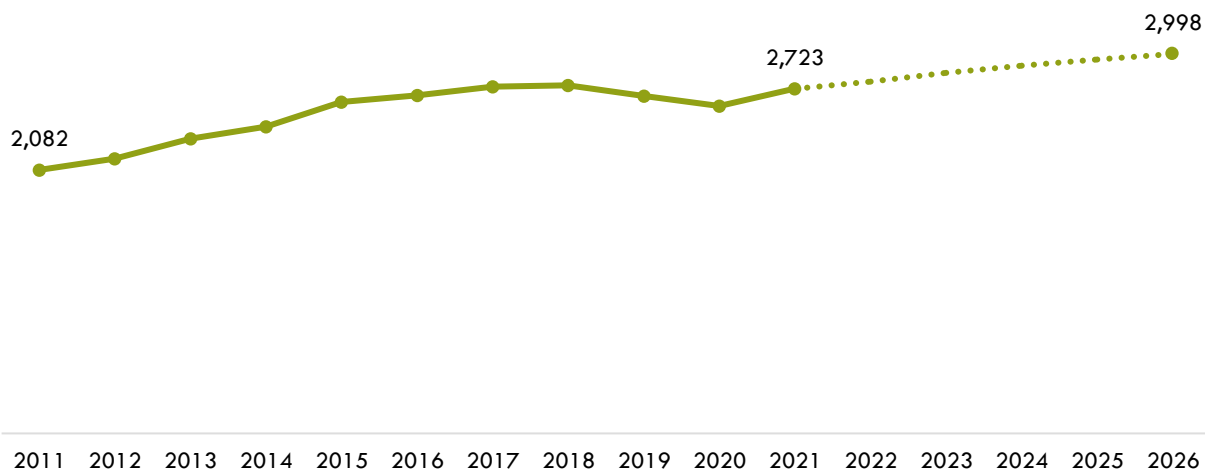
Maintenance Workers, Machinery (SOC 49-9043)

- **Job Description:** Lubricate machinery, change parts, or perform other routine machinery maintenance.
- **Knowledge:** Mechanical, Mathematics, Design, English Language, Engineering and Technology
- **Skills:** Equipment Maintenance, Operations Monitoring, Repairing, Troubleshooting, Operations and Control

Employment

Exhibit 1a shows trends for *Caterpillar Dealer Service Technician* in the NCV/NML subregion. Between 2021 to 2026, the number of jobs for *Caterpillar Dealer Service Technician* is projected to increase by 275 jobs, or 10 percent.

Exhibit 1a. Occupational projections for *Caterpillar Dealer Service Technicians* in the NCV/NML subregion



Between 2021 to 2026, *Caterpillar Dealer Service Technicians* in the NCV/NML subregion are projected to have 324 annual job openings (Exhibit 1b). Bus and truck mechanics and diesel engine specialists are projected to grow by nine percent over the next five years and have projected annual openings of 197.

Exhibit 1b. Occupational projections for *Caterpillar Dealer Service Technicians* in the NCV/NML subregion

Occupation	2021 Jobs	2026 Jobs	5-Year Change	5-Year % Change	Annual Openings
Bus and Truck Mechanics and Diesel Engine Specialists	1,748	1,902	154	9%	197
Mobile Heavy Equipment Mechanics, Except Engines	746	841	95	13%	95
Maintenance Workers, Machinery	229	255	26	11%	32
TOTAL	2,723	2,998	275	10%	324

Wages

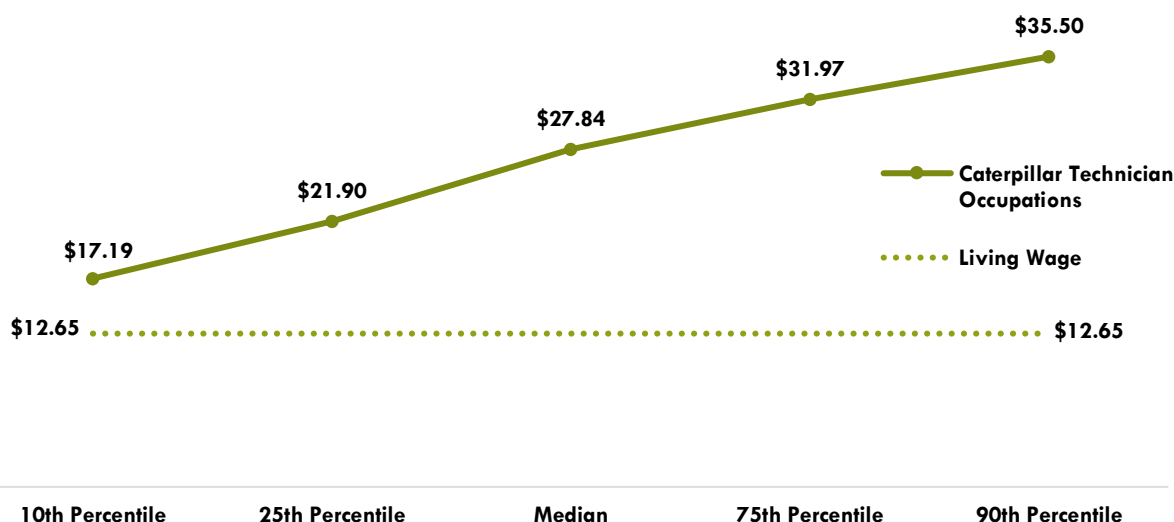
The average living wage for a single adult in the NCV/NML subregion is \$12.65/hour.² Exhibit 2a shows the entry-hourly wages for jobs related to *Caterpillar Dealer Service Technicians*. Mobile heavy equipment mechanics, except engines has the highest entry-level wage at \$24.11/hour.³ Please note 10th and 25th percentiles are considered entry-level wages while 75th and 90th are considered experienced wages, either gained by long-term employment, extra training, etc.

Exhibit 2a. Hourly wages for Caterpillar Dealer Service Technicians in the NCV/NML subregion

Occupation	Pct. 25 Hourly Earnings	Median Hourly Earnings	Pct. 75 Hourly Earnings
Mobile Heavy Equipment Mechanics, Except Engines	\$24.11	\$29.39	\$36.23
Bus and Truck Mechanics and Diesel Engine Specialists	\$21.81	\$28.15	\$30.27
Maintenance Workers, Machinery	\$19.80	\$25.99	\$29.40

Exhibit 2b shows the average hourly wages for *Caterpillar Dealer Service Technicians*; the average entry-level wage is more than the average entry-level living wage for the NCV/NML subregion.

Exhibit 2b. Caterpillar Dealer Service Technicians average hourly wages in the NCV/NML subregion



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 380 unique job postings for *Caterpillar Dealer Service Technicians* in the NCV/NML subregion from November 2022 to April 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 Sysco, Penske Automotive Group, and Foster Farms.

Exhibit 3. Top employers of *Caterpillar Dealer Service Technicians* by number of job postings

Employer
Sysco
Penske Automotive Group
Foster Farms
Love's
TravelCenters of America
United Rentals
Papé Kenworth
Peterbilt
Amerit Fleet Solutions
Cox Communications

Top Occupational Titles

Exhibit 4 shows the O*NET OnLine occupational titles for *Caterpillar Dealer Service Technicians* in the NCV/NML subregion. Common job titles in postings include: Diesel Mechanics and Diesel Mechanic Technicians.

Exhibit 4. Top occupational titles in job postings for *Caterpillar Dealer Service Technicians*

Occupational Title
Bus and Truck Mechanics and Diesel Engine Specialists
Mobile Heavy Equipment Mechanics, Except Engines
Maintenance Workers, Machinery

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.

Salaries

Exhibit 5 shows the “Market Salaries” for *Caterpillar Dealer Service Technicians*. These are calculated by Lightcast using a machine learning model built from millions of job postings every year. This accounts for adjustments based on location, industry, skills, experience, education, among other variables.

Exhibit 5. Market salaries for Caterpillar Dealer Service Technicians

Market Salary	Job Postings
\$58,000-\$64,999	55
\$65,000-\$71,999	53
\$44,000-\$50,999	42
\$72,000-\$78,999	29
\$37,000-\$43,999	20

Education

Of the 380 unique job postings, 219 listed a preferred or minimum educational requirement for the position being filled. Among those, 93% requested high school or GED, 4% requested a bachelor’s degree, and 3% requested an associate degree (Exhibit 6).

Exhibit 6. Education levels requested in job postings for Caterpillar Dealer Service Technicians

Education Level	Job Postings	% of Job Postings
High school or GED	203	93%
Bachelor's degree	8	4%
Associate degree	7	3%
Master's degree	1	0%

Baseline, Specialized, and Software Skills

Exhibit 7 depicts the top baseline, specialized, and software skills in job postings. The three most important baseline skills are computer literacy, troubleshooting (problem solving), and communication. The top three specialized skills are diesel engines, preventive maintenance, and electrical systems. The top software is Inventory Control Systems.

Exhibit 7. In-demand baseline, specialized, and software skills for Caterpillar Dealer Service Technicians

Baseline Skills	Specialized Skills	Software Skills
Computer Literacy	Diesel Engines	Inventory Control Systems
Troubleshooting (Problem Solving)	Preventive Maintenance	Apple IOS
Communications	Electrical Systems	Microsoft Office
Customer Service	HVAC	Fleet Maintenance Software
Management	Hand Tools	Project Management Software

Certifications

Of the 380 unique job postings, 380 contained certification data. Among those, 23% indicated a need for an Automotive Service Excellence (ASE) Certification. The next top certification is a Commercial Driver's License (CDL) (Exhibit 8).

Exhibit 8. Caterpillar Dealer Service Technicians certifications requested in job postings

Certifications	% of Job Postings
Automotive Service Excellence (ASE) Certification	23%
Commercial Driver's License (CDL)	16%
HVAC Certification	11%
CDL Class A License	3%
CDL Class B License	3%

Education, Work Experience, & Training

A high school diploma or equivalent is typically required for *Caterpillar Dealer Service Technicians* (Exhibit 9).

Exhibit 9. Education, work experience, training, and Current Population Survey results for Caterpillar Dealer Service Technicians⁵

Occupation	Typical Entry-level Education	Work Experience Required	Typical On-The-Job Training	CPS
Bus and Truck Mechanics and Diesel Engine Specialists	High school diploma or equivalent	None	Long-term	36.4%
Mobile Heavy Equipment Mechanics, Except Engines	High school diploma or equivalent	None	Long-term	35.2%
Maintenance Workers, Machinery	High school diploma or equivalent	None	Long-term	30.2%

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, 61 awards were conferred in the NCV/NML subregion (Exhibits 10 and 11).

Exhibit 10. TOP and CIP codes for Caterpillar Dealer Service Technicians

TOP Titles	CIP Titles
094700 - Diesel Technology	47.0302 - Heavy Equipment Maintenance Technology/Technician
	49.0202 - Construction/Heavy Equipment/Earthmoving Equipment Operation
	47.0605 - Diesel Mechanics Technology/Technician
094720 - Heavy Equipment Maintenance	01.0201 - Agricultural Mechanization, General
	01.0204 - Agricultural Power Machinery Operation
	47.0302 - Heavy Equipment Maintenance Technology/Technician

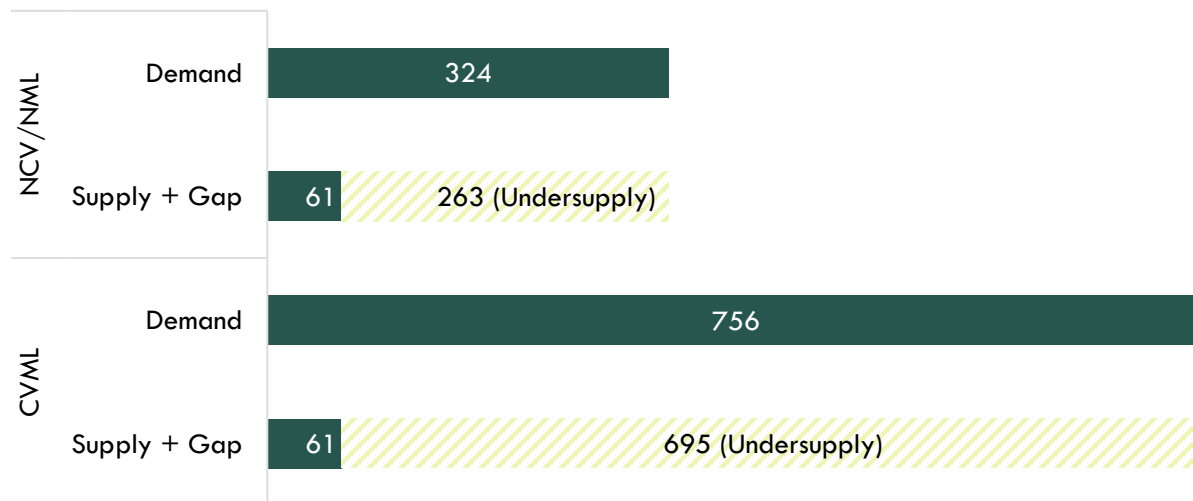
Exhibit 11. Postsecondary supply for Caterpillar Dealer Service Technicians

TOP/CIP code(s)- Title	College	Associate Degree	Certificate 16 < 30 Semester Units	Certificate 18 < 30 Semester Units	Certificate 30 < 60 Semester Units	Total
094700 - Diesel Technology	San Joaquin Delta	2	3		6	11*
094720 - Heavy Equipment Maintenance	San Joaquin Delta	27	2	3	18	50*
NCV/NML TOTAL		29	5	3	24	61
CVML TOTAL		29	5	3	24	61

*NCV/NML awards

There is an undersupply of 263 *Caterpillar Dealer Service Technician* workers in the NCV/NML subregion and an undersupply of 695 workers in the region (Exhibit 10).

Exhibit 10. *Caterpillar Dealer Service Technicians* workforce demand (annual job openings), postsecondary awards (supply), and additional students needed to fill gap in the NCV/NML subregion and region



Student Outcomes

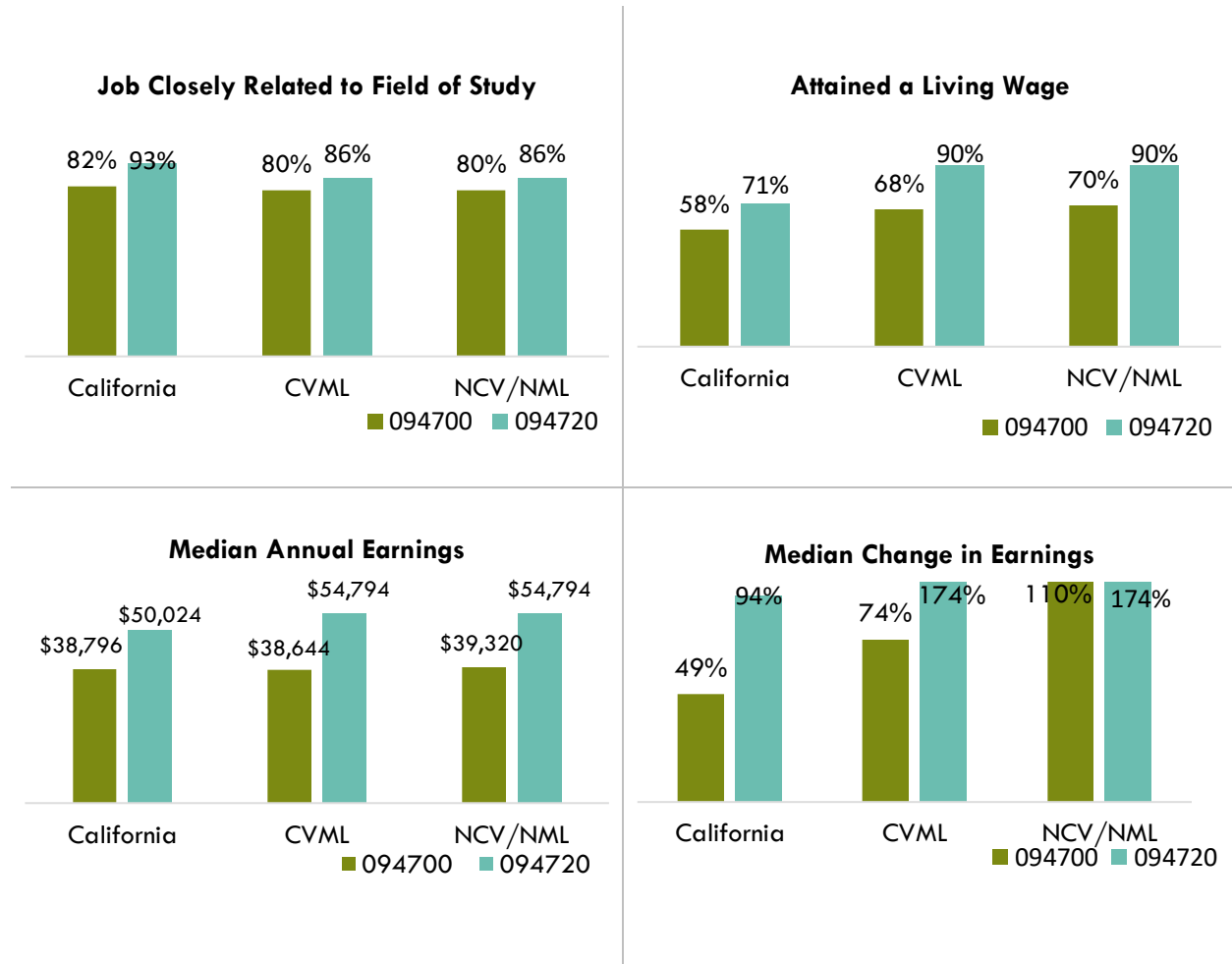
Exhibits 11a- 11b summarize outcomes from California Community College Chancellor’s LaunchBoard for TOP codes related to *Caterpillar Dealer Service Technicians*. Notably, 80% of Diesel Technology students obtained a job closely related to their field of study in the subregion and 70% attained a living wage in the subregion. For Heavy Equipment Maintenance, 86% of students obtained a job closely related to their field of study in the subregion and 90% attained a living wage in the subregion.

Exhibit 11a. Metrics for TOP 094700 - Diesel Technology and 094720 - Heavy Equipment Maintenance

Metric	094700 - Diesel Technology	094720 - Heavy Equipment Maintenance
Students Who Got a Degree or Certificate or Attained Apprenticeship Journey Status	11	60
Number of Students Who Transferred	*	*

*denotes data not available in table and charts

Exhibit 11. Metrics for TOP 094700 and TOP 094720 - Caterpillar Dealer Service Technicians



Recommendation

This report suggests there is a shortage of 263 workers in the NCV/NML subregion and a shortage of 695 workers in the CVML region for *Caterpillar Dealer Service Technicians*. Based on these findings, it is recommended that San Joaquin Delta College work with the regional directors, the college's advisory board, and local industry in the expansion of programs to address the shortage of *Caterpillar Dealer Service Technician* 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 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.