



Program Endorsement Brief

WILDLAND FIREFIGHTERS

North/Far North Center of Excellence
NOVEMBER 2020

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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.

Summary

The Far North Center of Excellence for Labor Market Research prepared this report to provide regional labor market supply and demand data related to wildland firefighter occupations in the Far North region. This report focuses on two middle-skill occupations; Firefighters (33-2011), and First-Line Supervisors of Firefighting and Prevention Workers (33-1021).¹ Reported job titles for Firefighters (33-2011) includes Wildland Firefighters.

Please note that at this time traditional LMI is not available for Wildland Firefighters. Wildland firefighters may be classified by some agencies as Forest and Conservation Technicians (19-4071). Please see Appendix A for labor market demand data for this middle-skill occupation.

This report is intended to help determine whether there is demand in the local labor market that is not being met by the supply from existing community college programs.

Key findings include:

- The Far North region held 1,891 jobs for fire prevention workers in 2019. Jobs for fire prevention workers are projected to increase by nearly 4% over the next five years. Jobs for forest and conservation technicians are projected to increase by nearly 1% over the next five years.
- Over the next five years, fire prevention workers are projected to have 164 annual openings in the Far North region. There are 153 projected openings for forest and conservation technicians over the next five years.
- Wage data shows that fire prevention workers and forest and conservation technicians tend to earn more than the subregion's living wage. Reported earnings for fire prevention workers range from a low of \$15 per hour for entry-level work to a high of \$48 per hour for experienced workers.
- Fifty-nine percent of existing fire prevention workers and 38% of existing forest and conservation technicians have education consistent with community college offerings (some college or associate degrees).
- Analysis of postsecondary awards related to fire occupations in the Far North region shows that, on average, 242 awards were issued each year between the 2017-2018 and 2019-2020 academic years.

¹ The COE classifies middle-skill jobs as the following:

- All occupations that require an educational requirement of some college, associate degree or apprenticeship;
- All occupations that require a bachelor's degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or
- All occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training where multiple community colleges have existing programs.

Introduction

The North/Far North Center of Excellence was asked to provide labor market information for a proposed program at a regional community college. This report focuses on the following Standard Occupational Classification (SOC) occupations and codes:

- Firefighters (33-2011)
- First-Line Supervisors of Firefighting and Prevention Workers (33-1021)

A review of related programs revealed the following program(s), and Taxonomy of Programs (TOP) code(s) are appropriate for inclusion in this report:

- Fire Technology (2133.00)
- Fire Academy (2133.50)

The corresponding Classification of Instructional Programs (CIP) code(s) are:

- Fire Prevention and Safety Technology/Technician (43.0201)
- First Science/Firefighting (43.0203)

The SOC titles, SOC codes, and job descriptions from the Bureau of Labor Statistics (BLS) and O*Net OnLine are shown below.

Firefighters (33-2011)

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.

First-Line Supervisors of Firefighting and Prevention Workers (33-1021)

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

Occupational Demand

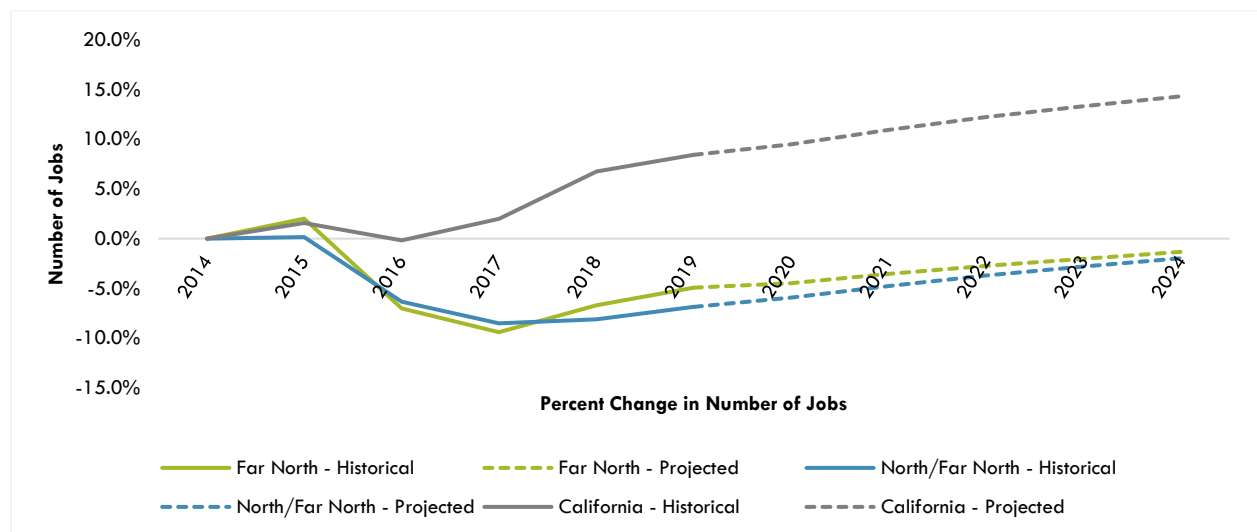
Exhibit 1 summarizes the five-year projected job growth for the selected occupations in the Far North, North/Far North, and California.

Exhibit 1. Employment and projected demand, 2019-2024

Occupation	SOC	2019 Jobs	2024 Jobs	2019-2024 Jobs Change	2019-2024 Jobs % Change	2019-2024 Annual Openings
First-Line Supervisors of Firefighting and Prevention Workers	33-1021	263	273	10	3.7%	31
Firefighters	33-2011	1,628	1,690	62	3.8%	134
Far North region	TOTAL	1,891	1,963	72	3.8%	164
First-Line Supervisors of Firefighting and Prevention Workers	33-1021	502	532	30	6.0%	52
Firefighters	33-2011	3,916	4,118	202	5.2%	321
North/Far North region	TOTAL	4,418	4,649	232	5.2%	373
First-Line Supervisors of Firefighting and Prevention Workers	33-1021	2,450	2,378	(72)	-2.9%	3,312
Firefighters	33-2011	32,732	32,198	(534)	-1.6%	34,614
California	TOTAL	35,182	34,576	(606)	-1.7%	37,926

Exhibit 2 compares the percent change in the number of jobs between 2014 through 2019 and the projected changes through 2024. The rate of change is indexed to the total number of jobs in 2014.

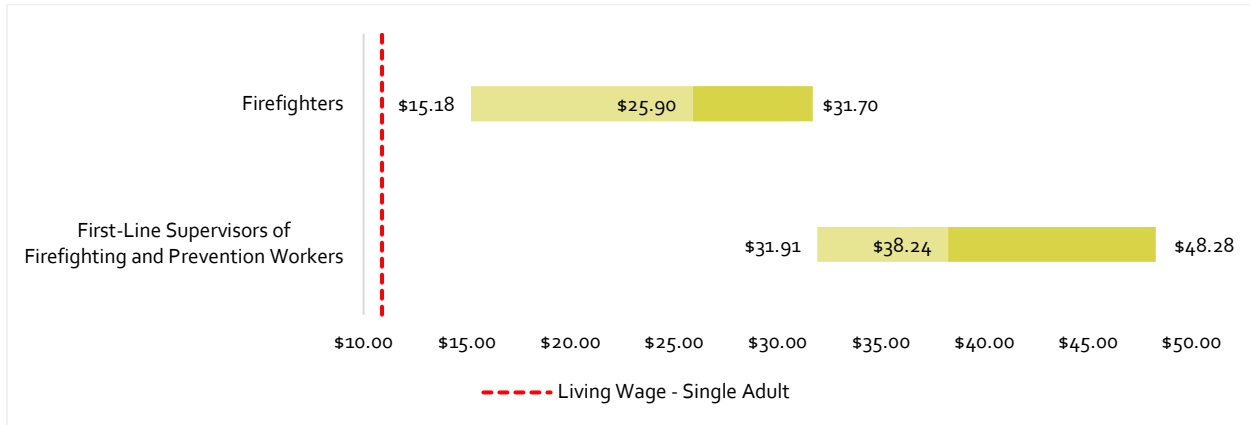
Exhibit 2. Changes in employment, 2014-2024



Wages

Exhibit 3 compares the entry-level, median, and experienced wages for the selected occupations to the Far North living wage for a single adult.²

Exhibit 3. Comparison of wages by occupation, Far North region



Job Postings

This section of the report analyzes recent data from online job postings (real-time LMI). Online job postings may provide additional insight into recent changes in the labor market that are not captured by historical data. Job postings data comes from Burning Glass Labor Insights and represents new listings posted online within the last year, from November 1, 2019, to October 31, 2020.

Occupations and Job Titles

Exhibit 4 details the number of online job postings for the selected occupations. Burning Glass identified a pool of 41 job postings for the selected occupations in the Far North region.

Exhibit 4. Number of job postings by occupation

Occupation	Job Postings	Share of Job Postings
Firefighters (33-2011)	13	32%
First-Line Supervisors of Fire Fighting and Prevention Workers (33-1021)	28	68%
Total Job Postings	41	100%

Exhibit 5 shows the top job titles with the most job postings and the share of job postings. All 41 job postings included a job title.

² Living wage is defined as the level of income a single adult with no children must earn to meet basic needs, including food, housing, transportation, healthcare, taxes, and other miscellaneous basic needs. The 25th-percentile and 75th-percentile hourly wages are used as proxy for entry-level and experienced-level wages.

Exhibit 5. Top jobs titles for selected occupations in the Far North region

Job Title	Job Postings	Share of Job Postings
Battalion Chief	14	34%
Fire Management Officer	3	7%
Heavy Fire Equipment Operator	2	5%
Forest Fire Management Officer	2	5%
Firefighter/Paramedic	2	5%
Fire Chief	2	5%
Wildland Firefighter - Helitack	1	2%
Wildland Firefighter	1	2%
Volunteer Firefighter	1	2%
Supervisor Firefighter Basic Life Support/Hazmat Technician	1	2%

Employers

Exhibit 6 shows the top employers for job postings related to the selected occupations. Please note that 39% of job posting have been excluded because they did not include an employer.

Exhibit 6. Top employers for selected occupations in the Far North region

Employer	Job Postings	Share of Job Postings
State of California	8	32%
National Testing Network	2	8%
Mountaineers Fire Crew, Inc	2	8%
Forest Service	2	8%
City Ukiah	2	8%
Bureau of Land Management	2	8%
US Government	1	4%
Northshore Fire Protection District	1	4%
National Park Service	1	4%
Kelseyville Fire Protection District	1	4%

Skills and Certifications

Exhibit 7 shows the top specialized skills for the selected occupations. Please note that 22% of job posting have been excluded because they did not include a skill.

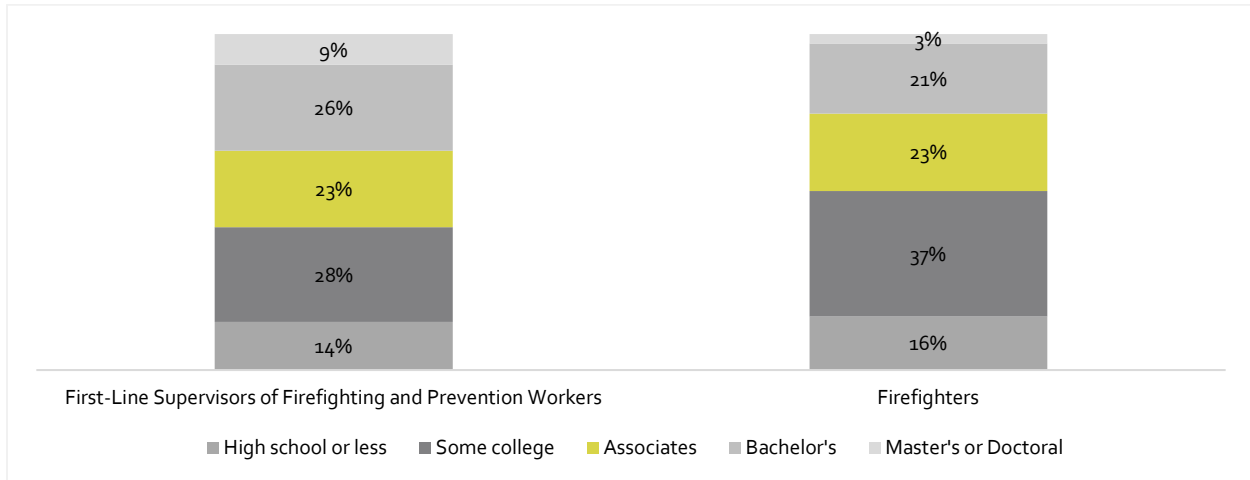
Exhibit 7. Top skills for selected occupations in the Far North region

Specialized Skill	Job Postings	Share of Job Postings
Fire Protection	20	10%
Self-Contained Breathing Apparatus (SCBA)	17	9%
Occupational Health and Safety	15	8%
Fire Suppression	11	6%
Exercise Treadmill	8	4%
Spirometry	8	4%
Telecommunications	7	4%
Treadmill Test	7	4%

Education and Training Requirements

The U.S. Census Bureau and Bureau of Labor Statistics collects data on the level of education achieved by workers employed in occupations. Exhibit 8 shows the national-level educational attainment of the current workforce in the selected occupations.

Exhibit 8. Educational attainment for selected occupations, 2018



The Bureau of Labor Statistics (BLS) uses a system to assign categories for entry-level education, work experience in a related occupation, and typical on-the-job training to each occupation for which the BLS publishes projections data. Exhibit 9 shows the entry-level job requirements for the selected occupations.

Exhibit 9. Typical education, training, and work experience for selected occupations

Occupation	Typical Entry-Level Education Required	Work Experience Required	Typical On-the-job Training Required
First-Line Supervisors of Firefighting and Prevention Workers	Postsecondary nondegree award	Less than 5 years	Moderate-term on-the-job training
Firefighters	Postsecondary nondegree award	None	Long-term on-the-job training

Educational Supply

Educational supply for an occupation can be estimated by analyzing the number of awards issued in related Taxonomy of Programs (TOP) or Classification of Instructional Programs (CIP) codes. Exhibit 10 shows the TOP and CIP codes related to the selected occupations.

Exhibit 10. Related TOP and CIP programs and codes for the selected occupations

TOP Programs and Codes	Aligned CIP Programs and Codes
Fire Technology (2133.00)	Fire Prevention and Safety Technology/Technician (43.0201)
Fire Academy (2133.50)	First Science/Firefighting (43.0203)

Community College Supply

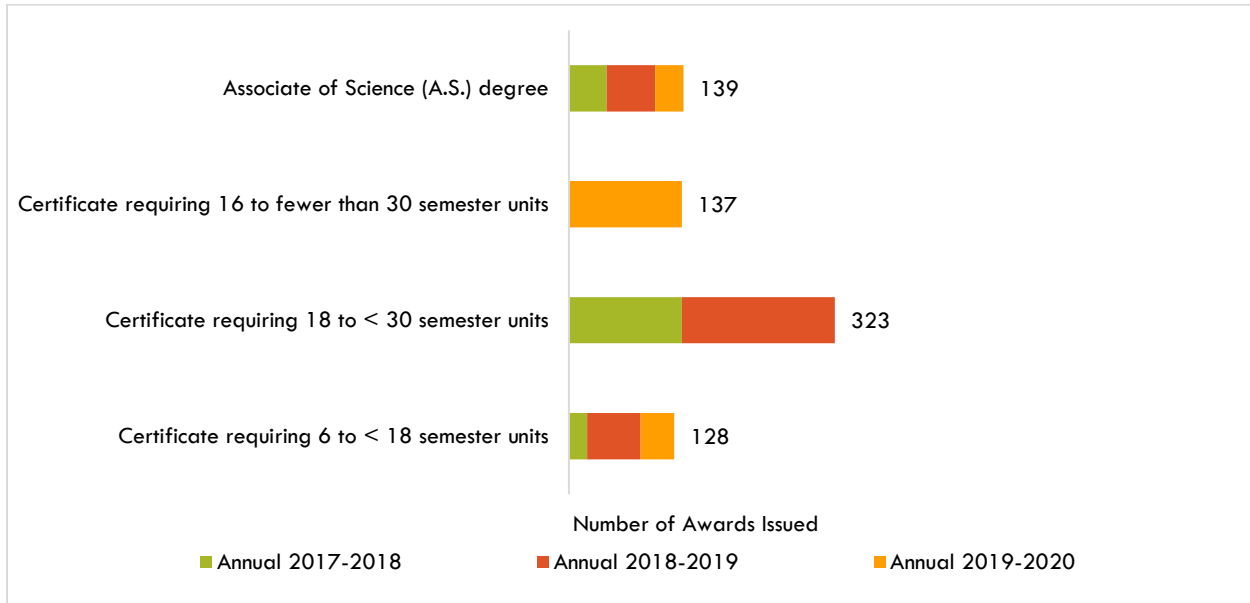
Exhibit 11 compares the average number of certificates and degrees conferred by Far North region community colleges in the selected programs over the last three academic years.

Exhibit 11. Regional community college awards (certificates and degrees), 2017-18 through 2019-20

Program	College	Annual Awards 2017-2018	Annual Awards 2018-2019	Annual Awards 2019-2020	3-Year Annual Awards Average
Fire Technology (2133.00)	Butte	57	67	27	50
	Lassen	3	2	2	2
	Mendocino	4	1	1	2
	Redwoods	1	0	0	0
	Shasta	4	3	3	3
	Siskiyou	33	37	20	30
Fire Academy (2133.50)	Butte	59	67	78	68
	Shasta	44	133	81	86
Totals		205	310	212	242

Exhibit 12 shows the distribution of issued awards by type.

Exhibit 12. Regional community college awards by type, 2017-18 through 2019-20



Other Postsecondary Supply

It is crucial to consider the supply from non-community college institutions in the region that provides training for the selected occupations.

No other postsecondary training providers in the Far North region offers programs in Fire Technology (2133.00) or Fire Academy (2133.50).

Findings

- Because some firefighters are classified as forest and conservation technicians, traditional labor market data may not accurately reflect demand.
- The Far North region held 1,891 jobs for fire prevention workers in 2019.
- Jobs for fire prevention workers are projected to increase by nearly 4% over the next five years.
- Over the next five years, fire prevention workers are projected to have 164 annual openings in the Far North region.
- Wage data shows that fire prevention workers tend to earn more than the subregion's living wage. Reported earnings for fire prevention workers range from a low of \$15 per hour for entry-level work to a high of \$48 per hour for experienced workers. The 2020 living wage for a single adult in the Far North region is \$10.89 per hour (minimum wage is \$13 per hour).
- According to real-time labor market information, there were 41 online job postings fire prevention workers between November 1, 2019, and October 31, 2020.
- Fifty-nine percent of existing fire prevention workers have education consistent with community college offerings (some college or associate degrees).

- Analysis of postsecondary awards in the Far North region shows that, on average, 242 awards were issued each year between the 2017-2018 and 2019-2020 academic years. The most popular award conferred was a certificate requiring 18 to fewer than 30-semester units.

Recommendations

- Based on a three-year average of annual awards in related fire Far North region fire programs (242 certificates and degrees) and projected yearly openings (164 openings), there seems to be an oversupply of trained firefighters and available positions. However, because firefighters employed may be classified as forest and conservation technicians, traditional labor market data for firefighters, especially wildland firefighters and those employed by federal agencies, may not accurately reflect demand. Appendix A shows demand (153 openings) for forest and conservation technicians.
- The North/Far North Center of Excellence recommends moving forward with programmatic changes and continued coordination with agencies that employ wildland firefighters.

COE Recommendation		
Move forward with the program	Program is not recommended	Additional information needed
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix A. Related Forestland Occupations

Introduction

The North/Far North Center of Excellence was asked to provide labor market information for a proposed program at a regional community college. This report focuses on the following Standard Occupational Classification (SOC) occupation and code:

- Forest and Conservation Technicians (19-4071)

The SOC title, SOC code, and job description from the Bureau of Labor Statistics (BLS) and O*Net OnLine are shown below.

Forest and Conservation Technicians (19-4071)

Provide technical assistance regarding the conservation of soil, water, forests, or related natural resources. May compile data pertaining to size, content, condition, and other characteristics of forest tracts, under the direction of foresters; or train and lead forest workers in forest propagation, fire prevention and suppression. May assist conservation scientists in managing, improving, and protecting rangelands and wildlife habitats.

Occupational Demand

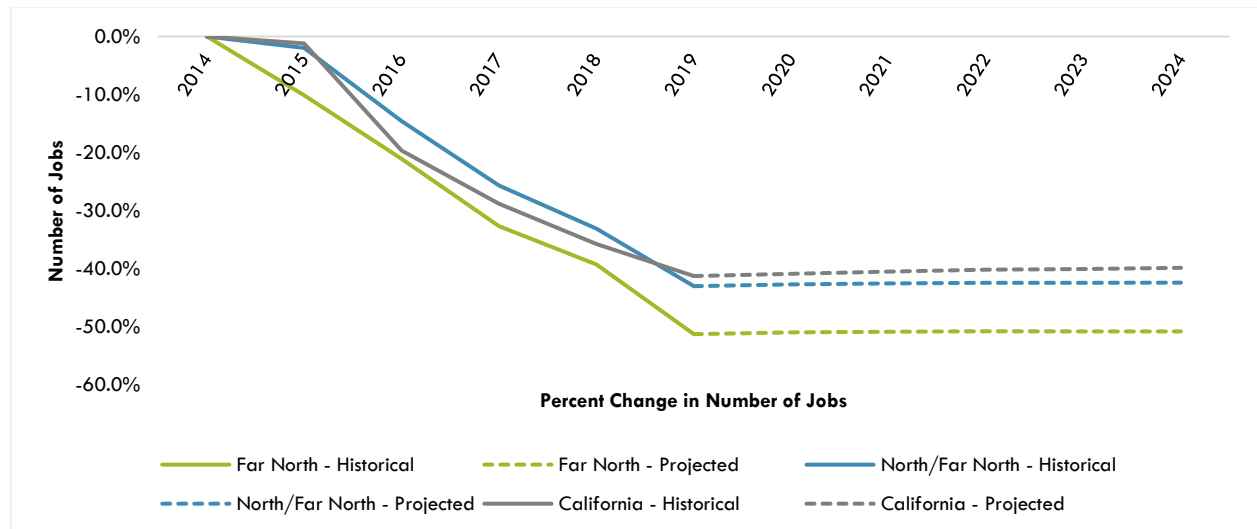
Exhibit 1 summarizes the five-year projected job growth for the selected occupation in the Far North, North/Far North, and California.

Exhibit 1. Employment and projected demand, 2019-2024

Occupation	SOC	2019 Jobs	2024 Jobs	2019-2024 Jobs Change	2019-2024 Jobs % Change	2019-2024 Annual Openings
Forest and Conservation Technicians	19-4071	1,025	1,035	10	0.9%	153
Far North region	TOTAL	1,025	1,035	10	0.9%	153
Forest and Conservation Technicians	19-4071	1,543	1,560	16	1.1%	222
North/Far North region	TOTAL	1,543	1,560	16	1.1%	222
Forest and Conservation Technicians	19-4071	7,519	6,112	(1,407)	-18.7%	706
California	TOTAL	7,519	6,112	(1,407)	-18.7%	706

Exhibit 2 compares the percent change in the number of jobs between 2014 through 2019 and the projected changes through 2024. The rate of change is indexed to the total number of jobs in 2014.

Exhibit 2. Changes in employment, 2014-2024

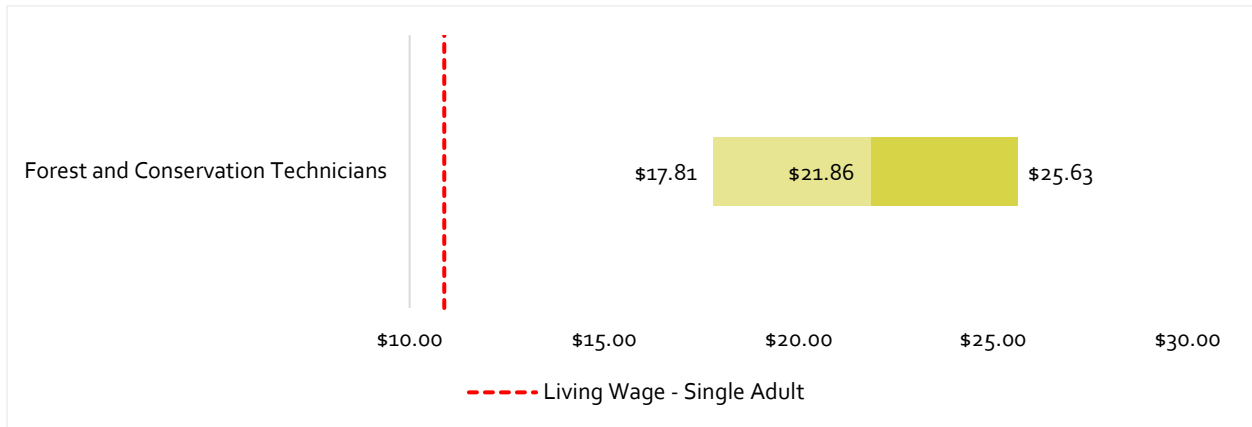


Wages

Exhibit 3 compares the entry-level, median, and experienced wages for the selected occupation to the Far North living wage for a single adult.³

³ Living wage is defined as the level of income a single adult with no children must earn to meet basic needs, including food, housing, transportation, healthcare, taxes, and other miscellaneous basic needs. The 25th-percentile and 75th-percentile hourly wages are used as proxy for entry-level and experienced-level wages.

Exhibit 3. Comparison of wages by occupation, Far North region



Job Postings

This section of the report analyzes recent data from online job postings (real-time LMI). Online job postings may provide additional insight into recent changes in the labor market that are not captured by historical data. Job postings data comes from Burning Glass Labor Insights and represents new listings posted online within the last year, from November 1, 2019, to October 31, 2020.

Occupations and Job Titles

Exhibit 4 details the number of online job postings for the selected occupation. Burning Glass identified a pool of 106 job postings for the selected occupation in the Far North region.

Exhibit 4. Number of job postings by occupation

Occupation	Job Postings	Share of Job Postings
Forest and Conservation Technicians (19-4093)	106	100%
Total Job Postings	106	100%

Exhibit 5 shows the top job titles with the most job postings and the share of job postings. All 106 job postings included a job title.

Exhibit 5. Top jobs titles for selected occupation in the Far North region

Job Title	Job Postings	Share of Job Postings
Forestry Technician	11	10%
Forestry Technician Tsa	7	7%
Forestry Technician Airtanker	6	6%
Stand Improvement Contract Inspection Crew Member	5	5%
Wildland Firefighter Forestry Aid/Technician	4	4%
Forestry Crew Technician - National Forest	4	4%
Forest Patrol	4	4%
Forestry Technician Recreation	3	3%
Forestry Technician Fire Dispatch	3	3%
Forestry Technician Dispatch	3	3%

Employers

Exhibit 6 shows the top employers for job postings related to the selected occupation. Please note that 13% of job posting have been excluded because they did not include an employer.

Exhibit 6. Top employers for selected occupation in the Far North region

Employer	Job Postings	Share of Job Postings
Forest Service	44	48%
Bureau of Land Management	12	13%
The Great Basin Institute	10	11%
National Park Service	8	9%
Mendocino Redwood Company	3	3%
Sierra Pacific Industries	2	2%
State of California	1	1%
US Government	1	1%
US Department of Agriculture	1	1%
The News Tribune Company	1	1%

Skills and Certifications

Exhibit 7 shows the top specialized skills for the selected occupation. All 106 job postings included job skills.

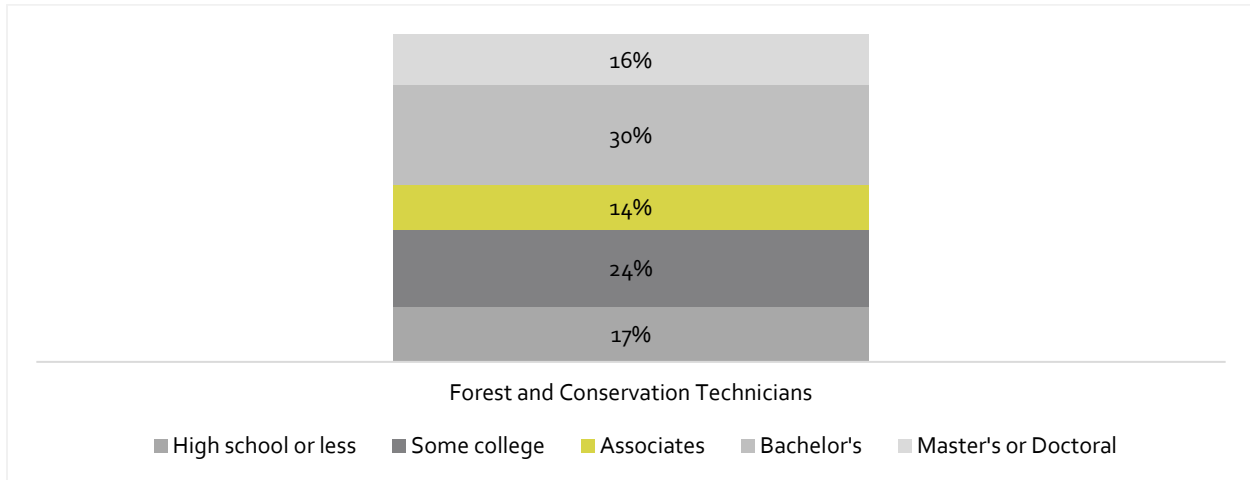
Exhibit 7. Top skills for selected occupation in the Far North region

Specialized Skill	Job Postings	Share of Job Postings
Personnel Management	50	5%
Range Management	44	5%
Fire Suppression	43	5%
Scheduling	34	4%
Annuities	31	3%
Land Management	31	3%
Global Positioning System (GPS)	28	3%
Natural Resources	27	3%

Education and Training Requirements

The U.S. Census Bureau and Bureau of Labor Statistics collects data on the level of education achieved by workers employed in this occupation. Exhibit 8 shows the national-level educational attainment of the current workforce in the selected occupation.

Exhibit 8. Educational attainment for selected occupation, 2018



The Bureau of Labor Statistics (BLS) uses a system to assign categories for entry-level education, work experience in a related occupation, and typical on-the-job training to each occupation for which the BLS publishes projections data. Exhibit 9 shows the entry-level job requirements for the selected occupation.

Exhibit 9. Typical education, training, and work experience for forest and conservation technicians

Occupation	Typical Entry-Level Education Required	Work Experience Required	Typical On-the-job Training Required
Forest and Conservation Technicians	Associate's degree	None	None

Findings

- The Far North region held 1,025 jobs for forest and conservation technicians in 2019.
- Jobs for forest and conservation technicians are projected to increase by 1% over the next five years.
- Over the next five years, forest and conservation technicians are projected to have 153 annual openings in the Far North region.
- Wage data shows that forest and conservation technicians tend to earn more than the subregion's living wage. Reported earnings range from a low of \$18 per hour for entry-level work to a high of \$26 per hour for experienced workers. The 2020 living wage for a single adult in the Far North region is \$10.89 per hour (minimum wage is \$13 per hour).
- According to real-time labor market information, there were 106 online job postings for forest and conservation technicians between November 1, 2019, and October 31, 2020. A majority of these postings were for employment with federal agencies.

- Thirty-eight percent of existing forest and conservation technicians have education consistent with community college offerings (some college or associate degrees).

Appendix B. Methodology and Sources

Occupations in this report were identified using O*Net. This report's findings were determined using labor market data from the Bureau of Labor Statistics (BLS), U.S. Census Bureau data from Emsi, and jobs posting data from Burning Glass.

Sources used for data analysis purposes in this report include:

- U.S. Department of Labor/Employment and Training Administration (DOL ETA) O*NET Online
- Burning Glass, Labor Insight/Jobs
- Economic Modeling Specialists, International (EMSI)
- California Employment Development Department, Labor Market Information Division (EDD, LMID)
- Bureau of Labor Statistics, Occupational Employment Statistics (OES)
- California Community Colleges Chancellor's Office, Cal-PASS Plus LaunchBoard
- Living Insight Center for Community Economic Development, Self-Sufficiency Standard Tool for California
- California Community Colleges Chancellor's Office Management Information Systems (MIS Data Mart)
- U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS)

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