



RESEARCH FOUNDATION

RESEARCH FOR THE NFPA MISSION

PROJECT SUMMARY

Occupant Evacuation Behavior in Wildland Fires: Summary and Gap Analysis

19 August 2020

Background: For structure fires, we have a great deal of information concerning occupant evacuation from buildings including types of behaviors prior to beginning evacuation, time associated with pre-movement delays, and times and behaviors associated with evacuation actions. We do not have similar information for people facing wildland fire evacuations. We have been able to construct building evacuation models that account for the range of behaviors that building occupants may engage in before they begin evacuation and have collected data concerning the likelihood and duration of the resulting delays and that allows for calculation of estimated evacuation times for a building. In mass evacuations in the event of wildland fires, we do not have the same level of information available on how people become aware of fires, how they decide on the need to evacuate their homes, the behaviors and time associated with pre-evacuation actions and how these vary by occupant type, and data on evacuation time components.

Research Goal: This project will compile available information on occupant evacuation in wildland fires from the literature as well as from case studies and perform a gap analysis to identify the areas where data needs to be collected in order to construct valid models of occupant decision making and evacuation in wildland fires.

Project Tasks: This project is comprised of the following tasks:

- **Task 1: Literature Review:** This will consist of a review of the available literature on occupant behavior in wildfire evacuations. Collect any available information on:
 - Occupant pre-movement delays and behaviors prior to the beginning of evacuation in a wildland fire event. Focus should be on types of behaviors and elapsed time for delays.
 - How people become aware of fires
 - How people decide on the need to evacuate their homes
 - Reasons for delays in occupant evacuation (in terms of who and how long)
 - What are the components of evacuation and are we able to quantify?

- Task 2: Case Studies: Using relevant case studies, develop a list of scenarios and the critical factors that apply to each scenario to inform the bullets above in Task 1. Develop a template that lists the factors organized by scenario.
- Task 3: Tabulate Data: Tabulate the available data/information by scenario. Analyze the available information to provide insights on the current knowledge of occupant evacuation in wildfire incidents.
- Task 4: Knowledge Gaps. Present the knowledge gaps and identify the missing data on occupant evacuation during wildfire incidents that are required for further analysis and modelling.
- Task 5: Final Report. Develop a final report to document the above tasks.

Implementation: This research program will be conducted under the auspices of the Research Foundation in accordance with Foundation Policies and will be guided by a Project Technical Panel who will provide input to the project, review periodic reports of progress and research results, and review the final project report.

Schedule: The final report will be available by the end of 2020.

About us:

About the Fire Protection Research Foundation

The [Fire Protection Research Foundation](#) plans, manages, and communicates research on a broad range of fire safety issues in collaboration with scientists and laboratories around the world. The Foundation is an affiliate of NFPA.



About the National Fire Protection Association (NFPA)

Founded in 1896, NFPA is a global, nonprofit organization devoted to eliminating death, injury, property and economic loss due to fire, electrical and related hazards. The association delivers information and knowledge through more than 300 consensus codes and standards, research, training, education, outreach and advocacy; and by partnering with others who share an interest in furthering the NFPA mission. [All NFPA codes and standards can be viewed online for free.](#) NFPA's [membership](#) totals more than 65,000 individuals around the world.

