

# Fire Protection Engineering

**STARTING SALARY: \$70,000**  
**MEDIAN INCOME: \$96,200**



Fire Protection Engineers (FPEs) keep people safe from fire. According to the Society of Fire Protection Engineers (SFPE), “Fire protection engineering is the application of science, engineering principles and experience to protect people and their environments from the destructive effects of fire.”

Fire protection engineers protect people, homes, the work place, industrial facilities and public spaces from the devastating effects of fire and explosion. They do this by evaluating fire safety and the design of fire safe systems in everything from vehicles to homes, buildings, and consumer products. This often involves computer modeling of the possible fire situations and innovative solutions that address the fire hazards, including the use of “smart” fire detectors and integrated smoke control systems, advanced fire suppression and special audible emergency communications for the occupants in the event of fire or explosion.

FPEs may work in the following scenarios:

1. They may work as spacecraft specialists making space travel safer for rocketeers and astronauts.
2. They may work as a fire safety specialist reviewing and testing products for fire fighter safety (clothing, breathing masks, etc).
3. They may work developing fire department programs.
4. They may work in disaster management ensuring the safety of people and the integrity of buildings in natural disasters such as earthquakes and floods.
5. They may be quality engineers inspecting all vehicles such as automobiles, large ocean going vessels, spacecraft, and aircrafts for fire safety.

## Salary Outlook

A 2012 Society of Fire Protection engineers survey found the median income for an entry-level fire protection engineer with a bachelor’s degree and six years or less experience is \$70,000 per year. For a mid-level fire protection engineer, the median income increases to \$96,200, and as a senior-level fire protection engineer, salary rises to more than \$128,000.

Fire protection engineers are among the highest paid engineers in the nation, earning an average raise of three percent in 2011; leading to a competitive salary in fields such as consulting, insurance, government and fire service. Earning a professional engineer (PE) license also has salary benefits as PEs earn 21 percent more annually than non-professional engineers.

Source: FireEngineering.com

6. They may work as Fire Safety Development Engineers writing fire safety codes for buildings, homes and schools.
7. They may perform fire safety evaluations of buildings and industrial complexes to determine the risk of fire losses and how best to prevent them.
8. They may design systems that automatically detect and suppress fires and explosions as well as design fire alarm, smoke control, emergency lighting, communications and exit systems
9. They may conduct fire research on materials and consumer products and use computer modeling to predict fire growth and smoke behavior.
10. They may investigate fires or explosions, preparing technical reports or providing expert courtroom or government testimony.
11. They may survey major facilities and perform research, testing and analysis

Most often, FPEs work in government agencies such as NASA, the CIA, the Navy, the Smithsonian Institute and the National Institute of Standards and Technology, healthcare facilities, large corporations, manufacturing facilities, insurance companies, civil engineering firms, and in consulting. They work “hand-in-hand” with architects, other engineers, government authorities, insurance underwriters, fire service personnel, lawyers and other FPE experts.

# Glossary of Terms

Alarm - system for detecting and reporting unusual conditions, such as smoke, fire, flood, loss of air, HAZMAT release, etc

Analysis - a careful study of something to learn about its parts, what they do, and how they are related to each other

Barrier - something material that blocks or is intended to block passage

Calculate - to forecast consequences

Code – a set of laws or regulations

Combustion - an act or instance of burning

Control - to direct the actions or function of (something) : to cause (something) to act or function in a certain way

Detection - the act or process of discovering, finding, or noticing something

Evaluate - to judge the value or condition of (someone or something) in a careful and thoughtful way

Extinguish - to cause (something) to stop burning

Flow - the volume of water delivered through hose lines to the burning material by a means of the mechanical force of the fire pump. Measured in GPM.

Hazard - a source of danger of personal injury or property damage

HAZMAT - Hazardous materials, including solids, liquids, or gases that may cause injury, death, or damage if released or triggered

Hydraulic - operated by the pressure of a fluid

Integration - the combining and coordinating of separate parts or elements into a unified whole

Investigation - to try to find out the facts about (something, such as a crime or an accident) in order to learn how it happened, who did it, etc.

Mitigate - to cause to become less harsh or hostile

Occupancy - zoning and safety code term used to determine how a structure is permitted to be used and occupied, which in turn dictates the necessary safety structures and procedures

Phenomenon - a fact or situation that is observed to exist or happen, especially one whose cause or explanation is in question

Pressure - the force with which water moves through the hose lines.

Preventive - used to stop something bad from happening

Riser - a vertical water pipe used to carry water for fire protection systems above grade

Safeguard - something that provides protection against possible loss, damage, etc.

Sprinkler - a device that sprays water

Statistics – a collection of quantitative data

Suppression - to end or stop (something) by force

Thermodynamics – a science that deals with the action of heat and related forms of energy

## ABET Accredited Programs in Fire Protection Engineering

School Name	Location	Website	Program and Degree Name
Oklahoma State University	Stillwater, OK, US	<a href="http://www.osu.okstate.edu">www.osu.okstate.edu</a>	Fire Protection and Safety Technology, BS
University of Houston-Downtown	Houston, TX, US	<a href="http://www.dt.uh.edu">www.dt.uh.edu</a>	Fire Protection Engineering Technology, BSET
University of Maryland College Park	College Park, MD, US	<a href="http://www.umd.edu">www.umd.edu</a>	Fire Protection Engineering, BS