** Firefighter Occupations**

**Labor Market Information Report**

**City College of San Francisco**

Prepared by the San Francisco Bay Center of Excellence

for Labor Market Research

February 2019

# Recommendation

Based on all available data, there appears to be an undersupply of Firefighter workers compared to the demand for this cluster of occupations in the Bay region and in the Mid-Peninsula sub-region (San Francisco and San Mateo Counties.) There is a projected annual gap of about 277 students in the Bay region and 13 students in the Mid-Peninsula Sub-Region.

However, the supply/demand “gap analysis” is not the only consideration, related to this proposed new City College of San Francisco (CCSF) Certificate of Achievement, which is intended to support a new Memorandum of Understanding Instructional Services Agreement with CCSF and the San Francisco Fire Department (SFFD). Some of the students/workers who will benefit from the certificate have already completed the SFFD Accredited Local Academy Basic Fire Academy. Once hired into the SFFD, individuals may enter fields of fire prevention, fire investigation, and wildland firefighting when they complete various phases of firefighter training and other education.

This report also provides student outcomes data on employment and earnings for programs on TOP 2133.00 - Fire Technology in the state and region. It is recommended that these data be reviewed to better understand how outcomes for students taking courses on this TOP code compare to potentially similar programs at colleges in the state and region, as well as to outcomes across all CTE programs at City College of San Francisco and in the region.

# Introduction

This report profiles Firefighter Occupations in the 12 county Bay region and in the Mid-Peninsula sub-region for a proposed new certificate program at City College of San Francisco. The proposed Certificate of Achievement is specific to a new Memorandum of Understanding Instructional Services Agreement with CCSF and the San Francisco Fire Department. Some of the students/workers who will benefit from the certificate have already completed the SFFD Accredited Local Academy Basic Fire Academy. Once hired into the SFFD, these individuals may enter fields of fire prevention, fire investigation, and wildland firefighting when they complete various phases of firefighter training and other education.

Labor market information (LMI) is not available at the eight-digit SOC Code level for Forest Firefighter (33-2011.02), therefore the data shown in Tables 1 and 2 is for Firefighter (33-2011), which includes Municipal and Forest Firefighters. Labor market information (LMI) is not available at the eight-digit SOC Code level for Fire Inspector (33-2021.01) or Fire Investigator (33-2021.02), therefore the data shown in Tables 1 and 2 is for Fire Inspectors and Investigators (33-2021.00).

Labor market information (LMI) is not available at the eight-digit SOC Code level for Municipal Fire Fighting and Prevention Supervisors (33-1021.01), therefore the data shown in Tables 1 and 2 is for First-Line Supervisors of Fire Fighting and Prevention Workers (33-1021), and may overstate the demand for Municipal Fire Fighting and Prevention Supervisors. Labor market information (LMI) is not available at the eight-digit SOC Code level for Fire Prevention and Protection Engineers (17-2111.02), therefore the data shown in Tables 1 and 2 is for Health and Safety Engineers, Except Mining Safety Engineers and Inspectors (17-2111), and may overstate the demand for Fire Prevention and Protection Engineers.

Tables 3, 4, 6, 9, 10 and 11 use job postings data from Burning Glass at the eight-digit SOC Code level for all occupations requested by CCSF at the eight-digit level.

|  |
| --- |
| * **First-Line Supervisors of Fire Fighting and Prevention Workers (SOC 33-1021):** Directly supervise and coordinate activities of workers engaged in fire fighting and fire prevention and control.
 |
| Entry-Level Educational Requirement: Postsecondary nondegree award |
| Training Requirement: Moderate-term on-the-job training |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 57% |
|

|  |
| --- |
| * **Health and Safety Engineers, Except Mining Safety Engineers and Inspectors (SOC 17-2111):** Promote worksite or product safety by applying knowledge of industrial processes, mechanics, chemistry, psychology, and industrial health and safety laws. Includes industrial product safety engineers.
 |
| Entry-Level Educational Requirement: Bachelor's degree |
| Training Requirement: None |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 21% |

 |
| * **Fire Inspectors and Investigators (SOC 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.
 |
| Entry-Level Educational Requirement: Postsecondary nondegree award |
| Training Requirement: Moderate-term on-the-job training |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 51% |
|  |
| * **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.
 |
| Entry-Level Educational Requirement: Postsecondary nondegree award |
| Training Requirement: Long-term on-the-job training |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 61% |

# Occupational Demand

**Table 1. Employment Outlook for Firefighter Occupations in Bay Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation  | 2017 Jobs | 2022 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Average Annual Open-ings | 10% Hourly Wage | Median Hourly Wage |
| First-Line Supervisors of Fire Fighting and Prevention Workers | 743 | 803 | 60  | 8% | 309 | 62 | $29.26  | $62.30  |
| Health and Safety Engineers, Except Mining Safety Engineers and Inspectors | 786 | 855 | 69  | 9% | 330 | 66 | $39.81  | $55.37  |
| Fire Inspectors and Investigators | 199 | 215 | 16  | 8% | 119 | 24 | $31.45  | $54.17  |
| Firefighters | 7,470 | 7,921 | 451  | 6% | 2,941 | 588 | $20.25  | $40.77  |
| **Total** | **9,197** | **9,794** | **597**  | **6%** | **3,700** | **740** | **$22.89**  | **$44.05**  |

*Source: EMSI 2019.1*

**Bay Region** includes Alameda, Contra Costa, Marin, Monterey, Napa, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano and Sonoma Counties

**Table 2. Employment Outlook for Firefighter Occupations in Mid-Peninsula Sub-Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation  | 2017 Jobs | 2022 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Average Annual Open-ings | 10% Hourly Wage | Median Hourly Wage |
| First-Line Supervisors of Fire Fighting and Prevention Workers | 215 | 227 | 12  | 6% | 83 | 17 | $25.15  | $59.00  |
| Health and Safety Engineers, Except Mining Safety Engineers and Inspectors | 164 | 173 | 9  | 6% | 63 | 13 | $35.86  | $51.08  |
| Fire Inspectors and Investigators | 11 | 14 | 2  | 19% | <10 | Insf. Data | $12.86  | $20.32  |
| Firefighters | 1,261 | 1,344 | 82  | 7% | 505 | 101 | $16.91  | $35.20  |
| **TOTAL** | **1,652** | **1,757** | **106**  | **6%** | **651** | **130** | **$19.83**  | **$39.77**  |

*Source: EMSI 2019.1*

**Mid-Peninsula Sub-Region** includes San Francisco and San Mateo Counties

### Job Postings in Bay Region and Mid-Peninsula Sub-Region

**Table 3. Number of Job Postings by Occupation for latest 12 months (Feb 2018 - Jan 2018)**

| Occupation | Bay Region | Mid-Peninsula |
| --- | --- | --- |
|  Fire Inspectors (33-2021.01) | 154 | 38 |
|  Municipal Fire Fighting and Prevention Supervisors (33-1021.01) | 115 | 12 |
|  Municipal Firefighters (33-2011.01) | 107 | 18 |
|  Fire-Prevention and Protection Engineers (17-2111.02) | 60 | 31 |
|  Forest Fire Fighting and Prevention Supervisors (33-1021.02) | 25 | 14 |
|  Forest Firefighters (33-2011.02) | 15 | 8 |
|  Fire Investigators (33-2021.02) | 1 |  |
| **Total** |  **477**  |  **121**  |

*Source: Burning Glass*

**Table 4. Top Job Titles for Firefighter Occupations for latest 12 months (Feb 2018 - Jan 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Common Title | Bay | Mid-Peninsula | Common Title | Bay | Mid-Peninsula |
| Firefighter | 78 | 11 | Fighter | 6 | 1 |
| Fire Protection Engineer | 25 | 8 | Fire Marshal | 6 | 2 |
| Battalion Chief | 21 | 1 | Inspector | 6 | 0 |
| Fire Chief | 21 | 1 | Technician | 6 | 3 |
| Senior Fire Protection Engineer | 21 | 15 | Alarm Specialist | 5 | 2 |
| Alarm Inspector | 20 | 0 | Equipment Operator | 5 | 0 |
| Fire Sprinkler Foreman | 14 | 4 | Specialist | 5 | 0 |
| Fire Inspector | 13 | 5 | Deputy Chief Health Officer, Medical Imaging | 4 | 2 |
| Fire Sprinkler Inspector | 8 | 4 | Deputy Marshal | 4 | 0 |
| Sprinkler/Inspector | 8 | 0 | Leader | 4 | 4 |
| Chief | 7 | 0 | Medic | 4 | 0 |
| Coordinator | 6 | 5 | Assistant Marshal | 3 | 0 |

*Source: Burning Glass*

# Industry Concentration

**Table 5. Industries hiring Firefighter Workers in Bay Region**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Industry – 6 Digit NAICS (No. American Industry Classification) Codes | Jobs in Industry (2017) | Jobs in Industry (2022) | % Change (2017-22) | % in Industry (2017) |
| Local Government, Excluding Education and Hospitals (903999) | 7,795 | 7,851 | 6% | 84.6% |
| State Government, Excluding Education and Hospitals (902999) | 111 | 113 | 7% | 1.2% |
| All Other Support Services (561990) | 103 | 106 | 3% | 1.1% |
| Federal Government, Civilian, Excluding Postal Service (901199) | 101 | 100 |  (1%) | 1.1% |
| Federal Government, Military (901200) | 101 | 99 |  (5%) | 1.1% |

*Source: EMSI 2019.1*

**Table 6. Top Employers Posting Firefighter Occupations in Bay and Mid-Peninsula Sub-Region (Feb 2018 - Jan 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Employer | Bay | Employer | Bay | Employer | Mid-Peninsula |
| US Army | 36 | County Alameda | 5 | Arup | 8 |
| State of California | 26 | IBM | 5 | Commercial Fire Protection Incorporated | 4 |
| Johnson Controls Inc | 18 | National Testing Network | 5 | National Testing Network | 4 |
| Todd Morris Fire Protection | 12 | Bay Alarm Company | 4 | City Redwood City | 3 |
| City Fremont | 9 | Capstone Fire & Safety Management | 4 | IBM | 3 |
| Arup | 8 | City Vallejo | 4 | Restoration Management Company | 3 |
| Commercial Fire Protection Inc | 8 | Ghd Incorporated | 4 | Todd Morris Fire Protection | 3 |
| Daily Dispatch | 7 | Restoration Management Company | 4 | Bay Alarm | 2 |
| City Sunnyvale | 6 | Alameda County | 3 | Bay Alarm Company | 2 |
| County Contra Costa | 6 | Amenify | 3 | California State University | 2 |
| County Sonoma | 6 | Bay Alarm | 3 | Capital Markets Placement | 2 |
| City Oakland | 5 | California State University | 3 | Cox Fire Protection Incorporated | 2 |
| Coffman Engineers | 5 | City Hayward | 3 | Guard Grabber Technologies Inc | 2 |

*Source: Burning Glass*

# Educational Supply

There are 12 colleges in the Bay Region issuing 463 awards annually on TOP 2133.00 - Fire Technology and TOP 2133.50 – Fire Academy. There are two colleges in the Mid-Peninsula Sub-Region, issuing 117 awards annually on these two TOP codes.

**Table 7. Awards on TOP 2133.00 - Fire Technology and TOP 2133.50 - Fire Academy in the Bay Region**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| College | Sub-Region | TOP Code | Headcount | Associates | Certificates | Total |
| Cabrillo | Santa Cruz & Monterey | 213300 |  1,402  | 20 | 1 | 21 |
| Chabot Hayward | East Bay | 213300 |  216  | 12 | 2 | 14 |
| Gavilan | Santa Cruz & Monterey | 213300 | 213 |  |  |  |
| Las Positas | East Bay | 213300 |  202  | 10 | 11 | 21 |
| Los Medanos | East Bay | 213300 |  294  | 24 | 63 | 86 |
| Mission | Silicon Valley | 213300 |  420  | 27 |  | 27 |
| Monterey | Santa Cruz & Monterey | 213300 |  607  | 2 | 2 | 5 |
| San Francisco | Mid-Peninsula | 213300 |  348  | 14 | 56 | 70 |
| San Mateo | Mid-Peninsula | 213300 |  258  | 24 | 23 | 47 |
| Santa Rosa | North Bay | 213300 |  578  | 32 | 102 | 134 |
| Solano | North Bay | 213300 |  183  | 10 | 5 | 16 |
| Chabot Hayward | East Bay | 2133.50 | 44 |  |  | 0 |
| Foothill | Silicon Valley | 2133.50 | 273 |  |  | 0 |
| Hartnell | Santa Cruz & Monterey | 2133.50 | 593 |  |  | 0 |
| Los Medanos | East Bay | 2133.50 |  28  |  | 1 | 1 |
| Merritt | East Bay | 2133.50 | 79 |  |  | 0 |
| Mission | Silicon Valley | 2133.50 | 25 |  |  | 0 |
| Monterey | Santa Cruz & Monterey | 2133.50 | 61 |  |  | 0 |
| San Mateo | Mid-Peninsula | 2133.50 | 42 |  |  | 0 |
| Santa Rosa | North Bay | 2133.50 |  95  |  | 23 | 23 |
| **Total Bay Region** |  |  **5,961**  |  **175**  |  **288**  |  **463**  |
| **Total Mid-Peninsula Sub-Region** |  | **648** | **38** | **79** | **117** |

# *Source: IPEDS, Data Mart and Launchboard*

NOTE: Headcount of students who took one or more courses is for 2016-17. The annual average for awards is 2014-17 unless there are only awards in 2016-17. The annual average for other postsecondary is for 2013-16.

# Gap Analysis

Based on the data included in this report, there is a labor market gap in the Bay region with 740 annual openings for the Firefighter occupational cluster and 463 annual (3-year average) awards for an annual undersupply of 277. In the Mid-Peninsula Sub-Region, there is a small gap with 130 annual openings and 117 annual (3-year average) awards for an annual undersupply of 13.

However, the supply/demand “gap analysis” is not the only consideration, related to this proposed new City College of San Francisco (CCSF) Certificate of Achievement, which is intended to support a new Memorandum of Understanding Instructional Services Agreement with CCSF and the San Francisco Fire Department (SFFD). Some of the students/workers who will benefit from the certificate have already completed the SFFD Accredited Local Academy Basic Fire Academy. Once hired into the SFFD, individuals may enter fields of fire prevention, fire investigation, and wildland firefighting when they complete various phases of firefighter training and other education.

# Student Outcomes

**Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 2133.00 - Fire Technology**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2015-16 | Bay (All CTE Programs) | City College of San Francisco (All CTE Programs) | State (2133.00) | Bay (2133.00) | Mid-Peninsula (2133.00) | City College of San Francisco (2133.00) |
| % Employed Four Quarters After Exit | 74% | 72% | 77% | 85% | 83% | 85% |
| Median Quarterly Earnings Two Quarters After Exit | $10,550 | $10,170 | $15,553 | $19,882 | $18,523 | $20,134 |
| Median % Change in Earnings | 46% | 31% | 37% | 34% | 46% | 41% |
| % of Students Earning a Living Wage | 63% | 65% | 68% | 78% | 79% | 84% |

*Source: Launchboard Pipeline (version available on 2/27/19)*

# Skills, Certifications and Education

**Table 9. Top Skills for Firefighter Occupations in Bay Region (Feb 2018 - Jan 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Skill | Postings | Skill | Postings | Skill | Postings |
| Fire Protection | 229 | Spirometry | 26 | Technical Assistance | 8 |
| Repair | 111 | Emergency Services | 25 | Training Programs | 8 |
| Fire Suppression | 89 | Hand Tools | 25 | Building Codes | 7 |
| Customer Service | 48 | Treadmill Test | 25 | Customer Contact | 7 |
| Budgeting | 47 | Calculation | 23 | Local Government | 7 |
| Occupational Health and Safety | 41 | Schematic Diagrams | 23 | Plumbing | 7 |
| Self-Contained Breathing Apparatus (SCBA) | 40 | Public administration | 22 | Public Health and Safety | 7 |
| Project Management | 38 | Training Programs | 22 | Quality Management | 7 |
| Telecommunications | 34 | Cardiopulmonary Resuscitation (CPR) | 21 | Business Operations | 6 |
| Professional Engineer | 30 | Emergency Medical Care | 21 | Chemistry | 6 |
| Scheduling | 29 | Life-Safety Systems | 21 | Commissioning | 6 |
| HAZMAT | 28 | Equipment Moving | 20 | Equipment Operation | 6 |
| Staff Management | 28 | Predictive / Preventative Maintenance | 20 | Fire Detection | 6 |
| Equipment Operation | 26 | Technical Inspections | 20 | Surveys | 6 |
| Exercise Treadmill | 26 | Building Codes | 19 | Biotechnology | 5 |

*Source: Burning Glass*

**Table 10. Certifications for Firefighter Occupations in the Bay Region (Feb 2018 - Jan 2018)**

Note: 42% of records have been excluded because they do not include a certification. As a result, the chart below may not be representative of the full sample.

|  |  |  |  |
| --- | --- | --- | --- |
| Certification | Postings | Certification | Postings |
| Driver's License | 171 | National Registry of Emergency Medical Technicians (NREMT) | 14 |
| Emergency Medical Technician (EMT) | 61 | Fire Inspector II | 13 |
| Firefighter | 40 | Aerial Rescue and Fire Fighting (ARFF) | 11 |
| Firefighter I | 32 | Airport Firefighter | 11 |
| Licensed Professional Engineer | 31 | Driver/Operator Mobile Water Supply | 10 |
| Certified Patient Account Technician | 22 | CDL Class D | 9 |
| Paramedic Certification | 20 | First Aid Cpr Aed | 9 |
| Fire Officer | 16 | American Heart Association Certification | 8 |
| Fire Inspector | 15 | Certified Financial Planner (CFP) | 8 |
| Fire Inspector I | 15 | Driver/Operator Pumper | 7 |
| Firefighter II | 15 | NICET II | 7 |

*Source: Burning Glass*

**Table 11. Education Requirements for Firefighter Occupations in Bay Region**

Note: 52% of records have been excluded because they do not include a degree level. As a result, the chart below may not be representative of the full sample.

|  |  |
| --- | --- |
| Education (minimum advertised) | Latest 12 Mos. Postings |
| High school or vocational training | 125 (55%) |
| Associate Degree | 14 (6%) |
| Bachelor’s Degree or Higher | 89 (39%) |

*Source: Burning Glass*

# Methodology

Occupations for this report were identified by use of skills listed in O\*Net descriptions and job descriptions in Burning Glass. Labor demand data is sourced from Economic Modeling Specialists International (EMSI) occupation data and Burning Glass job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CTE Launchboard and CCCCO Data Mart.

# Sources

O\*Net Online

Labor Insight/Jobs (Burning Glass)

Economic Modeling Specialists International (EMSI)

CTE LaunchBoard [www.calpassplus.org/Launchboard/](http://www.calpassplus.org/Launchboard/)

Statewide CTE Outcomes Survey

Employment Development Department Unemployment Insurance Dataset

Living Insight Center for Community Economic Development

Chancellor’s Office MIS system

# Contacts

For more information, please contact:

* Doreen O’Donovan, Data Research Analyst, for Bay Area Community College Consortium (BACCC) and Centers of Excellence (CoE), doreen@baccc.net or (831) 479-6481
* John Carrese, Director, San Francisco Bay Center of Excellence for Labor Market Research, jcarrese@ccsf.edu or (415) 267-6544