



Labor Market Analysis: 2133.00 – Fire Technology

43.0203 – Fire Science/Fire-Fighting

Los Angeles Center of Excellence, March 2026

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 the four identified middle-skill occupations in the region. However, of the 1,110 average annual awards issued related to fire technology, 35 were bachelor's degrees, 329 were associate degrees, 559 were certificates greater than 16 units, and 222 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 222 low-unit certificates are sufficient for employment as a firefighter, which brings the realistic estimate of supply for fire technology jobs down to 923 average annual awards. 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

- 775 annual job openings are projected in the region through 2028. This number is less than the three-year average of 1,145 awards conferred by educational institutions in the region.
 - Of the 1,145 average annual awards issued related to fire technology, 35 were bachelor's degrees, 329 were associate degrees, 559 were certificates greater than 16 units, and 222 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 222 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 fire technology jobs is 923 average annual awards.
 - Over the past 12 months, there were 255 online job postings related to fire technology occupations. The highest number of job postings were for firefighters, firefighters/paramedics, fire sprinkler inspectors, fire alarm inspectors, and fire investigators.

Living Wage

- All four occupations have entry-level wages **above** Los Angeles County's self-sufficiency standard hourly wage (\$24.03/hour).²

Educational Attainment

- 99% of the annual job openings typically require a postsecondary non-degree award for 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.
- 1,110 awards (degrees and certificates) were conferred on average each year between 2022 and 2024.
 - Of the 1,110 average annual sub-baccalaureate awards issued related to fire technology, 329 were associate degrees, 559 were certificates greater than 16 units, and 222 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 222 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 sub-baccalaureate supply for fire technology jobs is 888 average annual awards.

² Center for Women's Welfare, University of Washington. (2024). *The self-sufficiency standard for California 2024*. <http://selfsufficiencystandard.org/California>.

Other postsecondary supply

- 1 educational institution in the LA/OC region has conferred awards in programs related to fire technology over the past three years.
- 35 awards were conferred on average each year by other postsecondary institutions throughout the greater LA/OC region between 2020 and 2022.

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 fire technology occupations. In the greater Los Angeles/Orange County region, the number of jobs related to these occupations is projected to increase by 10% through 2028. There will be nearly 800 job openings per year through 2028 due to job growth and replacements. The majority of jobs in 2023 for these fire technology occupations (81%) were located in Los Angeles County.

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

Geography	2023 Jobs	2028 Jobs	2023-2028 Change	2023-2028 % Change	Annual Openings
Los Angeles	6,626	7,268	642	10%	625
Orange	1,566	1,729	163	10%	150
Total	8,191	8,996	805	10%	775

Detailed Occupation Data

Exhibit 2 displays the current employment and projected occupational demand for each of the target occupations in Los Angeles County. Positive scores for automation resilience⁸ reflect a lower-than-average threat of the occupation(s) being replaced by automation, while negative scores reflect a greater-than-average risk of automation. The average percentage of workers aged 55+ across all occupations in the Los Angeles/Orange County region is 26%; 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.

⁸ Automation risk is calculated based on the percentage of time spent on high-risk compared to low-risk work, the number of high-risk jobs in compatible occupations, and the overall industry automation risk.

with a larger share of workers aged 55 and older typically have greater replacement needs to offset the amount of impending retirements.

Exhibit 2: Detailed employment and occupational demand, Los Angeles County⁹

Occupation	2023 Jobs	2028 Jobs	5-Yr % Change	Annual Openings	Auto-mation Resilience	% Aged 55 and older	% Full Time Workers
First-Line Supervisors of Firefighting and Prevention Workers	1,463	1,599	9%	119	20.4	20%	100%
Firefighters	4,975	5,455	10%	484	(0.6)	7%	100%
Fire Inspectors and Investigators	128	147	14%	15	8.1	21%	Data unavail.
Forest Fire Inspectors and Prevention Specialists	60	67	12%	7	4.0	20%	Data unavail.
Total	6,626	7,268	10%	625	-	-	-

WAGES

The labor market endorsement in this report considers the entry-level hourly wages for these 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 (\$24.03 in Los Angeles County). Typical entry-level hourly wages are in a range between \$34.07 and \$53.80. (Exhibit 3). Experienced workers can expect to earn wages between \$55.58 and \$86.41.

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	\$53.80	\$81.69	\$86.41	\$169,900

⁹ 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	\$37.67	\$44.92	\$65.45	\$93,400
Fire Inspectors and Investigators	\$42.08	\$51.78	\$61.38	\$107,700
Forest Fire Inspectors and Prevention Specialists	\$34.07	\$47.34	\$55.58	\$98,500

*Rounded to the nearest \$100

Orange County

All four occupations have entry-level wages above the self-sufficiency standard wage for one adult (\$27.13 in Orange County). Typical entry-level hourly wages are in a range between \$31.11 and \$48.45 (Exhibit 4). Experienced workers can expect to earn wages between \$50.75 and \$77.81.

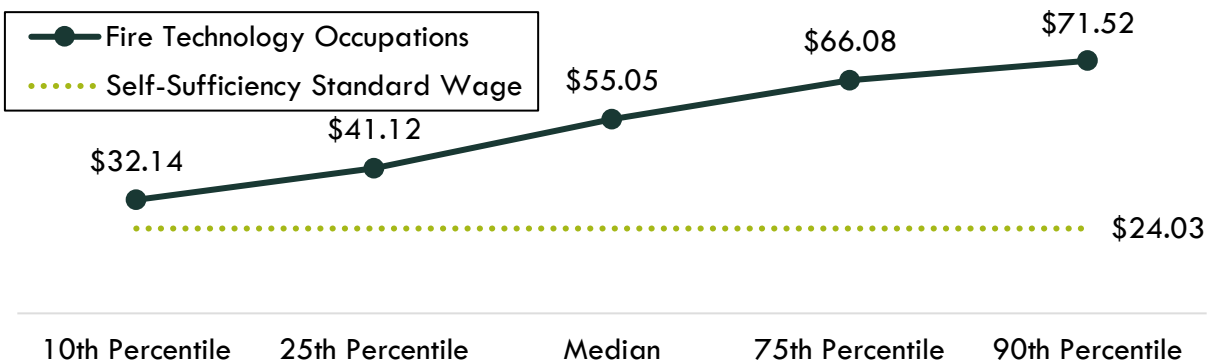
Exhibit 4: Earnings for occupations in Orange County

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	\$48.45	\$73.56	\$77.81	\$153,000
Firefighters	\$34.16	\$40.74	\$59.36	\$84,700
Fire Inspectors and Investigators	\$38.67	\$47.59	\$56.41	\$99,000
Forest Fire Inspectors and Prevention Specialists	\$31.11	\$43.22	\$50.75	\$89,900

*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 \$41.12; this is above the living wage for one single adult in Los Angeles County (\$24.03). 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 fire technology occupations, Los Angeles and Orange counties



JOB POSTINGS

There were 255 online job postings related to fire technology occupations 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 (39%) were for *fire inspectors and investigators*, followed by *firefighters* (33%) and *first-line supervisors of firefighting and prevention workers* (28%).

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 • Firefighters/paramedics • Fire sprinkler inspectors • Fire alarm inspectors • Fire investigators • Fire safety officers • Fire captains • Chief engineers • Fire chiefs 	<ul style="list-style-type: none"> • Firefighting • Fire prevention • NFPA (National Fire Protection Association) codes • Fire suppression systems • Fire alarm systems • Fire science 	<ul style="list-style-type: none"> • Orange County Fire Authority • Johnson Controls • Northrop Grumman • City of Montebello • City of Pasadena • Fire Safety First • Global Medical Response

In the greater Los Angeles/Orange County region, 56% of the fire technology job postings listed a minimum educational requirement. Exhibit 8 details the number and percentage of job postings by educational level.

Exhibit 8: Education levels requested in job postings for occupations related to fire technology, Los Angeles and Orange counties

Education Level	Job Postings	% of Job Postings
Bachelor's degree	27	19%

Education Level	Job Postings	% of Job Postings
Associate degree	25	17%
High school diploma or vocational training	91	64%

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), 2021-2023

TOP Code	Program	College	2021-22 Awards	2022-23 Awards	2023-24 Awards	3-Year Average
2133.00	Fire Technology	East LA	24	21	14	20
		El Camino	46	26	45	39
		Glendale	20	23	15	19
		LA Valley	13	8	16	12
		Long Beach	56	89	55	67
		Mt San Antonio	124	100	96	107
		Pasadena	3	-	10	4

TOP Code	Program	College	2021-22 Awards	2022-23 Awards	2023-24 Awards	3-Year Average
		Rio Hondo	176	180	156	171
		West LA	4	8	8	7
		LA Subtotal	466	455	415	445
		Santa Ana	378	360	420	386
		OC Subtotal	378	360	420	386
Supply Subtotal/Average			844	815	835	831
2133.10	Wildland Fire Technology	Rio Hondo	11	11	14	12
		LA Subtotal	11	11	14	12
Supply Subtotal/Average			11	11	14	12
2133.50	Fire Academy	East LA	180	180	160	173
		El Camino	39	10	14	21
		Rio Hondo	65	77	74	72
		LA Subtotal	284	267	248	266
Supply Subtotal/Average			284	267	248	266
Supply Total/Average			1,139	1,093	1,097	1,110

Of these 1,110 average annual awards fire technology awards issued by regional community colleges, 329 were associate degrees (30%), 559 were certificates greater than 16 units (50%), and 222 were low-unit certificates (20%). 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 222 low-unit certificates are sufficient for employment as a firefighter. Therefore, a more accurate and realistic estimate of community college supply for fire technology jobs is 888 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, 2021-2024

Award Type	# of Colleges Issuing Awards	3-Year Average Award Total	% of Total Awards
Associate degree	10	329	30%
Certificate 30 < 60 semester units	4	21	2%
Certificate 16 < 30 semester units	10	538	48%
Certificate 8 < 16 semester units	1	3	<1%
Certificate 6 < 18 semester units	3	219	20%
Supply Total/Average	10	1,110	100%

Other Postsecondary Supply

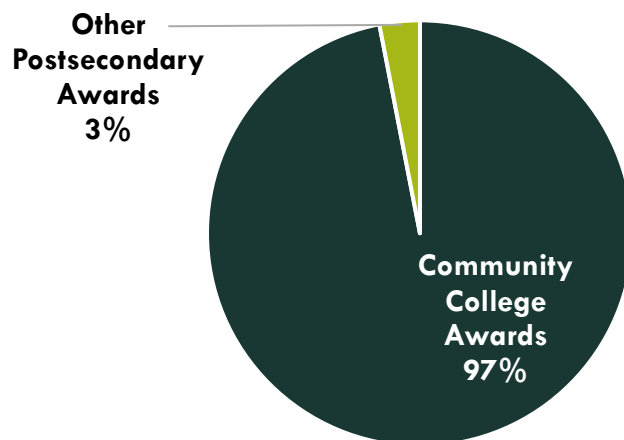
For a comprehensive regional supply analysis, it is important to consider the supply from other institutions in the region that provide training programs for fire technology. Exhibit 12 shows the number of awards conferred by one institution in relevant programs. Due to different data collection periods, the most recent data is from 2021 to 2023. Between 2021 and 2023, other postsecondary college institutions in the region conferred an average of 35 bachelor's degrees. Bachelor's degrees are included, since this program trains for fire technology occupations.

Exhibit 12: Other regional postsecondary awards, 2021-2023

CIP Code	Program	Postsecondary Institution	2020-21 Awards	2021-22 Awards	2022-23 Awards	3-Year Average
43.0202	Fire Services Administration	CSU-Los Angeles	33	32	39	35
Supply Total/Average			33	32	39	35

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.¹⁰

¹⁰ [First-Line Supervisors of Firefighting and Prevention Workers \(bls.gov\)](https://www.bls.gov)

- **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.¹¹
- **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.¹²
- **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.¹³

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DATA SOURCES



POWERED BY



- 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)

Important Disclaimer: All representations included in this report have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. Efforts have been made to qualify and validate the accuracy of the data and the reported findings; however, neither the Centers of Excellence, COE host District, nor California Community Colleges Chancellor's Office are responsible for applications or decisions made by recipient community colleges or their representatives based upon components or recommendations contained in this study.

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¹¹ [Firefighters \(bls.gov\)](https://www.bls.gov)

¹² [Fire Inspectors \(bls.gov\)](https://www.bls.gov)

¹³ [Forest Fire Inspectors and Prevention Specialists \(bls.gov\)](https://www.bls.gov)