June 2021

Labor Market Analysis

Construction Workers

Prepared by the Central Valley/Mother Lode Center of Excellence

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COVID-19 Statement: This report includes employment projection data by Emsi. Emsi'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

Please note the COVID-19 statement on page 2 when considering this report's findings.

This study conducted by the Central Valley/Mother Lode Center of Excellence examines labor market demand, wages, skills, and postsecondary supply for construction workers. Five occupations related to construction workers were identified for Fresno City College:

- 47-2061, Construction Laborers
- 47-1011, First-Line Supervisors of Construction Trades and Extraction Workers
- 47-2141, Painters, Construction and Maintenance
- 47-4011, Construction and Building Inspectors
- 47-4098, Miscellaneous Construction and Related Workers

Key findings:

- **Occupational demand —** More than 15,600 workers were employed in jobs related to construction workers in 2019 in the South Central Valley/Southern Mother Lode (SCV/SML) subregion. The largest occupation is construction laborers with 8,202 workers in 2019, a projected growth rate of 6% over the next five years, and 896 annual openings.

- **Wages —** Construction and building inspectors earn the highest entry-level wage, $27.63/hour in the subregion and $27.35/hour in the region.

- **Employers —** Employers with the most job postings in the subregion are Sunrun, Bj Perch Construction, and Installed Building Products.

- **Occupational titles —** The most common occupational title in job postings in the subregion is construction laborers. The most common job title is painter.

- **Skills and certifications —** The top baseline skill is physical abilities, the top specialized skill is painting, and the top software skill is Microsoft Office. The most in-demand certification is a driver's license.

- **Education —** A high school diploma or equivalent is typically required for four of the five occupations. No formal education credential is typically required for construction laborers.

- **Supply —** Analysis of postsecondary completions in the region shows that on average zero awards were conferred in the Central Valley/Mother Lode region each year.

Based on a comparison of occupational demand and supply, there is an undersupply of 1,616 trained workers in the subregion and 2,760 workers in the region. The Center of Excellence recommends that Fresno City College work with the Energy, Construction and Utilities Regional Director, the college's advisory board, and local industry in the expansion of programs to address the shortage of construction workers in the region.

Introduction

The Central Valley/Mother Lode Center of Excellence was asked by Fresno City College to provide labor market information for construction workers. The geographical focus for this report is the South Central Valley/Southern Mother Lode (SCV/SML) subregion, but regional demand and supply data has been included for broader applicability and use. The average living wage for a single adult in the SCV/SML subregion is $11.91/hour.[1] Analysis of the program and occupational data related to construction workers resulted in the identification of applicable occupations. The Standard Occupational Classification (SOC) System codes and titles used in this report are:

- 47-2061, Construction Laborers
- 47-1011, First-Line Supervisors of Construction Trades and Extraction Workers
- 47-2141, Painters, Construction and Maintenance
- 47-4011, Construction and Building Inspectors
- 47-4098, Miscellaneous Construction and Related Workers

The occupational titles, job descriptions, sample job titles, and knowledge and skills from the Bureau of Labor Statistics and O*NET OnLine are shown below. O*NET data was not available for miscellaneous construction and related workers.

Construction Laborers
Job Description: Perform tasks involving physical labor at construction sites. May operate hand and power tools of all types: air hammers, earth tampers, cement mixers, small mechanical hoists, surveying and measuring equipment, and a variety of other equipment and instruments. May clean and prepare sites, dig trenches, set braces to support the sides of excavations, erect scaffolding, and clean up rubble, debris, and other waste materials. May assist other craft workers.
Knowledge: Building and Construction, Public Safety and Security, Mechanical
Skills: Speaking, Active Listening, Coordination, Operation and Control, Operation Monitoring

First-Line Supervisors of Construction Trades and Extraction Workers
Job Description: Directly supervise and coordinate activities of construction or extraction workers.
Knowledge: Administration and Management, Building and Construction, Mechanical, Customer and Personal Service, English Language
Skills: Coordination, Active Listening, Speaking, Critical Thinking, Management and Personnel Resources

Painters, Construction and Maintenance
Job Description: Paint walls, equipment, buildings, bridges, and other structural surfaces, using brushes, rollers, and spray guns. May remove old paint to prepare surface prior to painting. May mix colors or oils to obtain desired color or consistency.
Knowledge: Public Safety and Security, Administration and Management, English Language, Customer and Personal Service, Building and Construction
Skills: Active Listening, Critical Thinking, Social Perceptiveness, Time Management

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[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://insightcced.org/tools-metrics/self-sufficiency-standard-tool-for-california/.

Painters, Construction and Maintenance
Job Description: Paint walls, equipment, buildings, bridges, and other structural surfaces, using brushes, rollers, and spray guns. May remove old paint to prepare surface prior to painting. May mix colors or oils to obtain desired color or consistency.
Knowledge: Public Safety and Security, Administration and Management, English Language, Customer and Personal Service, Building and Construction
Skills: Active Listening, Critical Thinking, Social Perceptiveness, Time Management

Construction and Building Inspectors
Job Description: Inspect structures using engineering skills to determine structural soundness and compliance with specifications, building codes, and other regulations. Inspections may be general in nature or may be limited to a specific area, such as electrical systems or plumbing.
Knowledge: Building and Construction, Customer and Personal Service, Mathematics, Engineering and Technology, Design
Skills: Active Listening, Reading Comprehension, Speaking, Critical Thinking, Complex Problem Solving

Occupational Demand

The South Central Valley/Southern Mother Lode subregion employed 15,635 workers in the targeted construction occupations in 2019 (Exhibit 1). The largest occupation is construction laborers with 8,202 workers in 2019. This occupation is projected to grow by 6% over the next five years and has the greatest number of projected annual openings, 896.
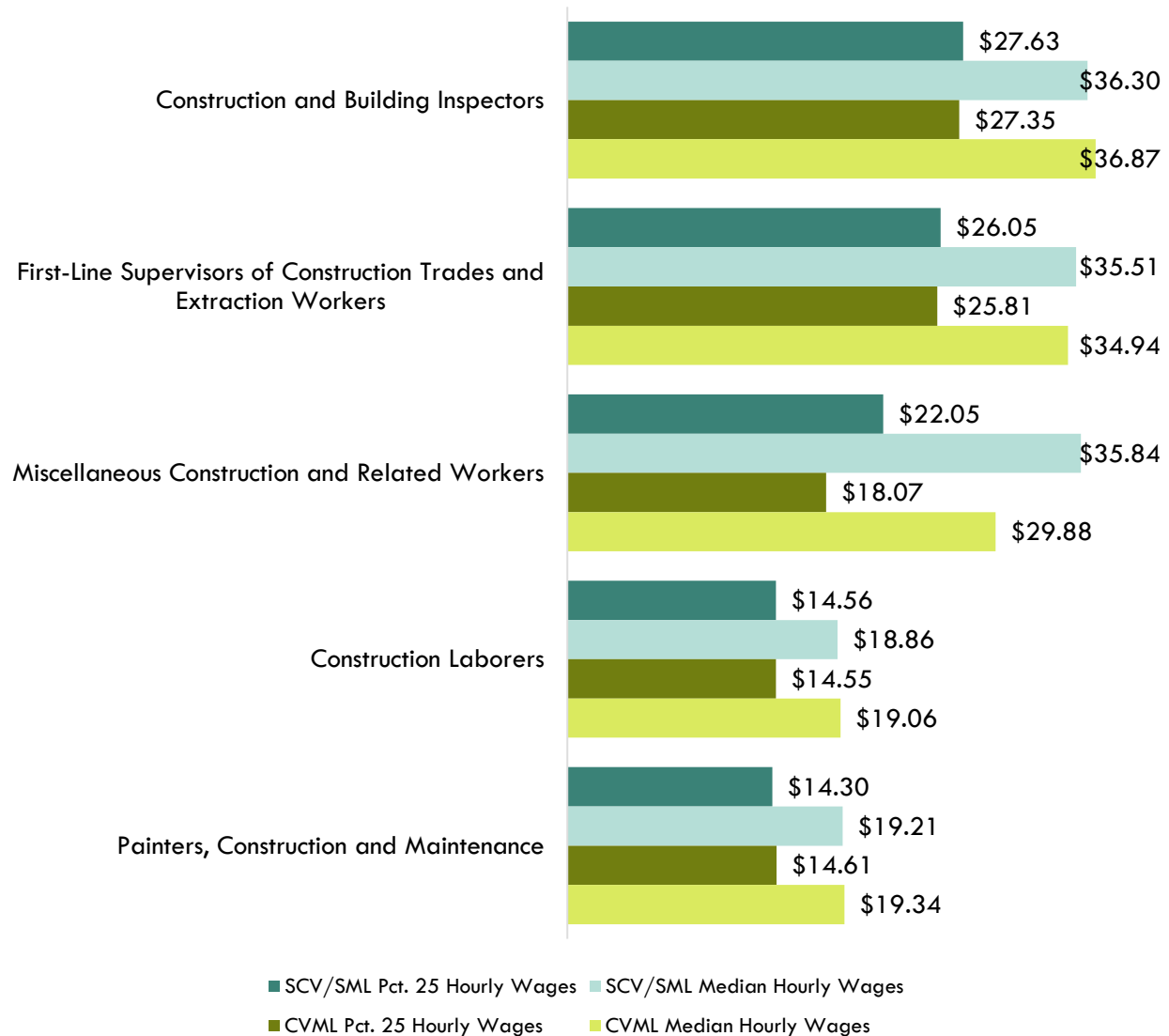
Exhibit 1. Construction worker employment and occupational projections in the SCV/SML subregion

Occupation	2019 Jobs	2024 Jobs	5-Year Change	5-Year % Change	Annual Openings
Construction Laborers	8,202	8,699	497	6%	896
First-Line Supervisors of Construction Trades and Extraction Workers	4,222	4,195	(28)	(1%)	405
Painters, Construction and Maintenance	2,466	2,443	(23)	(1%)	220
Construction and Building Inspectors	569	603	34	6%	72
Miscellaneous Construction and Related Workers	175	173	(1)	(1%)	24
TOTAL	**15,635**	**16,113**	**478**	**3%**	**1,616**

Wages

Exhibit 2 compares the entry-level and experienced wages of the targeted construction occupations. Construction and building inspectors earn the highest entry-level wage, $27.63/hour in the subregion and $27.35/hour in the region.

Exhibit 2. Entry-level and experienced wage comparison in the SCV/SML subregion and region

Occupation	SCV/SML Pct. 25 Hourly Wages	SCV/SML Median Hourly Wages	CVML Pct. 25 Hourly Wages	CVML Median Hourly Wages
Construction and Building Inspectors	$27.63	$36.30	$27.35	$36.87
First-Line Supervisors of Construction Trades and Extraction Workers	$26.05	$35.51	$25.81	$34.94
Miscellaneous Construction and Related Workers	$22.05	$35.84	$18.07	$29.88
Construction Laborers	$14.56	$18.86	$14.55	$19.06
Painters, Construction and Maintenance	$14.30	$19.21	$14.61	$19.34

■ SCV/SML Pct. 25 Hourly Wages   ■ SCV/SML Median Hourly Wages
■ CVML Pct. 25 Hourly Wages   ■ CVML Median Hourly Wages

Job Postings

There were 916 job postings for the five occupations in the SCV/SML subregion from December 2020 to May 2021.[2] The employers with the most job postings are listed in Exhibit 3.

Exhibit 3. Top employers of construction workers by number of job postings

Employer	Job Postings	% Job Postings
Sunrun	15	2%
Bj Perch Construction	9	1%
Installed Building Products	9	1%
Browning Contractors Incorporated	8	1%
Caliber Collision	6	1%
City Fresno	6	1%
Semper Solaris	6	1%
County Kern	5	1%
General Dynamics	5	1%
Hci Incorporated	5	1%

Exhibit 4 shows how job postings for the targeted occupations in the SCV/SML subregion are distributed across seven O*NET OnLine occupations. The occupational title construction laborers is listed in 474 job postings. Note how this occupational title dominates the job posting results. Common job titles in postings include shipping clerk in Painter in 39 job postings, Construction Laborer in 37 job postings, and General Labor in 27 job postings.

Exhibit 4. Top occupational titles in job postings for construction workers

Occupational Title	Job Postings	% of Job Postings
Construction Laborers	474	52%
First-Line Supervisors of Construction Trades and Extraction Workers	199	22%
Painters, Construction and Maintenance	133	15%
Construction and Building Inspectors	93	10%
Weatherization Installers and Technicians	8	1%
Construction and Related Workers, All Other	5	1%
Solar Energy Installation Managers	4	0%

Salaries

Exhibit 5 shows the "Market Salaries" for construction workers that are calculated by Burning Glass which uses a machine learning model built off of millions of job postings every year, and accounts for adjustments based on locations, industry, skills, experience, education requirements, among other variables.

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[2] 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.

Exhibit 5. Salaries for construction workers

Market Salary Percentile	Salary Amount
10th Percentile	$25,414
25th Percentile	$28,259
50th Percentile	$36,180
75th Percentile	$52,646
90th Percentile	$69,971

Education

Of the 916 job postings, 345 listed an education level preferred for the positions being filled. Of those, 88% requested high school or vocational training, 12% requested a bachelor's degree, and 6% requested an associate degree (Exhibit 6). A job posting can indicate more than one education level. Hence, the percentages shown in the chart below may total more than 100%.

Exhibit 6. Education levels requested in job postings for construction workers

Education Level	Job Postings	% of Job Postings
High school or vocational training	305	88%
Bachelor's degree	42	12%
Associate degree	20	6%
Master's degree	2	1%
Doctoral degree	2	1%

The following comments were provided by the Regional Director of Energy, Construction and Utilities:
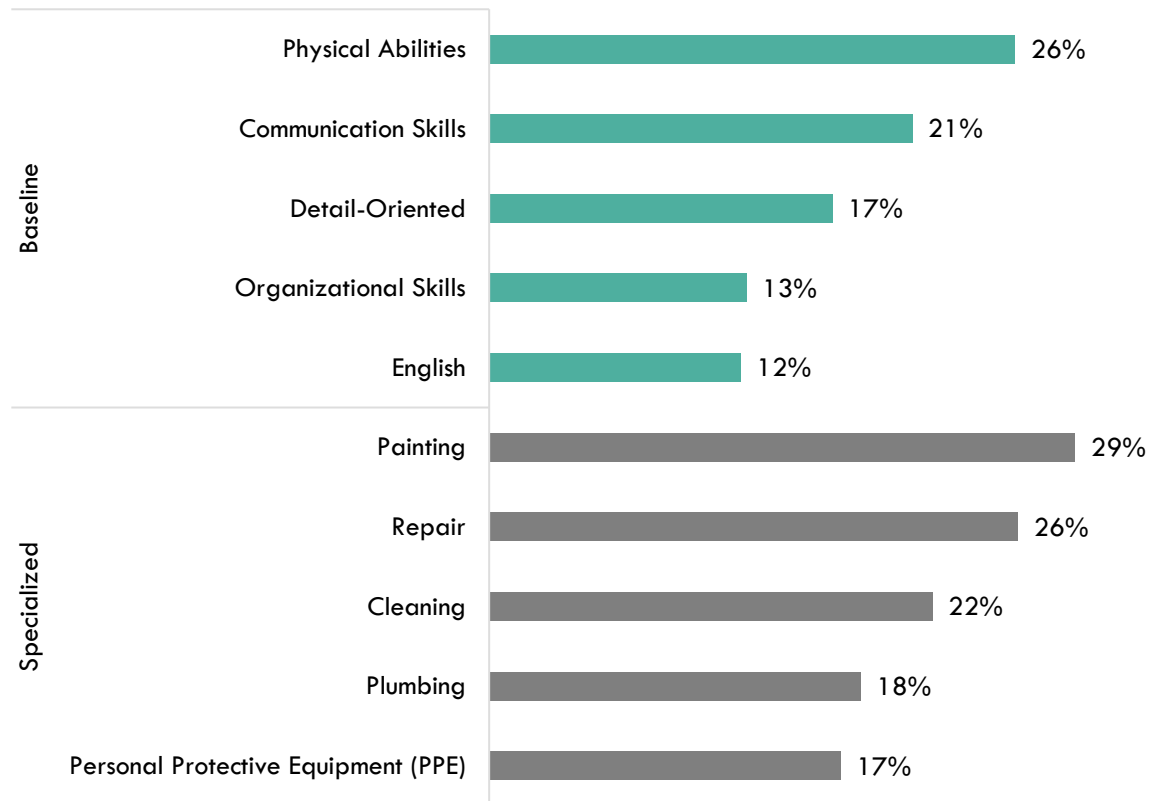
> *While the lack of training beyond high school does not preclude being hired for entry-level construction worker positions, contractors prefer to hire those with experience or vocational training. The desired knowledge, skills, and abilities include the ability to use hand and power tools appropriately, and the knowledge of safety principles and practices including an OSHA 10 certification.*

> *Construction workers have a clear promotional pathway which is demonstrated by the fact that nearly 30% of the annual openings are for first-line supervisors and building inspectors, an occupation with earnings nearly 80% higher than construction laborers.*

Baseline and Specialized Skills

Exhibit 7 depicts the top baseline and specialized skills for the targeted occupations. The three most important baseline skills are physical abilities, 26% of job postings, communication, 21%, and detail oriented, 17%. The top three specialized skills are painting, 29% of job postings, repair, 26%, and cleaning, 22%.
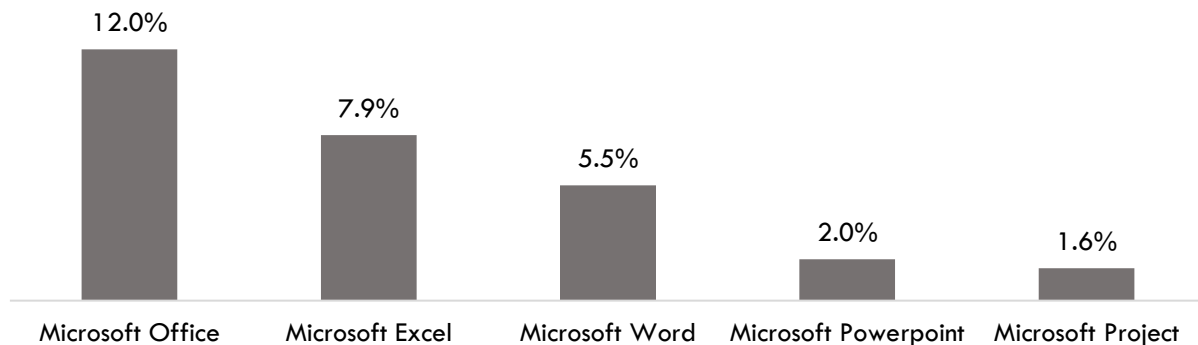
Exhibit 7. In-demand baseline and specialized skills for construction workers

Software Skills

Analysis also included the software skills most in demand by employers. Microsoft Office and Excel were the top two software skills identified in job postings (Exhibit 8).
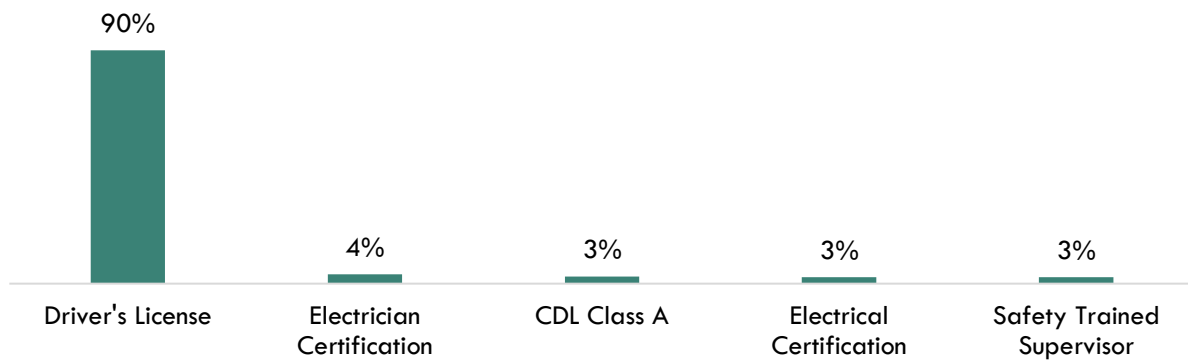
Exhibit 8. In-demand software skills for construction workers

Certifications

Of the 916 job postings, 396 contained certification data. Among those, 90% indicated a need for a driver's license. The next top certifications are electrician certification and CDL Class A (Exhibit 9). (Due to the low number of job postings with certifications listed, the chart below may not be representative of the full sample.)

Exhibit 9. Top construction worker certifications requested in job postings

Education, Work Experience & Training

A high school diploma or equivalent is typically required for four of the five occupations (Exhibit 10). No formal education credential is typically required for construction laborers.

Exhibit 10. Education, work experience, training, and Current Population Survey results for construction workers occupations[3]

Occupation	Typical Entry-level Education	Work Experience Required	Typical On-The-Job Training	CPS
Construction Laborers	No formal educational credential	None	Short-term	20.8%
First-Line Supervisors of Construction Trades and Extraction Workers	High school diploma or equivalent	5 years or more	None	29.2%
Painters, Construction and Maintenance	No formal educational credential	None	Moderate-term	20.5%
Construction and Building Inspectors	High school diploma or equivalent	5 years or more	Moderate-term	40.5%
Miscellaneous Construction and Related Workers	High school diploma or equivalent	None	Moderate-term	25.7%

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[3] "Labor Force Statistics from the Current Population Survey," Bureau of Labor Statistics, https://www.bls.gov/cps/.
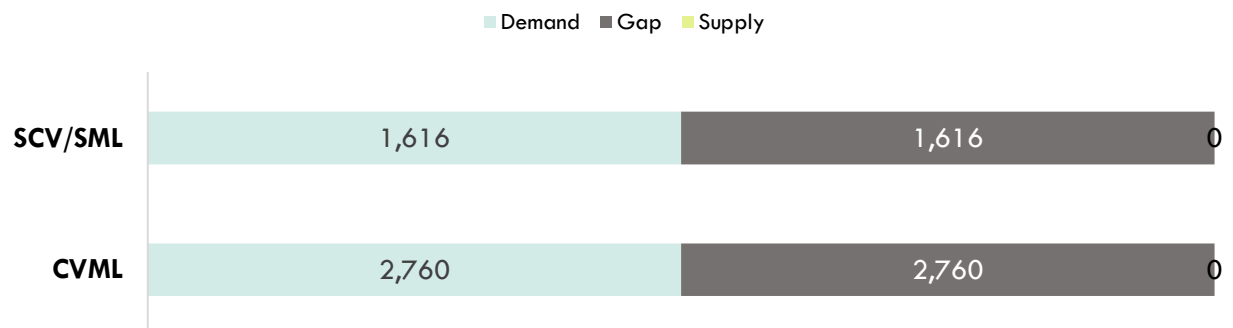
Supply

Analysis of program data from the California Community Colleges Chancellor's Office Data Mart included the TOP code and title: 095200 - Construction Crafts Technology. Analysis of the last three years of data shows that, on average, 15 awards were conferred in the Central Valley/Mother Lode region each year (Exhibit 11).

Exhibit 11. Postsecondary supply for construction workers in the region

TOP Code-Title	College	Associate Degree	Certificate 30 < 60 Semester Units	Certificate 6 < 18 Semester Units	Subtotal
095200 - Construction Crafts Technology	Bakersfield	1	2		3
	Fresno City	1	1		2
	Sequoias	2	3	4	9
TOTAL		**5**	**6**	**4**	**15**

There is an undersupply of 1,616 construction workers in the SCV/SML subregion and 2,760 construction workers in the region (Exhibit 12).

Exhibit 12. Workforce annual demand and supply in the SCV/SML subregion and region for construction workers

Student Outcomes

Exhibit 13 summarizes employment and wage outcomes from the California Community College Chancellor's Cal-PASS Plus LaunchBoard for the TOP code related to construction workers. Of note, there were 11 construction crafts technology students who received a degree or certificate or attained apprenticeship journey status; 30% of students reported a median change in earnings; and 60% attained a living wage.

Exhibit 13. Regional metrics for the TOP code related to construction workers

Metric	Construction Crafts Technology 095200
Students Who Got a Degree or Certificate or Attained Apprenticeship Journey Status	11
Number of Students Who Transferred	*
Job Closely Related to Field of Study	*
Median Change in Earnings	30%
Attained a Living Wage	60%
* denotes data not available.	

Conclusion

The entry-level wages of the five occupations exceed the SCV/SML subregion's average living wage. There were 916 job postings in the past six months for occupations related to construction workers in the subregion. Analysis of skills and certification requirements in job postings indicates:

- The top baseline skill is physical abilities, and the top specialized skill is painting.
- The top software skill is Microsoft Office.
- The top certification is a driver's license.

There is an undersupply of trained workers, a shortage of 1,616 in the SCV/SML subregion and 2,760 in the region.

Recommendation

Based on these findings, it is recommended that Fresno City College work with the Energy, Construction and Utilities Regional Director, the college's advisory board, and local industry in the expansion of programs to address the shortage of construction workers in the region.

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.
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.
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 occupations 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. (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.