**** **Fire Science Occupations**

**Labor Market Information Report**

Prepared by the San Francisco Bay Center of Excellence

For Labor Market Research

September 2018

# Recommendation

Based on all available data, there appears to be an undersupply of Fire Science 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). The gap is about 143 students annually in the Bay region and 51 annually in the Mid-Peninsula sub-region.

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 this 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 Fire Science 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.

|  |
| --- |
| * **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%* |
|  |
| * **Forest Fire Inspectors and Prevention Specialists** (**SOC 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.
 |
| *Entry-Level Educational Requirement: High school diploma or equivalent* |
| *Training Requirement: Moderate-term on-the-job training* |
| *Percentage of Community College Award Holders or Some Postsecondary Coursework: 52%* |
|  |
| * **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: 52%* |

# Occupational Demand

**Table 1. Employment Outlook for Fire Science Occupations in Bay Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation  | 2017 Jobs | 2022 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Annual Open-ings | 10% Hourly Wage | Median Hourly Wage |
| Firefighters | 6,915 | 7,352 | 437  | 6% | 2,747 | 549 | $22.80  | $40.25  |
| Forest Fire Inspectors and Prevention Specialists | 92 | 100 | 8  | 9% | 56 | 11 | $27.68  | $37.23  |
| Fire Inspectors and Investigators | 188 | 205 | 17  | 9% | 115 | 23 | $29.37  | $51.68  |
| **Total** | **7,195** | **7,657** | **462** | **6%** | **2,918** | **584** | **$23.03**  | **$40.51**  |

*Source: EMSI 2018.2*

**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 Fire Science Occupations in Mid-Peninsula Sub-Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation  | 2017 Jobs | 2022 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Annual Open-ings | 10% Hourly Wage | Median Hourly Wage |
| Firefighters | 1,834 | 2,006 | 173  | 9% | 794 | 159 | $27.92  | $43.79  |
| Forest Fire Inspectors and Prevention Specialists | <10 | <10 |  |  | <10 | Insf. Data | Insf. Data | Insf. Data |
| Fire Inspectors and Investigators | 73 | 80 | 7  | 9% | 45 | 9 | $35.68  | $66.26  |
| **TOTAL** | **1,907** | **2,086** | **179**  | **9%** | **839** | **168** | **$28.22**  | **$44.65**  |

*Source: EMSI 2018.2*

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 (Sept 2017 - Aug 2018)**

|  |  |  |
| --- | --- | --- |
| Occupation | Bay Region | Mid-Peninsula |
| Fire Inspectors (33-2021.01) | 90 | 19 |
| Municipal Firefighters (33-2011.01) | 82 | 13 |
| Forest Fire Inspectors and Prevention Specialists (33-2022.00) | 47 | 17 |
| Forest Firefighters (33-2011.02) | 14 | 7 |
| Fire Investigators (33-2021.02) | 1 | 1 |
| **Total** | **234** | **57** |

*Source: Burning Glass*

**Table 4. Top Job Titles for Fire Science Occupations for latest 12 months (Sept 2017 - Aug 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Common Title | Bay | Mid-Peninsula | Common Title | Bay | Mid-Peninsula |
| Firefighter | 68 | 12 | Book Writing Ranger, Writing | 5 | 3 |
| Alarm Inspector | 15 |  | Fire Technician | 4 | 3 |
| Specialist | 12 | 4 | Medic | 4 |  |
| Fire Inspector | 9 | 1 | Technician | 4 | 2 |
| Ranger | 8 |  | Tree Utility Forester | 4 | 2 |
| Equipment Operator | 6 |  | Alarm Specialist | 3 | 2 |
| Sprinkler/Inspector | 6 | 1 | Fire Prevention Specialist I | 3 |  |

*Source: Burning Glass*

# Industry Concentration

**Table 5. Industries hiring Fire Science 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) | 7,144 | 7,680 | 8% | 91.3% |
| State Government, Excluding Education and Hospitals (902999) | 136 | 149 | 10% | 1.7% |
| Federal Government, Military (901200) | 111 | 110 |  (1%) | 1.4% |
| All Other Support Services (561990) | 100 | 90 |  (10%) | 1.3% |
| Convention and Trade Show Organizers (561920) | 81 | 95 | 17% | 1.0% |
| Federal Government, Civilian, Excluding Postal Service (901199) | 81 | 83 | 2% | 1.0% |
| Packaging and Labeling Services (561910) | 47 | 57 | 21% | 0.6% |
| Security Guards and Patrol Services (561612) | 11 | 12 | 9% | 0.1% |

*Source: EMSI 2018.3*

**Table 6. Top Employers Posting Fire Science Occupations in Bay and Mid-Peninsula Sub-Region (Sept 2017 - Aug 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Employer | Bay | Employer | Bay | Employer | Mid-Peninsula |
| US Army | 16 | National Testing Network | 4 | National Testing Network | 4 |
| Johnson Controls Incorporated | 14 | Capstone Fire & Safety Management | 3 | Adventures In Writing Camp | 3 |
| Adventures In Writing Camp | 7 | City Oakland | 3 | Commercial Fire Protection Incorporated | 3 |
| Department Army | 6 | Contra Costa County | 3 | Ringtail Learning Inc | 3 |
| Equity Lifestyle Properties | 6 | Daily Dispatch | 3 | Salesforce | 3 |
| Commercial Fire Protection Incorporated | 5 | Hue & Cry, Inc | 3 | Sfmta | 3 |
| Vmware Incorporated | 5 | Jensen Hughes, Inc | 3 | Presidio Incorporated | 2 |
| state of california | 5 | Presidio Incorporated | 3 | Restoration Management Company | 2 |
| City Fremont | 4 | Restoration Management Company | 3 | San Francisco Public Utilities Commission | 2 |
| Davey Resource Group | 4 | Ringtail Learning Inc | 3 | San Francisco State University | 2 |

*Source: Burning Glass*

# Educational Supply

There are eight community colleges in the Bay Region issuing 441 awards annually on TOP 2133.00 - Fire Technology and two colleges in the Mid-Peninsula sub-region issuing 117 awards annually.

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| College | Sub-Region | Headcount | Associates | Certificates | Total |
| Cabrillo | Santa Cruz & Monterey | 1,402 | 20 | 2 | 22 |
| Chabot Hayward | East Bay | 220 | 12 | 2 | 14 |
| Las Positas | East Bay | 202 | 10 | 11 | 21 |
| Los Medanos | East Bay | 312 | 24 | 63 | 86 |
| Mission | Silicon Valley |  | 27 |  | 27 |
| Monterey | Santa Cruz & Monterey | 653 | 2 | 2 | 5 |
| San Francisco | Mid-Peninsula |  | 14 | 56 | 70 |
| San Mateo | Mid-Peninsula |  | 24 | 23 | 47 |
| Santa Rosa | North Bay | 619 | 32 | 102 | 134 |
| Solano | North Bay | 183 | 10 | 5 | 16 |
| **Total Bay Region** | **3,591** | **175** | **266** | **441** |
| **Total Mid-Peninsula Sub-Region** |  | **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 large labor market gap in the Bay region with 584 annual openings for the Fire Science occupational cluster and 441 annual awards for an annual undersupply of 143. In the Mid-Peninsula sub-region, there is also a gap with 168 annual openings and 117 annual awards for an annual undersupply of 51.

# 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 (213300) | Bay (213300) | Mid-Peninsula (213300) | City College of San Francisco (213300) |
| % Employed Four Quarters After Exit | 74% | 72% | 72% | 85% | 84% | 84% |
| Median Quarterly Earnings Two Quarters After Exit | $10,310 | $10,794 | $17,186 | $21,815 | $18,523 | $20,129 |
| Median % Change in Earnings | 46% | 46% | 34% | 31% | 41% | 33% |
| % of Students Earning a Living Wage | 63% | 55% | 72% | 78% | 79% | 84% |

*Source: Launchboard Pipeline (version available on 9/19/18)*

# Skills, Certifications and Education

**Table 9. Top Skills for Fire Science Occupations in Bay Region (Sept 2017 - Aug 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Skill | Postings | Skill | Postings | Skill | Postings |
| Fire Protection | 69 | Technical Training | 14 | Satisfaction Failure Correction | 9 |
| Repair | 58 | Inspection of Safety Equipment and/or Alarm Systems | 13 | Schematic Diagrams | 9 |
| Fire Suppression | 44 | Building Codes | 12 | Training Programs | 9 |
| Cardiopulmonary Resuscitation (CPR) | 24 | Inspection Records | 11 | Visual Signals | 9 |
| Customer Service | 23 | Scheduling | 11 | Basic Mathematics | 8 |
| Emergency Medical Care | 22 | Empower | 10 | Data Entry | 8 |
| Emergency Services | 19 | Prevention Activities | 10 | Electrical Systems | 8 |
| Life Support | 19 | Teaching | 10 | Life-Safety Systems | 8 |
| HAZMAT | 17 | Wiring | 10 | Salesforce | 8 |
| Predictive / Preventative Maintenance | 17 | Advanced Cardiac Life Support (ACLS) | 9 | Ansible | 7 |
| Equipment Operation | 15 | Cleaning | 9 | Hydraulics | 7 |
| Hand Tools | 15 | Customer Contact | 9 | Medical Emergencies | 7 |
| Technical Inspections | 15 | Lesson Planning | 9 | Plumbing | 7 |
| Equipment Moving | 14 | Network Access Control (NAC) | 9 | Power Tools | 7 |
| Public Health and Safety | 14 | Safety Codes | 9 | Python | 7 |

*Source: Burning Glass*

**Table 10. Certifications for Fire Science Occupations in the Bay Region (Sept 2017 - Aug 2018)**

Note: 63% 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 | 90 | Certified Financial Planner (CFP) | 5 |
| Emergency Medical Technician (EMT) | 53 | Driver/Operator Mobile Water Supply | 5 |
| Firefighter | 32 | HazMat Operations | 5 |
| Firefighter I | 28 | HazMat Technician | 5 |
| Certified Patient Account Technician | 18 | Hazardous Materials Technician | 5 |
| First Aid CPR AED | 18 | NICET II | 5 |
| Paramedic Certification | 16 | Wildland Firefighter | 5 |
| Firefighter II | 13 | Fire Instructor I | 4 |
| National Registry of Emergency Medical Technicians (NREMT) | 13 | Fire Officer | 4 |
| Fire Inspector | 11 | American Heart Association Certification | 3 |
| Fire Inspector I | 11 | Fire Inspector II | 3 |
| CDL Class D | 9 | HazMat Awareness | 3 |
| Aerial Rescue and Fire Fighting (ARFF) | 7 | Medical Examiner's License | 3 |
| Airport Firefighter | 7 | Asbestos Worker | 2 |
| Driver/Operator Pumper | 7 | Basic Cardiac Life Support Certification | 2 |
| Security Clearance | 7 | Environmental Protection Agency Certification | 2 |

*Source: Burning Glass*

**Table 11. Education Requirements for Fire Science Occupations in Bay Region**

Note: 56% 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 | 79 (76%) |
| Associate Degree | 3 (3%) |
| Bachelor’s Degree or Higher | 22 (21%) |

*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

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