



Evaluation of Dynamic Directional Exit Signage: A Literature Review

Background

For decades, the NFPA and ICC model codes have required an occupancy, having two or more required exits or exit accesses, to be provided with illuminated signs that readily identify the location of and indicate the path of travel to the exits. The UL 924 Standard specifies how static exit signs are to be designed and manufactured. The model codes and product standards require that the signs must be illuminated with letters reading "Exit."

The static Exit sign messaging has served the general public well, in the past, for fire emergencies and for buildings with simple egress layouts. However, in buildings with more complicated egress layouts, typical signage is not enough. Additionally, in recent years there are other emergencies for the public to deal with such as active shooter events that require people to move rapidly to areas other than the typical exit. This is particularly true for buildings with more complicated egress layouts.

Technological advances in sensors, controls, and artificial intelligence algorithms are being designed into emergency lighting systems to allow them to adjust to changing building circumstances. Dynamic directional signage that can change the displayed information based on real-time conditions presents a series of tradeoffs. The potential benefit of a changing message sign would be to deter occupants from a direction of travel that may be blocked or otherwise unavailable due to adverse conditions such as fire, structural collapse, active shooter or other unsafe conditions that may warrant avoidance.

Project Sponsors



This project was generously sponsored by the [National Fire Protection Association](#) (NFPA), through the annual [NFPA Research Fund](#).

Research Goal

This project aims to conduct a literature review to identify the use and regulation of dynamic directional emergency exit signage or lighting and its impact on occupant evacuation.

Project Tasks

This research project will involve the following tasks:

- **Task 1: Literature Review:** Carry out a literature review of the relevant information on this topic including:
 - Identify peer-reviewed behavioral studies that demonstrate the impact of dynamic directional exit signage on occupant evacuation.
 - Identify relevant product standards, installation standards, codes or regulations relating to dynamic directional exit signage.
 - Identify the countries and the types of occupancies that require or allow dynamic directional exit signage.
- **Task 2: Gap Analysis:** Analyze the literature found to determine if it meets the objectives in Task 1. If additional research is needed, identify the knowledge gaps.



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Deliverables

- Develop a draft final report including the findings from Tasks 1 & 2. Review the draft report with the project panel
- Submit a final report after considering the panel's comments.
- Present the findings in at least one relevant conference, webinar or technical committee meeting.

Schedule and Implementation

This six-month research project will be conducted under the auspices of the Fire Protection Research Foundation and will be conducted in accordance with the "Research Foundation Policies for the Conduct of Research Projects". The project 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.

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.

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