

Firefighting Occupations

Labor Market Analysis: San Diego County

October 2023

Summary

NEW PROGRAM RECOMMENDATION?	EVIDENCE OF A SUPPLY GAP?	AT OR ABOVE THE LIVING WAGE?	EXPECTED EDUCATION FOR MAJORITY OF OCCUPATIONS ANALYZED
 Proceed with New Program	 	 	☐ Doctorate Degree ☐ Master's Degree ☐ Bachelor's Degree ☐ Apprenticeship ☐ Associate Degree ☒ Some College or Certificate ☐ HS Diploma or Equivalent ☐ Less Than a HS Diploma
SUPPORT FOR PROGRAM MODIFICATION?	NUMBER OF INSTITUTIONS THAT PROVIDE TRAINING	NUMBER OF ANNUAL JOB OPENINGS	
 	LOW 	HIGH 	

This brief provides labor market information about *Firefighting Occupations* to assist the San Diego & Imperial Counties Community Colleges with program development and strategic planning. *Firefighting Occupations* include “Firefighters,” “First-Line Supervisors of Firefighting and Prevention Workers,” and “Forest and Conservation Technicians.” According to available labor market information, *Firefighting Occupations* in San Diego County have a labor market demand of 421 annual job openings (while average demand for a single occupation in San Diego County is 289 annual job openings), and three institutions supply 264 awards for these occupations, suggesting that there is a supply gap in the labor market. This brief recommends proceeding with developing a new program or modifying an existing program because, 1) entry-level wages pay at or above the living wage and 2) a supply gap exists for these occupations.

Introduction

This report provides labor market information in San Diego County for the following occupational codes in the Standard Occupational Classification (SOC)¹ system:

- **Firefighters (SOC 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 (SOC 33-1021):** Directly supervise and coordinate activities of workers engaged in firefighting and fire prevention and control.
- **Forest and Conservation Technicians (SOC 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 and fire prevention and suppression. May assist conservation scientists in managing, improving, and protecting rangelands and wildlife habitats.

For the purpose of this report, these occupations are referred to as *Firefighting Occupations*.

Projected Occupational Demand

Between 2022 and 2027, employers in San Diego County will need to hire **421** workers annually to fill new jobs and backfill jobs in *Firefighting Occupations* due to attrition caused by turnover and retirement, for example (Exhibit 1). “Firefighters” are projected to have the most labor market demand between 2022 and 2027, with **337** annual job openings.

Exhibit 1: Number of Jobs for Firefighting Occupations in San Diego County (2022-2027)²

Occupational Title	2022 Jobs	2027 Jobs	2022 - 2027 Net Jobs Change	2022- 2027 % Net Jobs Change	Annual Job Openings (Demand)
Firefighters	3,415	3,685	270	8%	337
Forest and Conservation Technicians	392	407	15	4%	52
First-Line Supervisors of Firefighting and Prevention Workers	292	336	44	15%	32
Total	4,099	4,428	329	8%	421

¹ The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. [bls.gov/soc/](https://www.bls.gov/soc/).

² Lightcast 2023.03; QCEW, Non-QCEW, Self-Employed.

Earnings

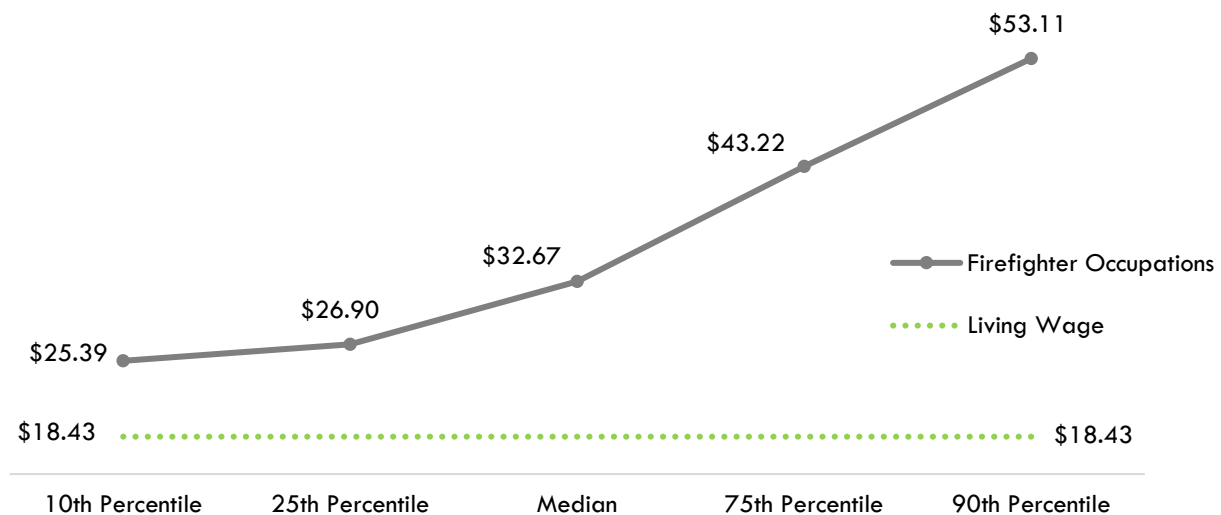
The entry-level hourly earnings for *Firefighting Occupations* range from \$17.47 to \$39.16 (Exhibit 2a).

Exhibit 2a: Hourly Earnings for *Firefighting Occupations* in San Diego County³

Occupational Title	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
First-Line Supervisors of Firefighting and Prevention Workers	\$39.16	\$46.34	\$63.81
Firefighters	\$24.08	\$30.79	\$37.53
Forest and Conservation Technicians	\$17.47	\$20.87	\$28.30

On average, the entry-level hourly earnings for *Firefighting Occupations* are \$26.90; this is more than the living wage for a single adult in San Diego County, which is \$18.43 per hour (Exhibit 2b).⁴

Exhibit 2b: Average Hourly Earnings⁵ for *Firefighting Occupations* in San Diego County⁶



³ Lightcast 2023.03; QCEW, Non-QCEW, Self-Employed.

⁴ "Family Needs Calculator (formerly the California Family Needs Calculator)," Insight: Center for Community Economic Development, last updated 2021. insightccd.org/family-needs-calculator.

⁵ 10th and 25th percentiles could be considered entry-level wages, and 75th and 90th percentiles could be considered experienced wages for individuals who may have been in the occupation longer, received more training than others, etc.

⁶ Lightcast 2023.03; QCEW, Non-QCEW, Self-Employed.

Educational Supply

Educational supply for an occupation can be estimated by analyzing the number of awards in related Taxonomy of Programs (TOP) or Classification of Instructional Programs (CIP) codes.⁷ There are **four** TOP codes and **seven** CIP codes related to *Firefighting Occupations* (Exhibit 3).

Exhibit 3: Related TOP and CIP Codes for *Firefighting Occupations*⁸

TOP or CIP Code	TOP or CIP Program Title
TOP 0114.00	Forestry
TOP 2133.00	Fire Technology
TOP 2133.10	Wildland Fire Technology
TOP 2133.50	Fire Academy
CIP 03.0510	Forest Resources Production and Management
CIP 03.0511	Forest Technology/Technician
CIP 43.0201	Fire Prevention and Safety Technology/Technician
CIP 43.0202	Fire Services Administration
CIP 43.0203	Fire Science/Fire-fighting
CIP 43.0204	Fire Systems Technology
CIP 43.0205	Fire/Arson Investigation and Prevention

⁷ TOP data comes from the California Community Colleges Chancellor's Office MIS Data Mart (datamart.cccco.edu) and CIP data comes from the Integrated Postsecondary Education Data System (nces.ed.gov/ipeds/use-the-data).

⁸ This brief uses a conservative estimate of program supply and only calculates awards from the TOP codes in Exhibit 3.

According to TOP data, **three** community colleges supply the region with awards for these occupations: **Palomar College, San Diego Miramar College, and Southwestern College**. According to CIP data, **no** non-community-college institution supplies the region with awards (Exhibit 4).

**Exhibit 4: Number of Awards (Certificates and Degrees) Conferred by Postsecondary Institutions
(Program Year 2019-20 through Program Year 2020-21 Average)**

TOP6 or CIP Code	TOP6 or CIP Program Title	3-Yr Annual Average CC Awards (PY19-20 to PY21-22)	Other Institutions 2-Yr Annual Average Awards (PY19-20 to PY20-21)	Total Average Supply (PY19-20 to PY21-22)
2133.00	Fire Technology	178	0	178
	• Palomar	121	0	
	• San Diego Miramar	37	0	
	• Southwestern	20	0	
2133.50	Fire Academy	86	0	86
	• Palomar	76	0	
	• Southwestern	10		
Total				264

Demand vs. Supply

Comparing labor demand (annual openings) with labor supply⁹ suggests that there is a **supply gap** for these occupations in San Diego County, with **421** annual openings and **264** awards. Comparatively, there are **4,786** annual openings in California and **3,771** awards, suggesting that there is also a **supply gap** across the state¹⁰ (Exhibit 5).

Exhibit 5: Labor Demand (Annual Openings) Compared with Labor Supply (Average Annual Awards)

	Demand (Annual Openings)	Supply¹¹ (Annual Awards)	Supply Gap or Oversupply
San Diego	421	264	157
California	4,786	3,771	1,015

Please note: This is a basic analysis of supply and demand of labor. The data does not include workers currently in the labor force who could fill these positions or workers who are not captured by publicly available data. This data should be used to discuss the potential gaps or oversupply of workers; however, it should not be the only basis for determining whether or not a program should be developed.

⁹ Labor supply can be found from two different sources: Lightcast or the California Community Colleges Chancellor's Office MIS Data Mart. Lightcast uses CIP codes while MIS uses TOP codes. Different coding systems result in differences in the supply numbers.

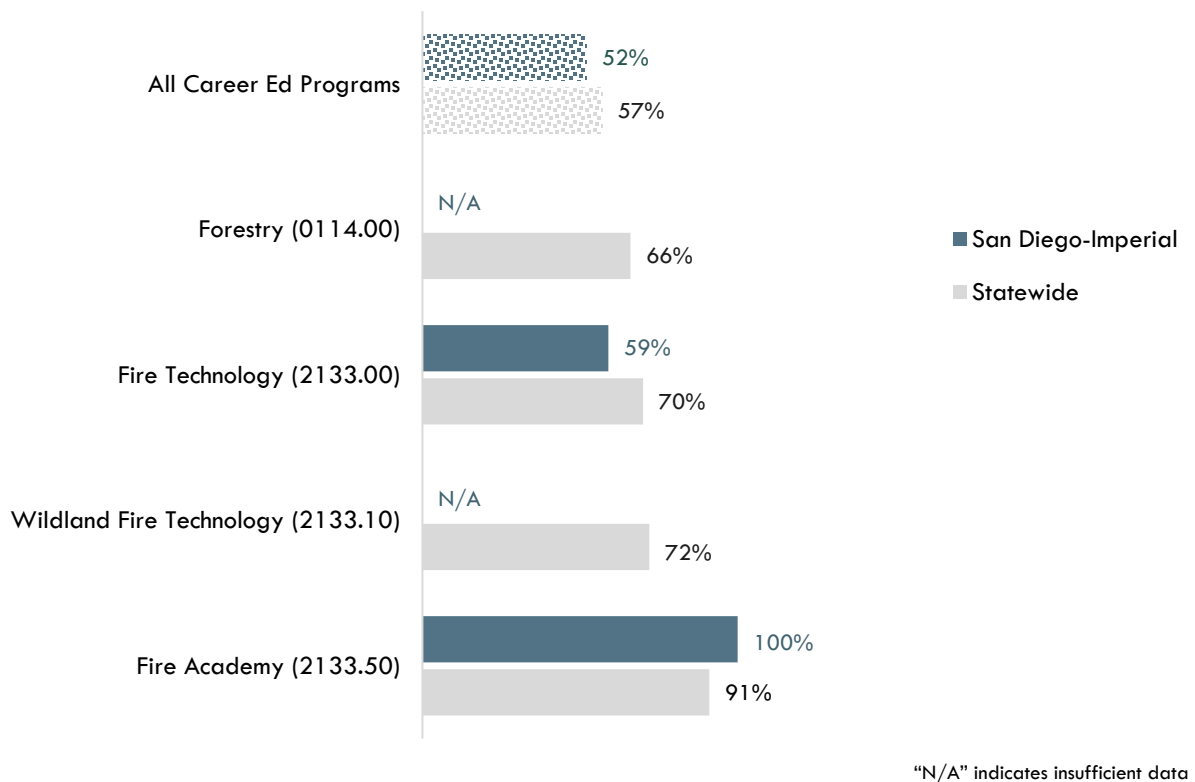
¹⁰ "Supply and Demand," Centers of Excellence Student Outcomes, <https://coeccc.net/our-resources/>.

¹¹ Awards included: associate degree; award <1 year; award 1<2 years; and postsecondary awards.

Student Outcomes and Regional Comparisons

According to the California Community Colleges LaunchBoard, 59 to 100 percent of students in the San Diego-Imperial region earned a living wage after completing a program related to *Firefighting Occupations*, compared to 66 to 91 percent statewide and 57 percent of students in Career Education programs in general across the state (Exhibit 6a).¹²

Exhibit 6a: Percentage of Students Who Earned a Living Wage by Program, PY2020-21¹³

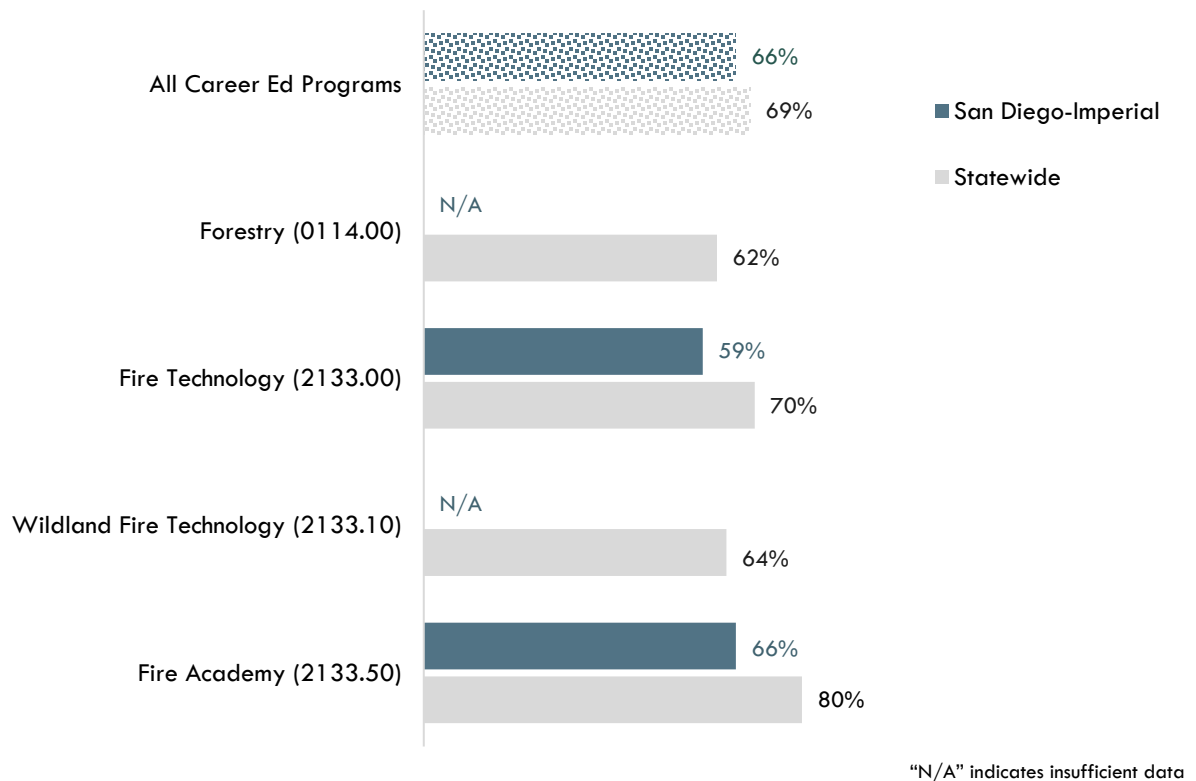


¹² "California Community Colleges Strong Workforce Program," California Community Colleges, calpassplus.org/LaunchBoard/SWP.aspx.

¹³ Most recent year with available data is Program Year 2020-21. Among completers and skills builders who exited, the percentage of students who attained a living wage.

According to the California Community Colleges LaunchBoard, 59 to 66 percent of students in the San Diego-Imperial region obtained a job closely related to their field of study after completing a program related to *Firefighting Occupations*, compared to 62 to 80 percent statewide and 69 percent of students in Career Education programs in general across the state (Exhibit 6b).¹⁴

Exhibit 6b: Percentage of Students in a Job Closely Related to Field of Study by Program, PY2019-20¹⁵



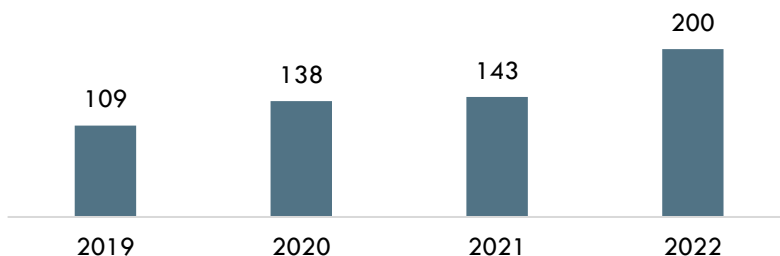
¹⁴ "California Community Colleges Strong Workforce Program," California Community Colleges, calpassplus.org/LaunchBoard/SWP.aspx.

¹⁵ Most recent year with available data is Program Year 2019-20. Percentage of Students in a Job Closely Related to Field of Study: Among students who responded to the CTEOS, the percentage reporting employment in the same or similar field as their program of study.

Online Job Postings

This report analyzes not only historical and projected (traditional LMI) data, but also recent data from online job postings (real-time LMI). Online job postings may provide additional insight about recent changes in the labor market that are not captured by historical data. Between 2019 and 2022, there was an average of 148 online job postings per year for *Firefighting Occupations* in San Diego County (Exhibit 7). Please note that online job postings do **not** equal labor market demand; demand is represented by annual job openings (see Exhibit 1). While this brief includes online jobs postings data to help with curriculum development, the community colleges should note that this type of data is impacted by several variables: employers may post a position multiple times to increase the pool of applicants; a job posting can remain posted after a business decides not to fill a position; or an employer may use one posting to fill multiple positions, for example.

Exhibit 7: Number of Online Job Postings for *Firefighting Occupations* in San Diego County (2019-2022)¹⁶



¹⁶ Lightcast; "Job Posting Analytics." 2018-2022.

Top Employers

Between January 1, 2020 and December 31, 2022, the top five employers in San Diego County for *Firefighting Occupations* were [United States Forest Service](#), [Rural Metro Corporation](#), [City of San Diego](#), [Capstone Fire Management](#), and [County of San Diego](#) based on online job postings (Exhibit 8).

Exhibit 8: Top Employers for *Firefighting Occupations* in San Diego County¹⁷

Top Employers	
• United States Forest Service • Rural Metro Corporation • City of San Diego • Capstone Fire Management • County of San Diego	• Global Medical Response • State of California • United States Department of Agriculture • City of Escondido • City of Carlsbad

Education, Skills, and Certifications

Firefighting Occupations have a national educational attainment ranging from a [postsecondary non-degree award](#) to an [associate degree](#) (Exhibit 9a).

Exhibit 9a: National Educational Attainment for *Firefighting Occupations*¹⁸

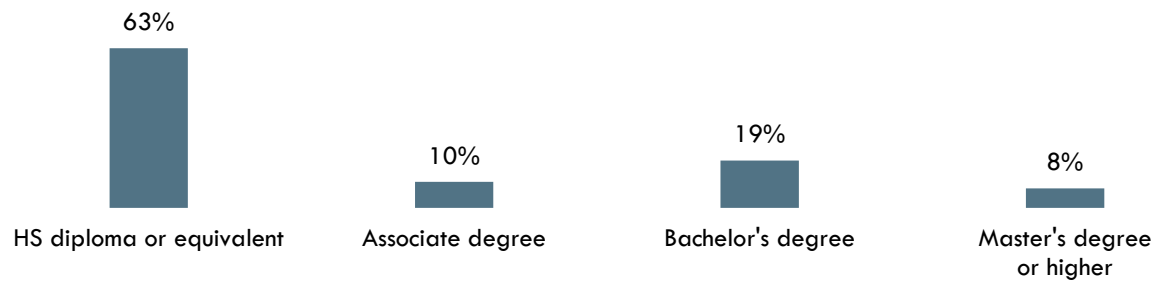
Occupational Title	Typical Entry-Level Education
Forest and Conservation Technicians	Associate degree
First-Line Supervisors of Firefighting and Prevention Workers	Postsecondary non-degree award
Firefighters	Postsecondary non-degree award

¹⁷ Lightcast; "Job Posting Analytics." 2020-2022.

¹⁸ Lightcast 2023.03; QCEW, Non-QCEW, Self-Employed.

Based on online job postings between January 1, 2020 and December 31, 2022 in San Diego County, employers posted a **high school diploma or equivalent** as the most requested educational requirement for *Firefighting Occupations* (Exhibit 9b).¹⁹

Exhibit 9b: Educational Requirements for Firefighting Occupations in San Diego County²⁰



*May not total 100 percent due to rounding

Exhibit 10 lists the top specialized, soft, and software skills that appeared in online job postings between January 1, 2020 and December 31, 2022.

Exhibit 10: Top Skills for Firefighting Occupations in San Diego County²¹

Specialized Skills	Soft Skills	Software Skills
• Firefighting • Fire Suppression Systems • Fire Prevention • Emergency Medical Services • Fire Service • Cardiopulmonary Resuscitation • Fire Science • Fire Safety • Wildfire Suppression • Fire Protection • Incident Command Systems • Forestry • Fire Alarm Systems • Fire Behavior • Agriculture	• Management • Operations • Communications • Planning • First Aid • Customer Service • Physical Fitness • Good Driving Record • Leadership • English Language • Coordinating • Mathematics • Computer Literacy • Verbal Communication Skills • Program Management	• N/A

¹⁹ Lightcast; "Job Posting Analytics." 2020-2022.

²⁰ "Educational Attainment for Workers 25 Years and Older by Detailed Occupation," Bureau of Labor Statistics, last modified April 9, 2021. bls.gov/emp/tables/educational-attainment.htm.

²¹ Lightcast; "Job Posting Analytics." 2020-2022.

Exhibit 11 lists the top certifications that appeared in online job postings between January 1, 2020 and December 31, 2022.

Exhibit 11: Top Certification for *Firefighting Occupations* in San Diego County²²

Top Certifications in Online Job Postings

1. Firefighter I Certification
2. Paramedic (EMT-P)
3. Emergency Medical Technician (EMT)
4. Cardiopulmonary Resuscitation (CPR) Certification
5. Firefighter II Certification
6. CDL Class C License
7. Advanced Life Support
8. Advanced Cardiovascular Life Support (ACLS) Certification
9. Automated External Defibrillator (AED) Certification
10. Basic Life Support (BLS) Certification
11. Certified First Responder (CFR)
12. Nationally Registered Emergency Medical Technician (NREMT)
13. Hazardous Materials Certification - Operations Level
14. Emergency Medical Technician - Basic (EMT-B)
15. Certified Fire Officer

²² Lightcast; "Job Posting Analytics." 2020-2022.

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Important Disclaimers

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. This study examines the most recent data available at the time of the analysis; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and the report findings; however, neither the Centers of Excellence (COE), COE host district, nor California Community Colleges Chancellor's Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.