

Fire - Ed Up

IGNITE A PASSION FOR BUSHFIRE EDUCATION



Office of the
Chief Scientist
& Engineer



Fire-Ed Up Challenge - Introduction

This Fire-Ed Up challenge is a 6-week design sprint, seeking innovative solutions to a range of bushfire-related challenges. Using the established iSTEM Engineering Design Process, each team will choose from three scenarios and design a solution presented in the form of either a detailed design poster or a 90-second video pitch aimed at potential investors.

Scenario 2: Strategies to Protect Human Life & Property in a Bushfire

INTRODUCTION

Bushfires are nature's formidable powerhouses, demonstrating both their grandeur and potential devastation. Protecting human life and property becomes paramount in such circumstances. While nature can be unpredictable, our strategies to defend against its wrath can be meticulously planned and innovative.

OBJECTIVE

Your six-week mission is to conceptualise and develop a strategy or tool that safeguards both human life and property against bushfires. This could involve early-warning systems, evacuation protocols, building materials, or community awareness campaigns, among others.

RESOURCES & INSPIRATION

Historical Events: Explore past bushfire events. What went wrong? What went right? Learn from history.

STEM Principles: Merge principles from science, engineering, math, and technology to create resilient strategies against bushfires.

Global Insights: Bushfires occur worldwide. Investigate strategies from other nations and consider how they might be adapted or enhanced for local conditions.



Mission Schedule

The Fire-Ed Up Challenge missions have been designed by subject matter experts and will provide relevant information for the team to complete the challenge in a systematic way using the [iSTEM Engineering Design Process](#) as a guide.

Research

Start your journey by researching the complexities of bushfires. How do they start? How do they spread? What are the current protocols in place for safety?



Mission Guide

Use the following information as a guide to completing the design sprint for this scenario. You can run these missions at your own pace, use as little or as much of the [Fire-Ed Up](#) resources as needed. Each heading is linked to the different tasks developed for the Fire-Ed Up program.

1. **Define:**

- Understand the importance of human and property safety during bushfires.
- Set the primary goal: developing strategies to enhance safety.

2. **Identify:**

- Recognise the vulnerabilities of communities during bushfires.
- Pinpoint areas where current safety measures fall short.

3. **Brainstorm:**

- Generate a list of potential strategies and tools to bolster safety.
- Encourage multidisciplinary ideas that encompass evacuation, shelter, communication, and more.

4. **Design:**

- Select the most impactful strategy from the brainstorming session.
- Plan out the logistics, requirements, and implementation of this strategy.

5. **Prototype:**

- Create a mockup or detailed outline of the chosen strategy/tool.
- Consider all facets, from initiation to execution.

6. **Evaluate:**

- Simulate the strategy in controlled bushfire scenarios.
- Gather community feedback and insights from safety experts.

7. **Iterate:**

- Refine the strategy based on feedback and simulation results.
- Address any unforeseen challenges or gaps.

8. **Communicate:**

- Prepare a pitch or design poster on the technology, its development process, and its potential impact.
- Engage with stakeholders, including bushfire management teams, to share and discuss the innovation.



Science Goals and Objectives

Each team must seek to answer one or more of the 14 national goals of the [2014 National Bushfire Management Policy Statement](#).

Teams will then outline a science objective(s) for their mission. Teams must seek to answer one or more of the most important science objectives:

- Maintain Appropriate Fire Regimes in Australia's Forests and Rangelands.
- Balance the Environmental Impacts of Fire.
- Promote Indigenous Australians' Use of Fire.
- Community Engagement.
- Public Awareness and Education.
- Integrated and Coordinated Decision Making and Management.
- Employment, Workforce Education and Training.
- Bushfire Risk Mitigation.
- Bushfire Response.
- Safety in Fire Operations.
- Bushfire Recovery.
- International Responsibilities.
- Risk Management.
- Investing in and Managing Knowledge.

Example question: 13. What are some potential risks, positive and negative? And what contingency plans have we got in place if those risks arise?

Suggested Resources

- Tips for a fire resilient household: <https://australian.museum/learn/climate-change/mt-resilience/households-and-bushfire/>
- Bushfire-proof houses: <https://www.csiro.au/en/news/all/articles/2015/december/raising-the-standard-for-bushfire-proofing-houses>
- Interactive climate risk and hazards map: <https://www.climatecouncil.org.au/resources/climate-risk-map/>
- Bushfire-proof house design: <https://theconversation.com/how-our-bushfire-proof-house-design-could-help-people-flee-rather-than-risk-fighting-the-flames-182046>
- Rural Fire Simulator: <https://imps.cdu.edu.au/tools/firesim/>
- Hoses and Ladders, Bushfire Survival Game: <https://disasterresiliencetas.com.au/wp-content/uploads/2019/09/Hoses-Ladders-A3-poster.pdf>
- Bushfires and Mental Health: <https://beyou.edu.au/bushfire-response-program/resource-pack>
- Project Firestorm: <https://www.projectfirestorm.com.au/>
- Fire Up! Surf Coast: <https://www.surfcoast.vic.gov.au/Community/Emergencies-and-safety/Fire-Up>