



RESEARCH FOUNDATION

RESEARCH FOR THE NFPA MISSION

PROJECT SUMMARY

An Analysis of Firefighter Breathing Air Replenishment Systems

25 June 2019

Background: The criteria for the installation of Firefighter Breathing-Air Replenishment Systems is contained in the Uniform Plumbing Code. The 2018 edition of NFPA 1 Fire Code added Annex F which references the Appendix F provisions of the Uniform Plumbing Code. During the NFPA 1 Fire Code Technical Committee discussions on the issue of firefighter breathing air replenishment systems, numerous questions arose as to the appropriateness of the installation criteria, actual field use by firefighters, safety of such system, maintenance and performance of systems in use. Based on their importance and impact on firefighters, there is uncertainty as to what code or standard should maintain the majority of the requirements for these systems.

Research Goal: The goal of this project is to analyze and review the existing code requirements and literature to provide guidance on the use and effectiveness of these firefighter breathing air replenishment systems.

Project Tasks: This study involves the following tasks:

Task 1: Literature Review. Conduct a literature review of firefighter breathing air systems in major journals and other sources. This could include resources such as: The National Fire Academy, fire service/fire engineering periodicals, and codes and standards. Provide a background on firefighter breathing air replenishment systems, their use, cost, and inspection, testing, and maintenance requirements, specifically addressing the following:

- What are firefighter breathing air replenishment systems?
- What are the needs and use cases for these systems in specific buildings (both new and existing high-rise applications)?
- What are the current code requirements for their installation? (e.g., UPC, IFC, and other codes and standards on firefighter breathing air systems)
- What are the current code requirements for their ITM requirements?
- What are the costs of installation and ITM for these systems under current provisions?

Task 2: Cost Benefit Analysis. Based on the findings of task 1, conduct a cost-benefit analysis for at least two scenarios in which firefighter breathing air replenishment systems are deployed.

Task 3: Packaging and Dissemination. Based on the information collected above, develop a final report that will be published on the Foundation's website.

Implementation: This research program will be conducted under the auspices of the Research Foundation in accordance with the 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.

Tentative Schedule:

Project Kick-off: 25 July 2019
Task 1 update: 25 September 2019
Task 2 update: 25 October 2019
Draft Final Report: 25 November 2019
Final Report: 20 December 2019

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.

