July 2022

Labor Market Analysis

Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics

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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 Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics. Three occupations related to Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics were identified for Reedley College:

- 49-2091, Avionics Technicians
- 49-3010, Aircraft Mechanics and Service Technicians
- 51-2010, Aircraft Structure, Surfaces, Rigging, and Systems Assemblers

Key findings:

- **Occupational demand —** Nearly 1,830 workers were employed in jobs related to Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics in 2020 in the South Central Valley/Southern Mother Lode (SCV/SML) subregion. The largest occupation is aircraft mechanics and service technicians with 1,429 workers, a projected growth rate of 8% over the next five years, and 148 annual openings.

- **Wages —** Avionics technicians earn the highest entry-level wage, $32.84/hour in the subregion.

- **Employers —** Employers with the most job postings in the subregion are Amentum, Elliot Aviation Incorporated, and Northrop Grumman.

- **Occupational titles —** The most common occupational title in job postings in the subregion is Aircraft Mechanics and Service Technicians. The most common job title is Avionics Technician.

- **Skills and certifications —** The top baseline skill is troubleshooting, the top specialized skill is repair, and the top software skill is Microsoft Excel. The most in-demand certification is a security clearance.

- **Education —** A high school diploma or equivalent is typically required for aircraft structure, surfaces, rigging, and systems assemblers. A postsecondary nondegree award is typically required for aircraft mechanics and service technicians. An associate's degree is typically required for avionics technicians.

- **Supply —** Analysis of postsecondary completions shows that on average 52 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 138 trained workers in the subregion and 178 workers in the region. 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 Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics workers in the region.

Introduction

The Central Valley/Mother Lode Center of Excellence was asked by Reedley College to provide labor market information for Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics. 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 Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics resulted in the identification of applicable occupations. The Standard Occupational Classification (SOC) System codes and titles used in this report are:

- 49-2091, Avionics Technicians
- 49-3010, Aircraft Mechanics and Service Technicians
- 51-2010, Aircraft Structure, Surfaces, Rigging, and Systems Assemblers

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.

Avionics Technicians
Job Description: Install, inspect, test, adjust, or repair avionics equipment, such as radar, radio, navigation, and missile control systems in aircraft or space vehicles.
Knowledge: Computers and Electronics, Mechanical, English Language, Engineering and Technology, Customer and Personal Service
Skills: Equipment Maintenance, Repairing, Troubleshooting, Critical Thinking, Operating Monitoring,

Aircraft Mechanics and Service Technicians
Job Description: Diagnose, adjust, repair, or overhaul aircraft engines and assemblies, such as hydraulic and pneumatic systems.
Knowledge: Mechanical, English Language, Engineering and Technology, Customer and Personal Service, Mathematics
Skills: Equipment Maintenance, Repairing, Operating Monitoring, Troubleshooting, Complex Problem Solving

Aircraft Structure, Surfaces, Rigging, and Systems Assemblers
Job Description: Assemble, fit, fasten, and install parts of airplanes, space vehicles, or missiles, such as tails, wings, fuselage, bulkheads, stabilizers, landing gear, rigging and control equipment, or heating and ventilating systems.
Knowledge: Education and Training, Mathematics English Language, Mechanical, Design
Skills: Quality Control Analysis, Active Listening, Critical Thinking, Monitoring, Complex Problem Solving

Occupational Demand

The SCV/SML subregion employed 1,821 workers in Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics occupations in 2020 (Exhibit 1). The largest occupation is aircraft mechanics and service technicians with 1,429 workers in 2020. This occupation is projected to grow by 8% over the next five years and has the greatest number of projected annual openings, 148.

[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/.

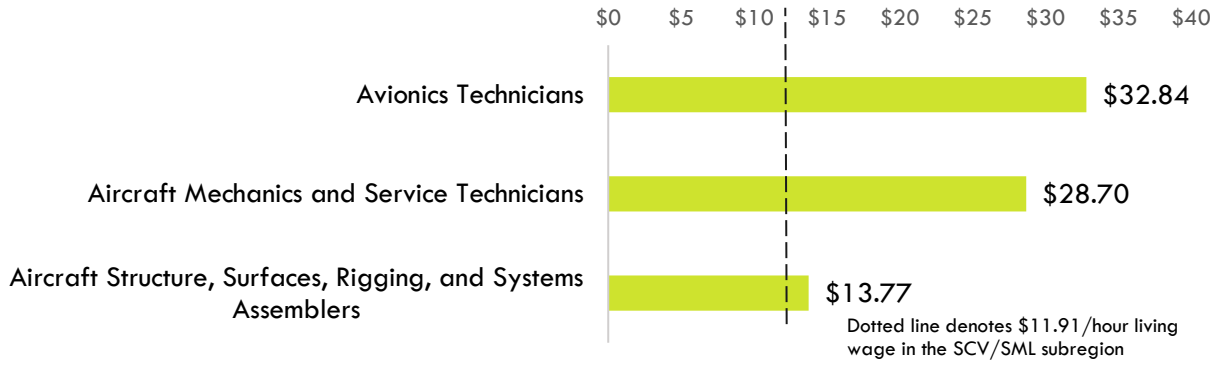
Exhibit 1. Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics employment and occupational projections in the SCV/SML subregion

Occupation	2020 Jobs	2025 Jobs	5-Year Change	5-Year % Change	Annual Openings
Aircraft Mechanics and Service Technicians	1,429	1,537	108	8%	148
Avionics Technicians	227	248	21	9%	21
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	165	171	6	4%	21
TOTAL	**1,821**	**1,956**	**135**	**7%**	**190**

Wages

Exhibit 2 shows the entry-level hourly wages of the Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics occupations. Avionics technicians earn the highest entry-level wage, $32.84/hour in the subregion[2].

Exhibit 2. Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics entry-level wages in the SCV/SML subregion



Job Postings

There were 304 job postings for the two occupations in the SCV/SML subregion from January 2022 to June 2022.[3] The employers with the most job postings are listed in Exhibit 3.

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

[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 3. Top employers of Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics by number of job postings

Employer	Job Postings	% Job Postings
Amentum	28	13%
Elliot Aviation Incorporated	25	11%
Northrop Grumman	25	11%
PAE Incorporated	14	6%
Vertex Aerospace	14	6%
DynCorp International	9	4%
Kay Associates	7	3%
Builders Firstsource	6	3%
Virgin Galactic	5	2%
Lockheed Martin Corporation	4	2%

Exhibit 4 shows how job postings for the targeted occupations in the SCV/SML subregion are distributed across three O*NET OnLine occupations. The occupational title Aircraft Mechanics and Service Technicians is listed in 159 job postings. Note how this occupational title dominates the job posting results. Common job titles in postings include Avionics Technician in 18 job postings, A and P Mechanic in 13 job postings, and Aircraft Mechanic in 11 job postings.

Exhibit 4. Top occupational titles in job postings for Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics

Occupational Title	Job Postings	% of Job Postings
Aircraft Mechanics and Service Technicians	159	52%
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	79	26%
Avionics Technicians	66	22%

Salaries

Exhibit 5 shows the "Market Salaries" for Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics occupations. These are calculated by Burning Glass using a machine learning model built off of millions of job postings every year. This accounts for adjustments based on locations, industry, skills, experience, education requirements, among other variables.

Exhibit 5. Salaries for Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics occupations

Market Salary Percentile	Salary Amount
10th Percentile	$25,943
25th Percentile	$36,714
50th Percentile	$46,882
75th Percentile	$54,329
90th Percentile	$61,712

Education

Of the 304 job postings, 172 listed an education level preferred for the positions being filled. Among those, 95% requested high school or vocational training, 15% requested an associate degree, and 5% requested a bachelor's 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%.

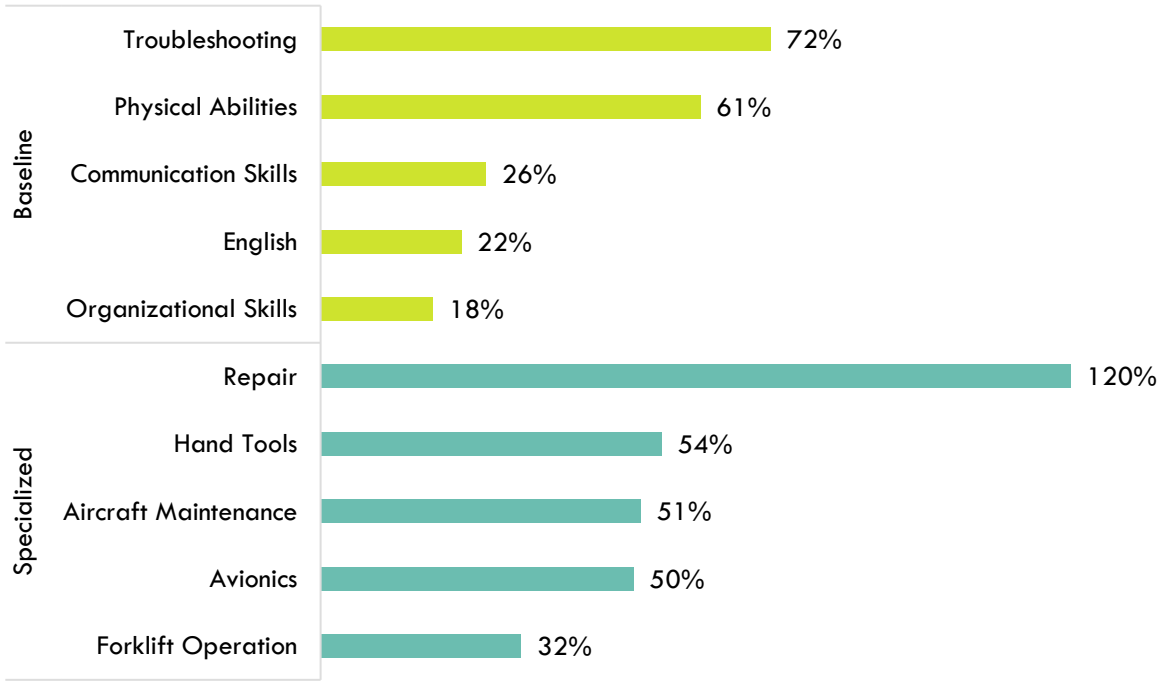
Exhibit 6. Education levels requested in job postings for Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics

Education Level	Job Postings	% of Job Postings
High school or vocational training	164	95%
Associate's degree	25	15%
Bachelor's degree	8	5%

Baseline and Specialized Skills

Exhibit 7 depicts the top baseline and specialized skills for the targeted occupations. The three most important baseline skills are troubleshooting, 72% of job postings, physical abilities, 61%, and communication skills, 26%. The top three specialized skills are repair, 120% of job postings, hand tools, 54%, and aircraft maintenance, 51%.

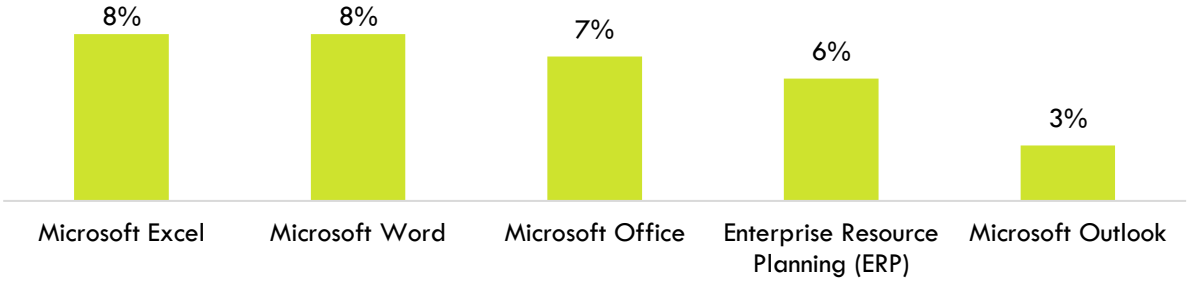
Exhibit 7. In-demand Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics baseline and specialized skills



Software Skills

Analysis also included the software skills most in demand by employers. Microsoft Excel and Word were the top two software skills identified in job postings (Exhibit 8).

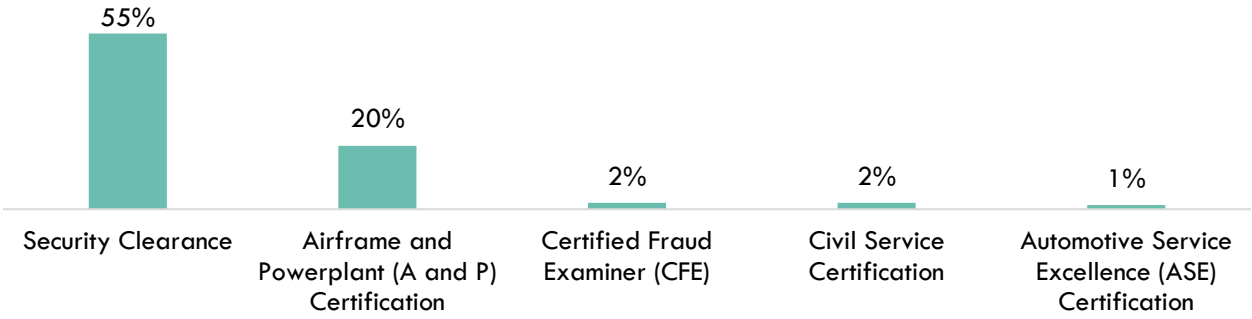
Exhibit 8. In-demand Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics software skills



Certifications

Of the 304 job postings, 152 contained certification data. Among those, 57% indicated a need for a security clearance. The next top certifications are airframe and powerplant (A and P) certification and Certified Fraud Examiner (CFE) (Exhibit 9).

Exhibit 9. Top Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics certifications requested in job postings



Education, Work Experience & Training

A high school diploma or equivalent is typically required for aircraft structure, surfaces, rigging, and systems assemblers. A postsecondary nondegree award is typically required for aircraft mechanics and service technicians. An associate's degree is typically required for avionics technicians (Exhibit 10).

Exhibit 10. Education, work experience, training, and Current Population Survey results for Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics occupations[4]

Occupation	Typical Entry-level Education	Work Experience Required	Typical On-The-Job Training	CPS
Aircraft Mechanics and Service Technicians	Postsecondary nondegree award	None	None	58.4%
Avionics Technicians	Associate's degree	None	None	60.5%
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	High school diploma or equivalent	None	Moderate-term	29.7%

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

Supply

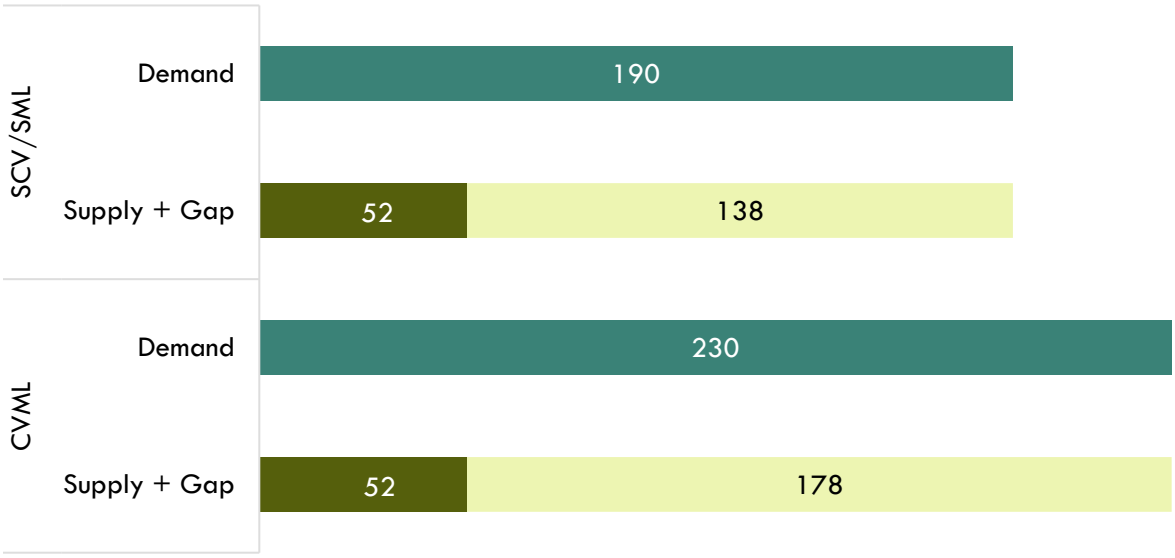
Analysis of program data from the Integrated Postsecondary Education Data System (IPEDS) included the TOP and CIP codes and titles: 095000 - Aeronautical and Aviation Technology and 47.0607 - Airframe Mechanics and Aircraft Maintenance Technology/Technician. Analysis of the last three years of data shows that, on average, 52 awards were conferred in the Central Valley/Mother Lode region each year (Exhibit 11).

Exhibit 11. Postsecondary supply for Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics occupations in the region

TOP/ CIP Code- Title	College	Associate Degree	Award 1 < 2 Academic Years	Award 2 < 4 Academic Years	Certificate 60+ Semester Units	Subtotal
095000 - Aeronautical and Aviation Technology	Reedley College	5			10	15
47.0607 - Airframe Mechanics and Aircraft Maintenance Technology/Technician	San Joaquin Valley College-Visalia	33	1	3		38
TOTAL		**38**	**1**	**3**	**10**	**52**

There is an undersupply of 138 Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics workers in the SCV/SML subregion and 178 workers in the region (Exhibit 12).

Exhibit 12. Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics 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 12 summarizes employment and wage outcomes from the California Community College Chancellor's Cal-PASS Plus LaunchBoard for the TOP code related to Health Care Interpreter. Of note, 14 students obtained got a degree or certificate or attained apprenticeship journey status.

Metric	Aircraft General Maintenance 95000	Aircraft Airframe Maintenance 95010	Aviation Powerplant Mechanics 95020
Students Who Got a Degree or Certificate or Attained Apprenticeship Journey Status	14	*	*
Number of Students Who Transferred	*	*	*
Job Closely Related to Field of Study	*	*	*
Median Change in Earnings	*	*	*
Attained a Living Wage	*	*	*
* denotes data not available.			

Conclusion

The entry-level wages of the three occupations exceed the SCV/SML subregion's average living wage. There were 304 job postings in the past six months for occupations related to Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics in the subregion. Analysis of skills and certification requirements in job postings indicates:

- The top baseline skill is troubleshooting, and the top specialized skill is repair.
- The top software skill is Microsoft Excel.
- The top certification is a security clearance.

There is an undersupply of trained workers, a shortage of 138 in the SCV/SML subregion and 178 in the region.

Recommendation

Based on these findings, it is recommended 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 Aircraft General/ Airframe Maintenance, and Aviation Powerplant Mechanics 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.