



RESEARCH FOUNDATION

RESEARCH FOR THE NFPA MISSION

PROJECT SUMMARY

Environmental Impact of Fire – Research Road Map

8 February 2019

Background: Concern for the health of the natural environment is growing as human population grows and as new levels of contamination of scarce resources are revealed. Current efforts to improve the sustainability of buildings focus on increasing energy efficiency and reducing the embodied carbon. This overlooks the fact that a fire event could reduce the overall sustainability of a building through the release of pollutants and the subsequent re-build.

Most fires occurring in the built environment contribute to air contamination from the fire plume (whose deposition is likely to subsequently include land and water contamination), contamination from water runoff containing toxic products, and other environmental discharges or releases from burned materials. The environmental impact also has economic consequences for communities and regions and while the direct and indirect costs of fire on a community can be devastating, they are not usually reported at a local scale beyond an account of the human deaths and injuries and the amount of property destroyed or damaged.

To calculate the true cost of fire to society we need to be able to quantify the impact fire has not only on the people or structures involved but also to the environment. Studies have been done to examine the environmental impact of fire but we cannot yet fully quantify this impact and its consequences to the local economy.

Research Goal: Develop a research road map identifying needed research to be able to quantify the environmental impact of fire from the built environment and its economic consequences. This project will focus on structure fires and exclude wildland and wildland urban interface (WUI) fires.

Project Tasks: This project involves the following tasks:

Task 1 – Using the Foundation’s [Phase 1 literature review](#) as a starting point, review existing information on environmental impact of fire from the built environment with a focus on quantification and economic consequences. This information should include the following:

- Research since the previous report was published
- Case studies of actual structure fires that includes information on the impact of the fire on the environment

Task 2 – Based on the information found in Task 1, perform a gap analysis on what future research is needed to adequately quantify the environmental impact of fire on the built environment and its economic consequences on the local economy and develop a research road map to fill the identified gaps. The road map should consider gaps as well as the prioritization of the needs in order to achieve this goal.

Task 3 – Prepare a final report that includes the findings of Task 1 and Task 2.

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, recommend contractor selection, review periodic reports of progress and research results, and review the final project report.

Schedule: The final report will be published in February 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.

