

Firefighter

Inland Empire/Desert Region (Riverside and San Bernardino counties combined)

Note: This workforce demand report uses state and federal job projection data that was developed before the economic impact of COVID-19. The COE is monitoring the situation and will provide more information as it becomes available. Please consult with local employers to understand their current employment needs.

Summary

- The knowledge, skills, and abilities provided by the community college programs related to urban search and rescue lead to two distinct occupations, collectively referred to as the *fire technology occupational group* in this report.
- Employment for the *fire technology occupational group* is expected to **increase by 9% between 2019 and 2024**. A total of **272 annual job openings** will be available each year over the five-year timeframe.
- **The entry-level hourly wages for both occupations in this group are above \$21.78 per hour**, the self-sustainable hourly wage estimate for a single adult with one child.
- There were **273 credentials issued** from regional community college programs related to fire technology over the last three academic years (129 for **fire technology** and 144 for **fire academy**). Supply may be overstated by examining the number of credentials alone for these occupations due to the crossover nature of these programs.
- The COE recommends creating new and expanding existing firefighter programs to meet the demand for more workers.

Introduction

This report provides data on programs and occupations related to Urban Search and Rescue (US&R). See page nine for more information about US&R. The most closely related California Community College programs are:

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

The **fire technology** program prepares students for employment through the instruction of the principles and techniques of preventing, controlling and extinguishing fires, including firefighter operations, maintenance of firefighting equipment, fire rescue procedures, and applicable laws and regulations (Taxonomy of Programs, 2012).

The **fire academy** program prepares students for employment by providing instruction specific to local and state training requirements for fire technology-related employment and post-employment advancement (Taxonomy of Programs, 2012).

The knowledge, skills, and abilities trained by these programs lead to the following occupations, collectively referred to as the *fire technology occupational group*:

- Firefighter (SOC 33-2011)
- Forest Fire Inspectors and Prevention Specialists (SOC 33-2022)

Job Opportunities

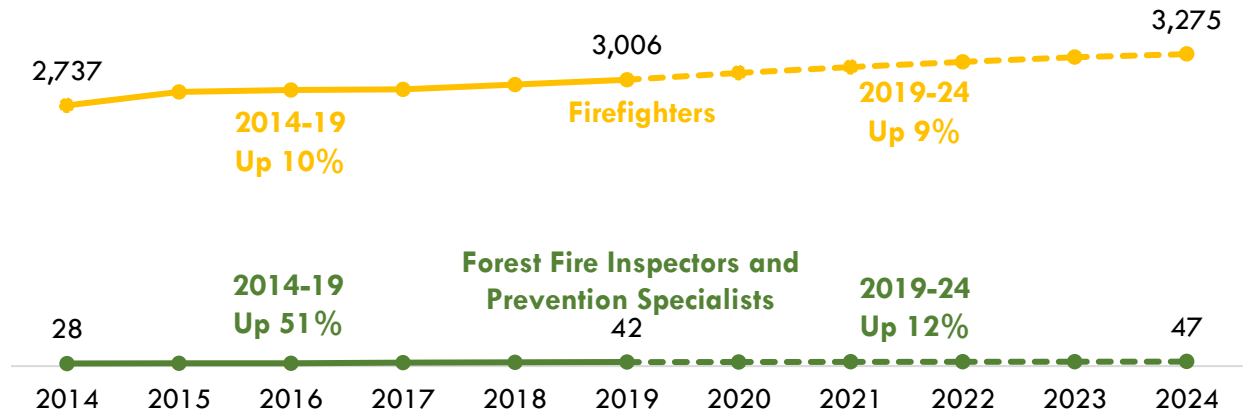
In 2019, there were 3,048 jobs in the *fire technology occupational group* in the Inland Empire/Desert region (IEDR). This occupational group is projected to increase employment by 9% through 2024. Employers are expected to have 1,360 job openings over the next five years to fill new jobs and backfill jobs that workers are permanently vacating (includes occupational transfers and retirements). Far more *firefighters* job openings are expected over the next five years compared to *forest fire inspectors and prevention specialist* jobs. Exhibit 1 displays five-year projected job growth, and Exhibit 2 displays historical (2013 to 2019) and projected (2019-2024) jobs for the *fire technology occupational group*.

Exhibit 1: Five-year projections for each occupation in the fire technology occupational group

Occupation	2019 Jobs	2024 Jobs	5-Yr % Change (New Jobs)	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)	% of workers age 55+
Firefighters	3,006	3,275	9%	1,334	267	7%
Forest Fire Inspectors and Prevention Specialists	42	47	12%	26	5	Insf. Data
Total	3,048	3,322	9%	1,360	272	8%

Source: EMSI 2020.1

Exhibit 2: Historical and projected jobs for the fire technology occupational group, 2013 – 2024



Source: EMSI 2020.1

Job Postings

Exhibit 3 displays the number of job ads posted during the last 12 months, along with the local and statewide average time to fill for the *fire technology occupational group*. It is important to note limitations when examining employer job ads. Job postings data is limited to the information provided by employers and the ability of artificial intelligence search engines to identify this information. Additionally, preliminary calculations by Georgetown Center on Education and the Workforce found that "just 30 to 40 percent of openings for candidates with some college or an associate degree, and only 40 to 60 percent of openings for high school diploma holders appear online" (Carnevale et al., 2014).

This section includes all advertisements for the *fire technology occupational group* due to the limited number of job postings for urban search and rescue workers (US&R). Only one of the 47 online job postings for *fire technology occupational group* mentioned urban search and rescue. This advertisement did not include any requirements beyond those of a certified Firefighter 1 (Cal Fire, March 2020).

Over the last 12 months, there were no local online job postings for *forest fire inspectors and prevention specialists*. On average, local employers fill online job postings for the *fire technology occupational group* within 32 days. This regional average is three days longer than the statewide average of 29 days, indicating that it may be slightly more challenging for local employers to fill open positions than other employers in California.

Exhibit 3: Job ads and time to fill, Apr 2019 – Mar 2020

Occupation	Job Ads	Regional Average Time to Fill (Days)	California Average Time to Fill (Days)
Firefighters	47	32	28
Forest Fire Inspectors and Prevention Specialists	0	-	40

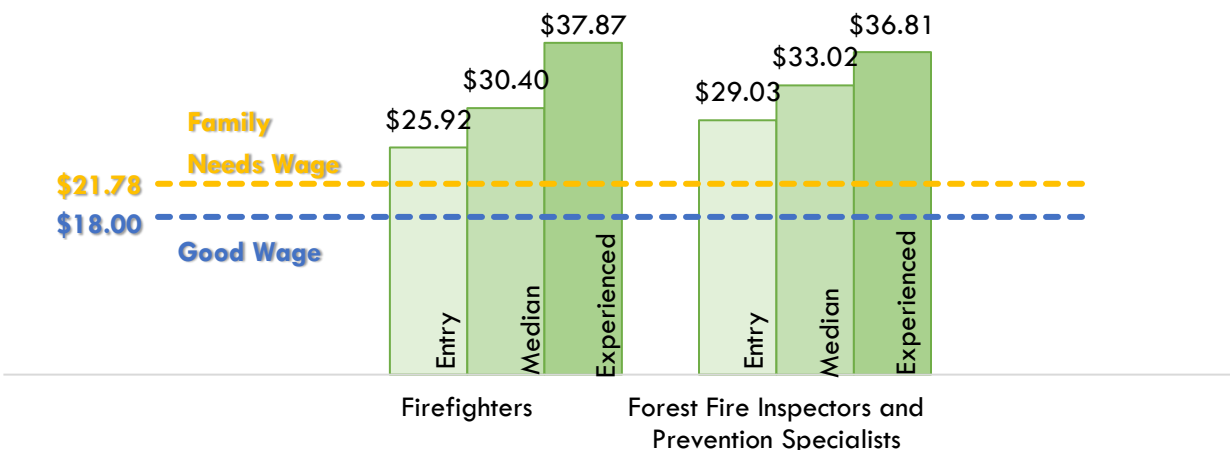
Occupation	Job Ads	Regional Average Time to Fill (Days)	California Average Time to Fill (Days)
Total	47	32	29

Source: Burning Glass – Labor Insights

Earnings and Benefits

Community colleges should ensure their training programs lead to employment opportunities that provide a self-sustainable level of income. The Brookings Institute in their Advancing Opportunity in California's Inland Empire report found that a "good job" wage in the region is above the \$18.00 per hour, or \$37,440 per year (Shearer, Shah & Gootman, p. 25). The Family Needs Calculator estimates that a self-sustainable wage for a single adult with one school-age child is \$21.78 per hour (Pearce & Manzer, 2020). The entry-level wages for the *fire technology occupational group* are above the Family Needs Calculator self-sustainability rate. Both occupations surpass the Brookings Institute's "good job" wage at the entry-level. Exhibit 4 displays the hourly earnings for this occupational group.

Exhibit 4: Hourly earnings for the fire technology occupational group



Source: EMSI 2020.1

According to the California Labor Market Information Division's occupational guides, benefits for *fire technology occupational group* typically include paid vacation, holidays, sick leave, health insurance, and retirement programs (Detailed Occupational Guides, 2020).

Employers, Skills, Education, and Work Experience

Exhibit 5 displays the employers posting the most job ads for the *fire technology occupational group* during the last 12 months in the IEDR. There were no local job postings for *forest fire inspectors and prevention specialists*; job posting data could not be obtained for this occupation.

Exhibit 5: Employers posting the most job ads for fire technology occupations, Apr 2019 – Mar 2020

Occupation	Employers
Firefighters (n=41)	<ul style="list-style-type: none"> • Morongo Band of Mission Indians – Fire Department • San Bernardino County • Victorville Fire Department • Palm Springs Fire Department

Source: Burning Glass – Labor Insights

Exhibit 6 displays a sample of specialized and employability skills that employers are seeking when looking for workers to fill positions in the *fire technology occupational group*. Specialized skills are occupation-specific skills that employers are requesting for industry or job competency. Employability skills are foundational skills that transcend industries and occupations; this category is commonly referred to as "soft skills." The skills requested in job postings may be utilized as a helpful guide for curriculum development.

Exhibit 6: Sample of in-demand skills from employer job ads, Apr 2019 – Mar 2020

Occupation	Specialized Skills	Employability Skills
Firefighters (n=24)	<ul style="list-style-type: none"> • Cardiopulmonary Resuscitation (CPR) • Advanced Cardiac Life Support (ACLS) • Fire Suppression • Life Support 	<ul style="list-style-type: none"> • Writing • Physical Abilities • Preventive Maintenance • Building Effective Relationships

Source: Burning Glass – Labor Insights

Exhibit 7 displays the entry-level education typically required to enter each occupation according to the Bureau of Labor Statistics (BLS), educational attainment for incumbent workers with "some college, no degree" and an "associate degree" according to the U.S. Census (2016-17) and the real-time minimum advertised education requirement from employer job ads. Employers posting job ads for *firefighters* were looking for a candidate with high school or vocational training. There were no job postings for *forest fire inspectors and prevention specialists*; minimum advertised education information could not be obtained.

Exhibit 7: Typical entry-level education, educational attainment, and minimum advertised education requirements for the fire technology occupational group, Apr 2019 – Mar 2020

Occupation	Typical Entry-Level Education Requirement	CC-Level Educational Attainment*	Real-Time Minimum Advertised Education Requirement			
			Number of Job Ads	High school diploma or vocational training	Associate degree	Bachelor's degree or higher
Firefighters	Postsecondary nondegree award	61%	20	100%	-	-
Forest Fire Inspectors and Prevention Specialists	High school diploma or equivalent	56%	0	-	-	-

Source: EMSI 2020.1, Burning Glass – Labor Insights

*Percentage of incumbent workers with a Community College Credential or Some Postsecondary Coursework

Exhibit 8 displays the work experience typically required to enter each occupation and the real-time work experience requirements from employer job ads. Most employers were looking for a candidate with zero to two years of work experience.

Exhibit 8: Work experience required and real-time work experience requirements, Apr 2019 – Mar 2020

Occupation	Work Experience Typically Required	Real-Time Work Experience			
		Number of Job Ads	0 – 2 years	3 – 5 years	6+ years
Firefighters	None	11	82%	18%	-
Forest Fire Inspectors and Prevention Specialists	Less than 5 years	0	-	-	-

Source: EMSI 2020.1, Burning Glass – Labor Insights

Certifications

The Office of the State Fire Marshall, the regulatory agency that issues certifications for firefighters in California, developed a certification checklist required for prospective firefighters to complete before becoming a certified firefighter. The checklist of required certifications includes, Confined Space Rescue Awareness (FSTEP or IAFF), IS-100 Introduction to Incident Command System (FEMA), IS-700a National Incident Management System An Introduction (FEMA), Wildland Fire Fighter, Hazardous Materials First Responder Operational (FRO), and both the written and skills portions of the firefighter I examination (Cal Fire, March 2020).

Fire inspectors must complete HAZMAT First Responder Awareness training in addition to fire inspector-specific course work. Fire inspectors are also required to obtain one year of full-time work experience or two years of part-time paid experience before employment. Each of the fire technology positions requires the completion of a task book, which includes all the necessary certifications and tasks to complete before licensure. The Office of the State Fire Marshall website provides detailed information on the certifications required for the fire academy occupational group (Cal Fire, April 2019). Exhibit 9 displays the certifications required by employers posting job ads for *firefighters* in the IEDR.

Exhibit 9: Certifications requested or required by employer job ads for fire technology occupations, Apr 2019 – Mar 2020

Occupation	Certifications
Firefighters (n=21)	<ul style="list-style-type: none"> • Firefighter Certification • Paramedic Certification • Emergency Medical Technician (EMT) Certification

Source: Burning Glass – Labor Insights

Student Completions and Program Outcomes

Exhibits 10 and 11 display annual average completion data for the California Community College *fire technology* and *fire academy* programs, respectively, based on the most recent three academic years. The student completion methodology is available in the appendix section of this report.

Exhibit 10: Annual average community college credentials for the fire technology program in the IEDR

2133.00 – Fire Technology	Associate of Science (A.S.)	Certificate requiring 30 to < 60-semester units	Certificate requiring 18 to < 30-semester units	CCC Annual Average Credentials, Academic Years 2016-19
Chaffey	16	-	18	44
Copper Mountain	4	1	0	5
Crafton Hills	16	-	-	16
Desert	5	-	4	9
Moreno Valley	15	-	20	35
Mt. San Jacinto	9	4	-	13
Victor Valley	18	-	-	18
Total	82	4	43	129

Source: MIS Data Mart

Exhibit 11: Annual average community college credentials for the fire academy program in the IEDR

2133.50 – Fire Academy	Associate of Science (A.S.)	Certificate requiring 30 to < 60-semester units	Certificate requiring 18 to < 30-semester units	Certificate requiring 6 to < 18-semester units	CCC Annual Average Credentials, Academic Years 2016-19
Crafton Hills	-	-	-	38	38
Desert	-	-	10	-	10
Moreno Valley	18	-	76	-	94
Mt. San Jacinto	-	-	-	1	1
Victor Valley	-	1	-	-	1
Total	18	1	86	39	144

Source: MIS Data Mart

Program outcome data may provide a useful insight into the likelihood of success for the proposed program. Community college student outcome information based on the selected TOP codes and region is provided in Exhibits 12 and 13. In the following tables, dashes represent metrics in which there were too few students to obtain accurate outcome information. The outcome methodology is available in the appendix section of this report.

Exhibit 12: 2133.00 – Fire technology strong workforce program outcomes

Strong Workforce Program Metrics: 2133.00 – Fire Technology Academic Year 2016 -17, unless noted otherwise	Inland Empire/Desert Region	California
Unduplicated count of enrolled students (2017-18)	3,447	28,001
Completed 9+ career education units in one year (2017-18)	21%	24%
Economically disadvantaged students	41%	45%
Students who attained a noncredit workforce milestone in a year (2017-18)	-	33%
Students who earned a degree, certificate, or attained apprenticeship (2017-18)	131	1,383
Transferred to a four-year institution (transfers)	21	262
Job closely related to the field of study (2015-16)	84%	78%
Median annual earnings (all exiters)	\$73,908	\$50,960
Median change in earnings (all exiters)	30%	43%
Attained a living wage (completers and skills-builders)	75%	67%

Sources: LaunchBoard Community College Pipeline and Strong Workforce Program Metrics

Exhibit 13: 2133.50 – Fire academy strong workforce program outcomes

Strong Workforce Program Metrics: 2133.50 – Fire Academy Academic Year 2016 -17, unless noted otherwise	Inland Empire/Desert Region	California
Unduplicated count of enrolled students (2017-18)	388	10,510
Completed 9+ career education units in one year (2017-18)	47%	18%
Economically disadvantaged students	50%	28%
Students who attained a noncredit workforce milestone in a year (2017-18)	-	-
Students who earned a degree, certificate, or attained apprenticeship (2017-18)	61	606
Transferred to a four-year institution (transfers)	-	151
Job closely related to the field of study (2015-16)	89%	90%
Median annual earnings (all exiters)	\$81,960	\$128,140
Median change in earnings (all exiters)	51%	34%
Attained a living wage (completers and skills-builders)	83%	85%

Sources: LaunchBoard Community College Pipeline and Strong Workforce Program Metrics

Urban Search and Rescue

Urban Search and Rescue (US&R) task forces operate within the Federal Emergency Management Agency (FEMA) and specialize in the location, rescue (extrication), and initial medical stabilization of individuals trapped in confined spaces (FEMA, 2018). There are 28 US&R task forces nationally, eight in California, and one located in Riverside. While the US&R task force is a FEMA resource, the task forces work for and in support of, local response agencies, typically fire departments (Riverside Fire Department, 2020). The City of Riverside Fire Department is the sponsoring agency for the US&R task force in the region and is supported by the following fire departments; Corona, Hemet, Murrieta, Pechanga, and CAL Fire/Riverside County Fire Department (Riverside Fire Department, 2020). US&R task forces primarily operate as regional fire departments, but additional funding from FEMA equips these departments with the resources and training needed to respond to emergencies.

US&R workers typically begin their careers as firefighters and gain the necessary skills to respond to emergencies through on the job training and work experience. Task forces can comprise a range of specialties including, search specialists, heavy rescue specialists, HAZ-MAT specialists, medical team personnel, heavy riggers, structural engineers, and logisticians (Riverside Fire Department, 2020). Participating departments determine the employment requirements to become a member of a US&R task force but typically reflect the needs to become a firefighter (Riverside Fire Department, 2020). While US&R task forces are primarily comprised of firefighters, job posting data reveals that not all firefighters are US&R workers. As a result, the lack of US&R job postings likely understates the demand for these workers.

Real-time online job posting information from employer advertisements provides limited insight into job requirements for US&R workers. Only one of the 47 regional job postings for firefighters over the last year mentioned US&R. This job advertisement did not include any job requirements beyond what is required for Firefighter 1 certification (Cal Fire, March 2020). Job posting data indicates that individuals qualified to be level 1 Firefighters are also qualified to work at US&R fire departments.

Recommendation

Fire Technology (TOP 2133.00) and Fire Academy (TOP 2133.50) community college programs prepare students to enter the workforce as a *firefighter* or *forest fire inspectors and prevention specialists*. The *fire technology occupational group* will have 272 combined annual job openings over the next five years. Far more job openings are expected for *firefighters* compared to *forest fire inspectors and prevention specialists* over the next five years. Both occupations provide a self-sustainable hours wage at the 25th percentile



level (\$25.92 per hour for *firefighters* and \$29.03 per hour for *forest fire inspection and prevention specialists*).

Seven IEDR community colleges offer **fire technology** programs, and five offer **fire academy** programs. These programs combined conferred 273 annual average credentials over the last three academic years (129 for **fire technology** and 144 for **fire academy**). On the surface, it appears that the supply of credentials is meeting the workforce demand for the *fire technology occupational group*. *Still*, the supply of qualified workers may be overstated by combining the number of credentials from these programs. Students may need to receive awards in both programs to have the necessary qualifications to enter the workforce, depending on the hiring employer.

The IEDR COE recommends creating new and expanding existing firefighter programs to meet the demand for more workers. Colleges considering these programs should meet with relevant employers to understand their demand for more workers and the specific skills, licensing, and credentials needed for gainful employment in this field.

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Appendix: Occupation definitions, sample job titles, five-year projections for fire technology occupations

Occupation Definitions (SOC) code), Education and Training Requirement, Community College Educational Attainment

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.

Sample job titles: Apparatus Operator, Fire Captain, Fire Chief, Fire Engineer, Fire Equipment Operator, Fire Fighter, Firefighter, Fireman, Safety Officer, Volunteer Firefighter, Fire Management Specialist, Fire Rescue Technician, Fire Technician, Forest Fire Suppression Specialist, Forestry Fire Technician, Hot Shot, On-Scene Supporter, Wildland Firefighter

Entry-Level Educational Requirement: Postsecondary nondegree award

Training Requirement: More than twelve months of on-the-job training

Incumbent workers with a Community College Award or Some Postsecondary Coursework: 61%

Forest Fire Inspectors and Prevention Specialists (33-2022)

Enforce fire regulations, inspect forest for fire hazards and recommend forest fire prevention or control measures. May report forest fires and weather conditions.

Sample job titles: Fire Apparatus Engineer, Fire Lookout, Fire Operations Forester, Forest Fire Lookout, Forest Officer, Forest Patrolman, Forest Ranger, Forest Technician, Forester, Ranger

Entry-Level Educational Requirement: High school diploma or equivalent

Training Requirement: One to twelve months of on-the-job training

Incumbent workers with a Community College Award or Some Postsecondary Coursework: 56%

Appendix: Student Completions and Program Outcome Methodology

Exhibits 10 and 11 display the average annual regional California Community College (CCC) credentials conferred during the three academic years between 2016 and 2019, from the California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart, along with the enrollments from the most recent year available on LaunchBoard. Credentials are the combined total of associate degrees and certificates issued during the timeframe, divided by three in this case to calculate an annual average. This is done to minimize the effect of atypical variation that might be present in a single year. Enrollments are the count of enrollments in courses assigned to the TOP code in the selected year.

Community college student outcome information is from LaunchBoard and based on the selected TOP code and region. These metrics are based on records submitted to the California Community Colleges Chancellor's Office Management Information Systems (MIS) by community colleges, which come from self-reported student information from CCC Apply and the National Student Clearinghouse. Employment and earnings metrics are sourced from records provided by California's Employment Development Department's Unemployment Insurance database. When available, outcomes for completers are reported to demonstrate the impact that earning a degree or certificate can have on employment and earnings. For more information on the types of students included for each metric, please see the web link for LaunchBoard's Strong Workforce Program Metrics Data Element Dictionary in the References section (LaunchBoard, 2020a). Finally, employment in a job closely related to the field of study comes from self-reported student responses on the CTE Employment Outcomes Survey (CTEOS), administered by Santa Rosa Junior College (LaunchBoard, 2017).

Table 1: 2019 to 2024 job growth, wages, education, training, and work experience required for the fire technology occupational group, IEDR

Occupation (SOC)	2019 Jobs	5-Yr Change	5-Yr % Change	Annual Openings (New + Replacement Jobs)	Entry-Experienced Hourly Wage Range (25 th to 75 th percentile)	Median Hourly Wage (50 th percentile)	Average Annual Earnings	Typical Entry-Level Education & On-The-Job Training Required	Work Experience Required
Firefighters (33-2011)	3,006	269	9%	267	\$25.92 to \$37.87	\$30.40	\$68,600	Postsecondary & More than 12 months	None
Forest Fire Inspectors and Prevention Specialists (33-2022)	42	5	12%	5	\$29.03 to \$34.08	\$33.02	\$70,900	High school diploma or equivalent & 1-12 months	Less than 5 years
Total	3,048	274	9%	272	-	-	-	-	-

Source: EMSI 2020.1