

Labor Market Analysis: 2133.10 – Wildland Fire Technology

Certificate requiring 8 to fewer than 16 semester units

Los Angeles Center of Excellence, June 2024

Program Endorsement:	Endorsed: All Criteria Met <input type="checkbox"/>	Endorsed: Some Criteria Met <input type="checkbox"/>	Not Endorsed <input checked="" type="checkbox"/>
Program Endorsement Criteria			
Supply Gap:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> (see below)	
Living Wage: (Entry-Level, 25th)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Education:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Emerging Occupation(s)			
Yes <input type="checkbox"/>		No <input checked="" type="checkbox"/>	

SUMMARY

This report analyzes whether local labor market demand is being met by community college programs aligned with the identified middle-skill occupations¹ or whether a shortage of workers exists. Labor market demand is measured by annual job openings while education supply is measured by the number of awards (degrees and certificates) conferred on average each year.

Based on the available data, there does not appear to be a supply gap for these fire technology occupations in the region. However, of the 1,125 average annual awards issued related to fire technology, 37 were bachelor's degrees, 335 were associate degrees, 518 were certificates greater than 16 units, and 235 were low-unit certificates. Although hiring preferences for entry-level firefighters vary by agency type (Federal, State/Cal-Fire, Local/Municipal/County, and Private), it is unlikely that the 235 low-unit certificates are sufficient for employment as a firefighter, which brings the realistic supply for firefighting occupations down to 890 average annual awards. Furthermore, entry-level wages exceed the self-sufficiency standard wage in both Los Angeles and Orange counties, and the majority of annual openings for the occupations in this report typically require a postsecondary non-degree award.

Recommendation: Due to the lack of a supply gap, the Los Angeles Center of Excellence for Labor Market Research (LA COE) does not endorse this proposed program.

¹ Middle-skill occupations typically require some postsecondary education, but less than a bachelor's degree. 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.

Key Findings

Supply Gap

- 727 annual job openings are projected in the region through 2027. This number is less than the three-year average of 1,125 awards conferred by educational institutions in the region.
 - Of the 1,125 average annual awards issued related to fire technology, 37 were bachelor's degrees, 335 were associate degrees, 518 were certificates greater than 16 units, and 235 were low-unit certificates. Although hiring preferences for entry-level firefighters vary by agency type (Federal, State/Cal-Fire, Local/Municipal/County, or Private), it is unlikely that these 235 low-unit certificates are sufficient for employment as a firefighter. It is also possible that these are up-skilling certificates issued to individuals already employed as firefighters. Therefore, a more accurate and realistic estimate of supply for firefighting jobs is 890 average annual awards.
 - Over the past 12 months, there were 289 online job postings related to fire technology occupations. The highest number of job postings were for firefighters, fire inspectors, firefighters/paramedics, fire alarm inspectors, and fire investigators.

Living Wage

- All four of the occupations have entry-level wages **above** Los Angeles County's self-sufficiency standard hourly wage (\$18.10/hour).²

Educational Attainment

- 99% of the annual job openings typically require a postsecondary non-degree award for middle-skill fire technology occupations in the LA/OC region.
- 47%-59% of workers in the field have completed some college or an associate degree, according to national educational attainment data.

Community college supply

- 10 community colleges issued awards related to fire technology in the greater LA/OC region.
- 1,088 awards (degrees and certificates) were conferred on average each year between 2020 and 2023.
 - Of these 1,088 average annual awards issued related to fire technology, 335 were associate degrees, 516 were certificates greater than 16 units, and 235 were low-unit certificates. Although hiring preferences for entry-level firefighters vary by agency type (Federal, State/Cal-Fire, Local/Municipal/County, or Private), it is unlikely that these 235 low-unit certificates are sufficient for employment as a firefighter. Therefore, a more accurate and realistic estimate of supply for firefighting jobs is 853 average annual community college awards.

Other postsecondary supply

- 1 educational institution in the LA/OC region conferred awards in the past three years for a program related fire technology.
- 37 bachelor's awards were conferred on average each year by one other postsecondary institution in the greater LA/OC region.

² Self-Sufficiency Standard wage data was pulled from The Self-Sufficiency Standard Tool for California. For more information, visit: <http://selfsufficiencystandard.org/california>.

TARGET OCCUPATIONS

LA COE prepared this report to provide regional labor market and postsecondary supply data related to four middle-skill occupations. [For full occupation descriptions, please see Appendix.](#)

- **First-Line Supervisor of Firefighting and Prevention Workers (33-1021)**³
- **Firefighters (33-2011)**⁴
- **Fire Inspectors and Investigators (33-2021)**⁵
- **Forest Fire Inspectors and Prevention Specialists (33-2022)**⁶

OCCUPATIONAL DEMAND

Exhibit 1 shows the five-year occupational demand projections for these middle-skill fire technology occupations. In the greater Los Angeles/Orange County region, the number of jobs related to these occupations is projected to decrease by 4% through 2027. However, there will be more than 720 job openings per year through 2027 due to retirements and workers leaving the field. The majority of jobs in 2022 for these middle-skill fire technology occupations (81%) were located in Los Angeles County.

Exhibit 1: Current employment and occupational demand, Los Angeles and Orange counties⁷

Geography	2022 Jobs	2027 Jobs	2022-2027 Change	2022-2027 % Change	Annual Openings
Los Angeles	7,406	7,067	(339)	(5%)	581
Orange	1,748	1,706	(41)	(2%)	146
Total	9,154	8,774	(380)	(4%)	727

Detailed Occupation Data

Exhibit 2 displays the current employment and projected occupational demand for each of the target occupations in Los Angeles County. The percentage of workers aged 55+ and automation index is included in order visualize upcoming replacement demand for these occupations.

³ [First-Line Supervisors of Firefighting and Prevention Workers \(bls.gov\)](#)

⁴ [Firefighters \(bls.gov\)](#)

⁵ [Fire Inspectors \(bls.gov\)](#)

⁶ [Forest Fire Inspectors and Prevention Specialists \(bls.gov\)](#)

⁷ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

Firefighters have a slightly higher-than-average risk of automation, as well as a smaller share of older workers in the field.

Exhibit 2: Current employment, projected occupational demand, percentage of workers aged 55+, Los Angeles County⁸

Occupation	2022 Jobs	2027 Jobs	5-Yr % Change	Annual Openings	% Aged 55 and older*	Automation Index	% Full Time Workers
First-Line Supervisors of Firefighting and Prevention Workers	1,541	1,556	1%	109	18%	79.6	100%
Firefighters	5,608	5,304	(5%)	451	7%	100.6	100%
Fire Inspectors and Investigators	182	142	(22%)	15	20%	91.9	Data unavail.
Forest Fire Inspectors and Prevention Specialists	76	66	(13%)	7	19%	96.0	Data unavail.
Total	7,406	7,067	(5%)	581	-	-	-

*The average percentage of workers aged 55 and older across all occupations in the greater LA/OC region is 27%. These occupations have a smaller share of older workers, which typically indicates fewer replacements needs to offset the amount of impending retirements.

WAGES

The labor market endorsement in this report considers the entry-level hourly wages for these middle-skill fire technology occupations in Los Angeles County as they relate to the county’s self-sufficiency standard wage. Orange County wages are included below in order to provide a complete analysis of the greater Los Angeles/Orange County region.

Los Angeles County

All four occupations have entry-level wages above the self-sufficiency standard wage for one adult (\$18.10 in Los Angeles County). Typical entry-level hourly wages are in a range between \$33.80 and \$53.79. (Exhibit 3). Experienced workers can expect to earn wages between \$55.54 and \$86.39.

Exhibit 3: Earnings for occupations in Los Angeles County

Occupation	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)	Median Annual Earnings*
First-Line Supervisors of Firefighting and Prevention Workers	\$53.79	\$81.67	\$86.39	\$169,900

⁸ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

Occupation	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)	Median Annual Earnings*
Firefighters	\$37.65	\$44.90	\$65.43	\$93,400
Fire Inspectors and Investigators	\$41.59	\$51.77	\$61.27	\$107,700
Forest Fire Inspectors and Prevention Specialists	\$33.80	\$47.25	\$55.54	\$98,300

*Rounded to the nearest \$100

Orange County

All four occupations have entry-level wages above the self-sufficiency standard wage for one adult (\$20.63 in Orange County). Typical entry-level hourly wages are in a range between \$30.83 and \$48.50 (Exhibit 4). Experienced workers can expect to earn wages between \$50.67 and \$77.89.

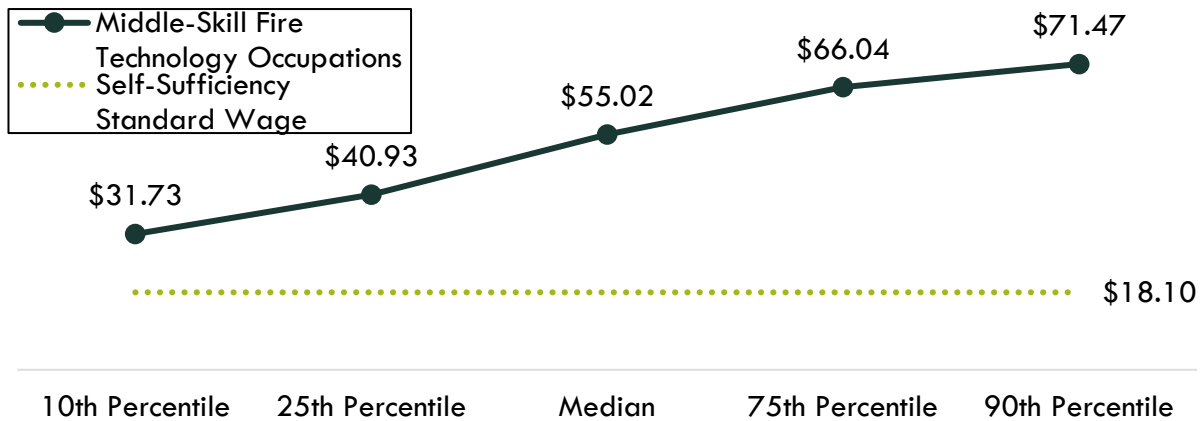
Exhibit 4: Earnings for occupations in Orange County

Occupation	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)	Median Annual Earnings*
First-Line Supervisors of Firefighting and Prevention Workers	\$48.50	\$73.64	\$77.89	\$153,200
Firefighters	\$34.21	\$40.80	\$59.45	\$84,900
Fire Inspectors and Investigators	\$38.34	\$47.73	\$56.48	\$99,300
Forest Fire Inspectors and Prevention Specialists	\$30.83	\$43.10	\$50.67	\$89,600

*Rounded to the nearest \$100

Across the greater Los Angeles and Orange County region, the average entry-level hourly earnings for the occupations in this report are \$40.93; this is above the living wage for one single adult in Los Angeles County (\$18.10). Exhibit 5 shows the average hourly wage for the occupations in this report, for entry-level to experienced workers.

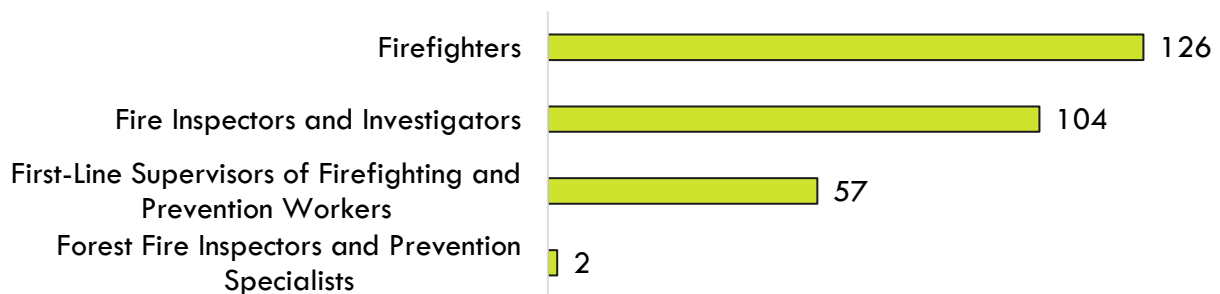
Exhibit 5: Average hourly earnings for middle-skill fire technology occupations, Los Angeles and Orange counties



JOB POSTINGS

There were 289 online job postings related to fire technology listed in the past 12 months in Los Angeles and Orange counties. Exhibit 6 displays the number of job postings by occupation. The majority of job postings (44%) were for firefighters, followed by fire inspectors and investigators (36%) and first-line supervisors of firefighting and prevention workers (20%).

Exhibit 6: Job postings by occupation (last 12 months), Los Angeles and Orange counties



Job postings were analyzed for the most common job titles, skills, and employers associated with the target occupations in this report (Exhibit 7).

Exhibit 7: Most commonly requested job titles, skills and employers in job postings, Los Angeles and Orange counties

Top Job Titles	Top Skills	Top Employers
<ul style="list-style-type: none"> • Firefighters • Fire inspectors • Firefighters/paramedics • Fire alarm inspectors • Fire investigators 	<ul style="list-style-type: none"> • Firefighting • Fire prevention • Fire alarm systems • Fire suppression systems • Fire protection 	<ul style="list-style-type: none"> • Johnson Controls • Orange County Fire Authority • Allied Universal

In the greater Los Angeles/Orange County region, 67% of the middle-skill fire technology job postings listed a minimum educational requirement. The number and percentage of job postings by educational level appear in exhibit 8.

Exhibit 8: Education levels requested in job postings for middle-skill fire technology occupations, Los Angeles and Orange counties

Education Level	Job Postings	% of Job Postings
Bachelor's degree	31	16%
Associate degree	34	18%
High school diploma or vocational training	129	66%

EDUCATIONAL ATTAINMENT

In the greater Los Angeles/Orange County region, the majority of annual job openings (99%) typically require a postsecondary non-degree award (Exhibit 9). Furthermore, the national-level data indicates between 47% and 59% of workers in the field have completed some college or an associate degree as their highest level of educational attainment. The Bureau of Labor Statistics (BLS) lists the following typical entry-level education levels for the occupations in this report:

Exhibit 9: Entry-level education preferred by employers nationally, Bureau of Labor Statistics

Occupation	Education Level
First-Line Supervisors of Firefighting and Prevention Workers	Postsecondary non-degree award
Firefighters	Postsecondary non-degree award
Fire Inspectors and Investigators	Postsecondary non-degree award
Forest Fire Inspectors and Prevention Specialists	High school diploma or equivalent

EDUCATIONAL SUPPLY

Community College Supply

Exhibit 10 shows the annual and three-year average number of awards conferred by community colleges in programs that have historically trained for the occupations of interest. The colleges with the most completions in the region are Santa Ana, Rio Hondo, and East LA.

Exhibit 10: Regional community college awards (certificates and degrees), 2020-2023

TOP Code	Program	College	2020-21 Awards	2021-22 Awards	2022-23 Awards	3-Year Average
2133.00	Fire Technology	East LA	24	24	21	23
		El Camino	33	46	26	35

TOP Code	Program	College	2020-21 Awards	2021-22 Awards	2022-23 Awards	3-Year Average
		Glendale	40	20	23	28
		LA Valley	11	13	8	11
		Long Beach	36	56	89	60
		Mt San Antonio	84	124	100	103
		Pasadena	2	3	-	2
		Rio Hondo	211	176	180	189
		West LA	7	4	8	6
		LA Subtotal	448	466	455	456
		Santa Ana	421	378	360	386
		OC Subtotal	421	378	360	386
Supply Subtotal/Average			869	844	815	843
2133.10	Wildland Fire Technology	Rio Hondo	9	11	11	10
		LA Subtotal	9	11	11	10
Supply Subtotal/Average			9	11	11	10
2133.50	Fire Academy	East LA	23	180	180	128
		El Camino	37	39	10	29
		Rio Hondo	94	65	77	79
		LA Subtotal	154	284	267	235
Supply Subtotal/Average			154	284	267	235
Supply Total/Average			1,032	1,139	1,093	1,088

Of these 1,088 average annual awards fire technology awards issued by regional community colleges, 335 were associate degrees (31%), 518 were certificates greater than 16 units (48%), and 235 were low-unit certificates (22%). Although hiring preferences for entry-level firefighters vary by agency type (Federal, State/Cal-Fire, Local/Municipal/County, or Private), it is unlikely that these 235 low-unit certificates are sufficient for employment as a firefighter. Therefore, a more accurate and realistic estimate of community college supply for firefighting jobs is 853 average annual community college awards. The breakdown of award types is displayed in exhibit 11.

Exhibit 11: Regional community college awards for fire technology programs (TOP 2133) by award type, 2020-2023

Award Type	# of Colleges Issuing Awards	3-Year Average Award Total	% of Total Awards
Associate Degree	10	335	31%
Certificate 30 < 60 semester units	5	38	3%
Certificate 16 < 30 semester units	8	480	44%
Certificate 8 < 16 semester units	1	5	<1%
Certificate 6 < 18 semester units	3	231	21%
Supply Total/Average	10	1,088	100%

Other Postsecondary Supply

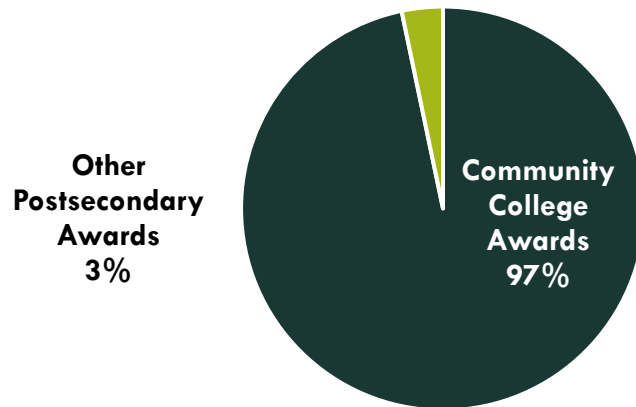
For a comprehensive regional supply analysis, it is important to consider the supply from other institutions in the region that provide training programs for middle-skill fire technology occupations. Exhibit 12 shows the number of awards conferred by this institution in a relevant program. Due to different data collection periods, the most recent is from 2019 to 2022. Between 2019 and 2022, other postsecondary college institutions in the region conferred an average of 37 bachelor's awards. Bachelor's awards are included in this report, since this bachelor's level program trains for the occupations of interest.

Exhibit 12: Other regional postsecondary awards, 2019-2022

CIP Code	Program	Postsecondary Institution	2019-20 Awards	2020-21 Awards	2021-22 Awards	3-Year Average
43.0202	Fire Services Administration	CSU-Los Angeles	46	33	32	37
Supply Total/Average			46	33	32	37

Exhibit 13 shows the proportion of community college awards conferred in the greater Los Angeles/Orange County region compared to the number of other postsecondary awards for the programs in this report. The majority of awards conferred in these programs are awarded by community colleges in the greater Los Angeles/Orange County region.

Exhibit 13: Percentage of community college awards compared to other postsecondary institution awards in the Los Angeles/Orange County region



APPENDIX: OCCUPATION DESCRIPTIONS

LA COE prepared this report to provide regional labor market supply and demand data related to these target occupations:

- **First-Line Supervisor of Firefighting and Prevention Workers (33-1021)** Directly supervise and coordinate activities of workers engaged in firefighting and fire prevention and control.⁹
- **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.¹⁰
- **Fire Inspectors and Investigators (33-2021)** Inspect buildings to detect fire hazards and enforce local ordinances and state laws, or investigate and gather facts to determine cause of fires and explosions.¹¹
- **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.¹²

⁹ [First-Line Supervisors of Firefighting and Prevention Workers \(bls.gov\)](#)

¹⁰ [Firefighters \(bls.gov\)](#)

¹¹ [Fire Inspectors \(bls.gov\)](#)

¹² [Forest Fire Inspectors and Prevention Specialists \(bls.gov\)](#)

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DATA SOURCES

- O*NET Online
- Lightcast (formerly Emsi)
- Bureau of Labor Statistics (BLS)
- California Employment Development Department, Labor Market Information Division, OES
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- Self-Sufficiency Standard at the Center for Women's Welfare, University of Washington
- Chancellor's Office Curriculum Inventory (COCI 2.0)

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