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Labor Market Analysis

Wildfire Resources Supervisors



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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 Wildfire Resources Supervisors. Three occupations related to Wildfire Resources Supervisors were identified for Reedley College:

- 33-1021, First-Line Supervisors of Firefighting and Prevention Workers
- 33-2011, Firefighters
- 45-1011, First-Line Supervisors of Farming, Fishing, and Forestry Workers

Key findings:

- **Occupational demand** — Nearly 6,320 workers were employed in jobs related to Wildfire Resources Supervisors in 2021 in the South Central Valley/Southern Mother Lode (SCV/SML) subregion. The largest occupation is first-line supervisors of farming, fishing, and forestry workers with 3,760 workers, a projected growth rate of 2% over the next five years, and 560 annual openings.
- **Wages** — First-line supervisors of firefighting and prevention workers earn the highest entry-level wage, \$39.22/hour in the subregion.
- **Employers** — Employers with the most job postings in the subregion are Wildfire Defense Systems, Kern County, and County Tulare.
- **Occupational titles** — The most common occupational title in job postings in the subregion is Municipal Firefighters. The most common job title is Battalion Chief.
- **Skills and certifications** — The top baseline skill is building effective relationships, the top specialized skill is safety training, and the top software skill is ArcGIS. The most in-demand certification is a driver's license.
- **Education** — A high school diploma or equivalent is typically required for first-line supervisors of farming, fishing, and forestry workers. A postsecondary nondegree award is typically required for the remaining two occupations.
- **Supply** — Analysis of postsecondary completions shows that on average 238 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 633 trained workers in the subregion and 894 workers in the region. Please note that all students need to attend an academy to become firefighters in the state of California. The Center of Excellence recommends that Reedley College work with the regional directors, the college's advisory board, and local industry in the expansion of programs to address the shortage of Wildfire Resources Supervisors workers in the region.

Introduction

The Central Valley/Mother Lode Center of Excellence was asked by Reedley College to provide labor market information for Wildfire Resources Supervisors. 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 Wildfire Resources Supervisors resulted in the identification of applicable occupations. The Standard Occupational Classification (SOC) System codes and titles used in this report are:

- 33-1021, First-Line Supervisors of Firefighting and Prevention Workers
- 33-2011, Firefighters
- 45-1011, First-Line Supervisors of Farming, Fishing, and Forestry 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.

First-Line Supervisors of Firefighting and Prevention Workers

Job Description: Directly supervise and coordinate activities of workers engaged in firefighting and fire prevention and control.

Knowledge: Public Safety and Security, Customer and Personal Service, Administration and Management, English Language, Education and Training

Skills: Critical Thinking, Monitoring, Speaking, Active Listening, Complex Problem Solving

Firefighters

Job Description: Control and extinguish fires or respond to emergency situations where life, property, or the environment is at risk. Duties may include fire prevention, emergency medical service, hazardous material response, search and rescue, and disaster assistance.

Knowledge: Public Safety and Security, Building and Construction, Customer and Personal Service, Education and Training, Mechanical

Skills: Active Listening, Monitoring, Coordination, Operations Monitoring, Critical Thinking

First-Line Supervisors of Farming, Fishing, and Forestry Workers

Job Description: Directly supervise and coordinate the activities of agricultural, forestry, aquacultural, and related workers.

Knowledge: Administration and Management, Production and Processing, Mechanical, Education and Training, English Language

Skills: Active Listening, Judgment and Decision Making, Monitoring, Critical Thinking, Management of Personnel Resources

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/>.

Occupational Demand

The SCV/SML subregion employed 6,318 workers in Wildfire Resources Supervisors occupations in 2021 (Exhibit 1). The largest occupation is first-line supervisors of farming, fishing, and forestry workers with 3,760 workers in 2021. This occupation is projected to grow by 2% over the next five years and has the greatest number of projected annual openings, 560.

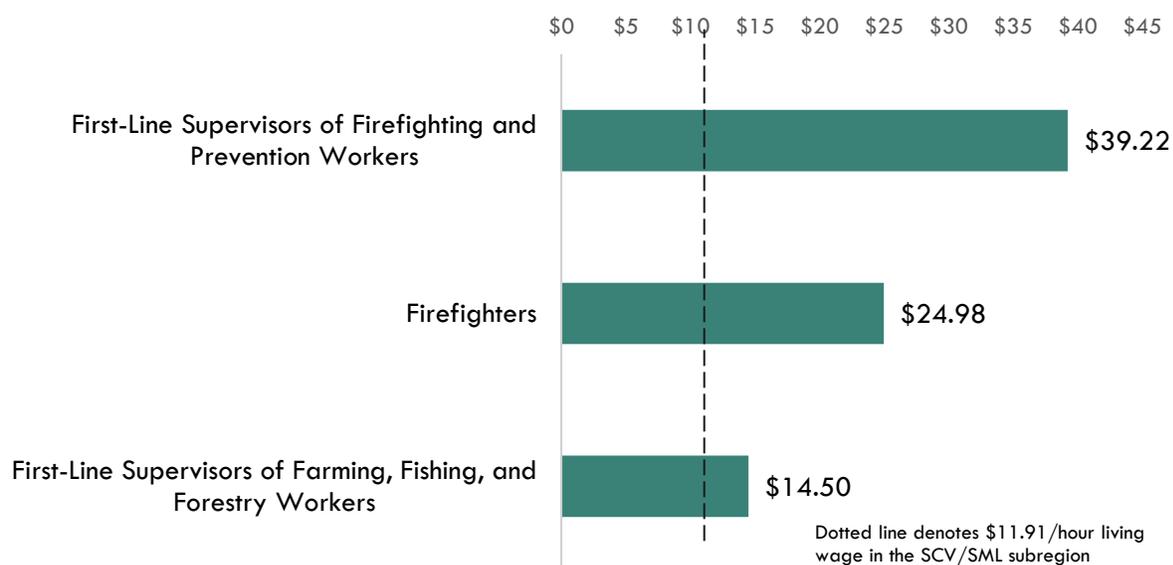
Exhibit 1: Wildfire Resources Supervisors employment and occupational projections in the SCV/SML subregion

Occupation	2021 Jobs	2026 Jobs	5-Year Change	5-Year % Change	Annual Openings
First-Line Supervisors of Farming, Fishing, and Forestry Workers	3,760	3,822	62	2%	560
Firefighters	2,302	2,410	108	5%	196
First-Line Supervisors of Firefighting and Prevention Workers	256	266	10	4%	19
TOTAL	6,318	6,498	180	3%	775

Wages

Exhibit 2 shows the entry-level hourly wages of the Wildfire Resources Supervisors occupations. First-line supervisors of firefighting and prevention workers earn the highest entry-level wage, \$39.22/hour in the subregion².

Exhibit 2: Wildfire Resources Supervisors entry-level wages in the SCV/SML subregion



² Entry-level wages are derived from the 25th percentile.

Job Postings

There were 80 job postings for the three occupations in the SCV/SML subregion from November 2021 to April 2022.³ The employers with the most job postings are listed in Exhibit 3.

Exhibit 3: Top employers of Wildfire Resources Supervisors by number of job postings

Employer	Job Postings	% Job Postings
Wildfire Defense Systems	29	45%
Kern County	5	8%
County Tulare	4	6%
Commander	3	5%
County Kern	3	5%
City Of Dinuba	2	3%
Kings County	2	3%
Tulare County	2	3%
State of California	2	3%
California Conservation Corps	1	2%

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 Municipal Firefighters is listed in 52 job postings. Note how this occupational title dominates the job posting results. Common job titles in postings include Battalion Chief in five job postings, Extra Help - Firefighter in five job postings, and Wildland Firefighter Engine Boss in four job postings.

Exhibit 4: Top occupational titles in job postings for Wildfire Resources Supervisors

Occupational Title	Job Postings	% of Job Postings
Municipal Firefighters	52	65%
Municipal Fire Fighting and Prevention Supervisors	15	19%
Forest Fire Fighting and Prevention Supervisors	4	5%
First-Line Supervisors of Agricultural Crop and Horticultural Workers	3	4%
Forest Firefighters	3	4%
First-Line Supervisors of Animal Husbandry and Animal Care Workers	2	3%
First-Line Supervisors of Logging Workers	1	1%

Salaries

Exhibit 5 shows the “Market Salaries” for Wildfire Resources Supervisors occupations. These are calculated by Burning Glass using a machine learning model built from millions of job postings every year. This accounts for adjustments based on locations, industry, skills, experience, education requirements, among other variables.

³ 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 Wildfire Resources Supervisors occupations

Market Salary Percentile	Salary Amount
10th Percentile	\$30,592
25th Percentile	\$36,030
50th Percentile	\$42,330
75th Percentile	\$61,944
90th Percentile	\$76,966

Education

Of the 80 job postings, 15 listed an education level preferred for the positions being filled. Among those, 80% requested high school or vocational training, and 20% requested an associate degree (Exhibit 6).

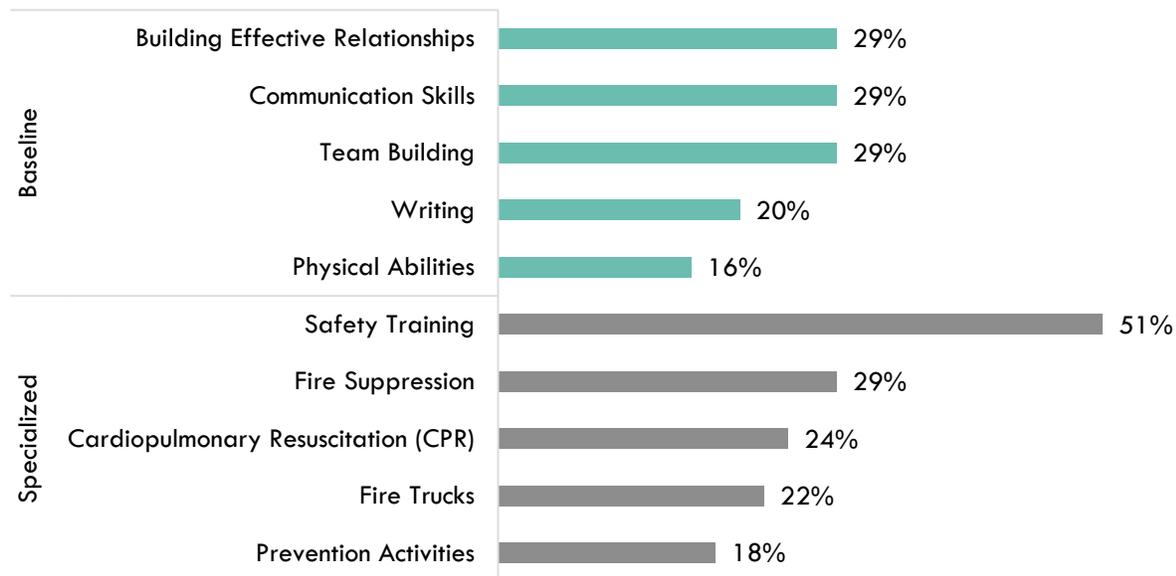
Exhibit 6: Education levels requested in job postings for Wildfire Resources Supervisors

Education Level	Job Postings	% of Job Postings
High school or vocational training	12	80%
Bachelor's degree	3	20%

Baseline and Specialized Skills

Exhibit 7 depicts the top baseline and specialized skills for the targeted occupations. The three most important baseline skills are building effective relationships, 29% of job postings, communication skills, 29%, and team building, 29%. The top three specialized skills are safety training, 51% of job postings, fire suppression, 29%, and cardiopulmonary resuscitation (CPR), 24%.

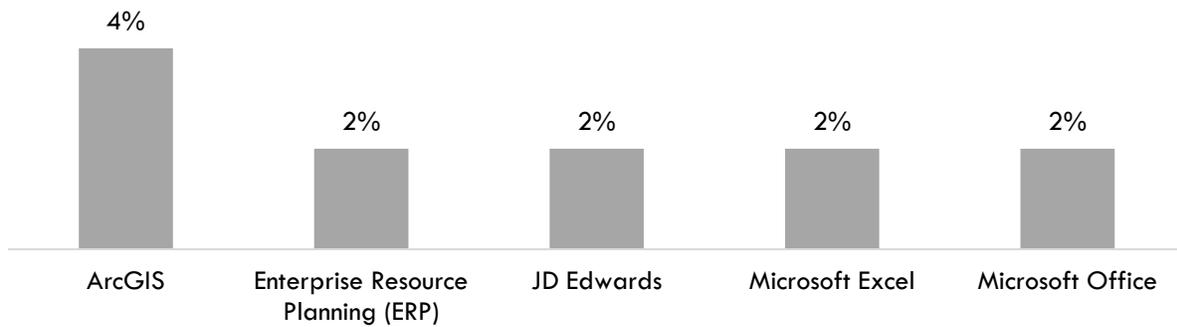
Exhibit 7: In-demand Wildfire Resources Supervisors baseline and specialized skills



Software Skills

Analysis also included the software skills most in demand by employers. ArcGIS and enterprise resource planning (ERP) were the top two software skills identified in job postings (Exhibit 8).

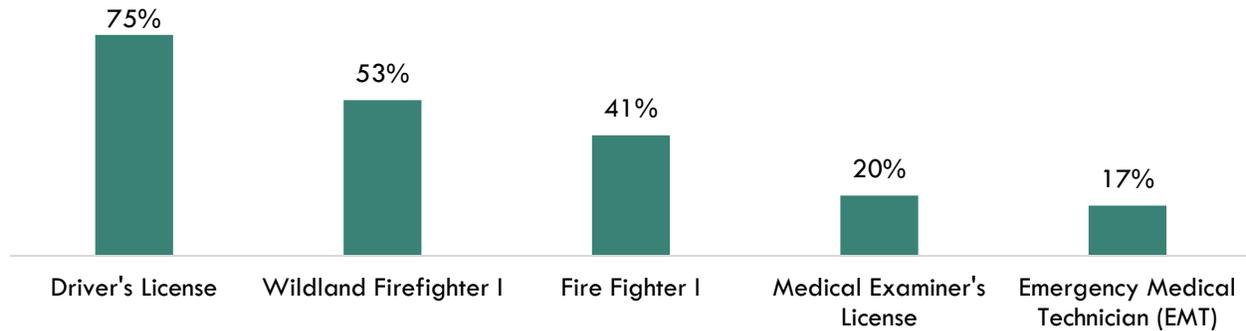
Exhibit 8: In-demand Wildfire Resources Supervisors software skills



Certifications

Of the 80 job postings, 59 contained certification data. Among those, 53% indicated a need for a driver's license. The next top certifications are a driver's license and AWS D1.1 (Exhibit 9).

Exhibit 9. Top Wildfire Resources Supervisors certifications requested in job postings



Education, Work Experience & Training

A high school diploma or equivalent is typically required for first-line supervisors of farming, fishing, and forestry workers. A postsecondary nondegree award is typically required for the remaining two occupations (Exhibit 10).

Exhibit 10: Education, work experience, training, and Current Population Survey results for Wildfire Resources Supervisors occupations⁴

Occupation	Typical Entry-level Education	Work Experience Required	Typical On-The-Job Training	CPS
First-Line Supervisors of Farming, Fishing, and Forestry Workers	High school diploma or equivalent	Less than 5 years	None	21.9%
Firefighters	Postsecondary nondegree award	None	Long-term	59.4%
First-Line Supervisors of Firefighting and Prevention Workers	Postsecondary nondegree award	Less than 5 years	Moderate-term	55.2%

⁴ "Labor Force Statistics from the Current Population Survey," Bureau of Labor Statistics, <https://www.bls.gov/cps/>.

Supply

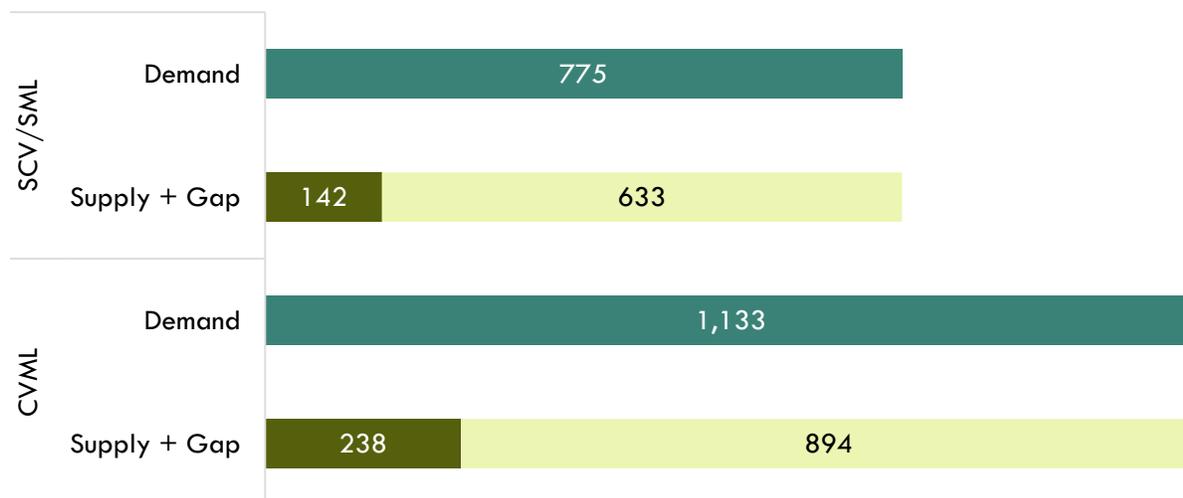
Analysis of program data from the Integrated Postsecondary Education Data System (IPEDS) included the TOP codes and titles: 213300 - Fire Technology, 213310 - Wildland Fire Technology, and 213350 - Fire Academy. Analysis of the last three years of data shows that, on average, 238 awards were conferred in the Central Valley/Mother Lode region each year (Exhibit 11).

Exhibit 11: Postsecondary supply for Wildfire Resources Supervisors occupations in the region

TOP/CIP Code- Title	College	Associate Degree	Certificate 16 < 30 Semester Units	Certificate 18 < 30 Semester Units	Certificate 30 < 60 Semester Units	Certificate 6 < 18 Semester Units	Subtotal
213300 - Fire Technology	Bakersfield	25			8		32
	Columbia	15	5	25			44
	Fresno City	9			1		10
	Merced	7			2		9
	Modesto	18			8		26
	Porterville				4		4
	Sequoias	8			1		9
213310 - Wildland Fire Technology	Bakersfield	3				0	3
	Porterville					18	18
213350 - Fire Academy	Fresno City		7	16			24
	Modesto					17	17
	Sequoias					42	42
TOTAL		84	12	41	23	77	238

There is an undersupply of 633 Wildfire Resources Supervisors workers in the SCV/SML subregion and 894 workers in the region (Exhibit 12).

Exhibit 12: Wildfire Resources Supervisors workforce demand (annual job openings), postsecondary supply of students (awards), and additional students needed to fill gap in the SCV/SML subregion and region



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 Wildfire Resources Supervisors. Of note, 98 fire technology students received a degree or certificate or attained apprenticeship journey status; 20 students transferred; 82% of students obtained a job closely related to their field of study; 21% had a median change in earnings; and 60% of students attained a living wage.

Exhibit 13: Subregional metrics for the TOP code related to Wildfire Resources Supervisors

Metric	Fire Technology 213300	Wildland Fire Technology 213310	Fire Academy 213350
Students Who Got a Degree or Certificate or Attained Apprenticeship Journey Status	98	*	23
Number of Students Who Transferred	20	*	*
Job Closely Related to Field of Study	82%	*	100%
Median Change in Earnings	21%	2%	23%
Attained a Living Wage	60%	77%	94%
* denotes data not available.			

Conclusion

The entry-level wages of the three occupations exceed the SCV/SML subregion’s average living wage. There were 80 job postings in the past six months for occupations related to Wildfire Resources Supervisors in the subregion. Analysis of skills and certification requirements in job postings indicates:

- The top baseline skill is building effective relationships, and the top specialized skill is safety training.
- The top software skill is ArcGIS.
- The top certification is a driver's license.

There is an undersupply of trained workers, a shortage of 633 in the SCV/SML subregion and 894 in the region.

Recommendation

Based on these findings, it is recommended that Reedley College work with the regional director, the college’s advisory board, and local industry in the expansion of programs to address the shortage of Wildfire Resources Supervisors 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.