Background: NFPA 96, Standard for Ventilation Control and Fire Protection for Commercial Cooking Operations, provides the minimum fire safety requirements (preventative and operative) related to the design, installation, operation, inspection, and maintenance of all public and private cooking operations. Section 10.3 of the latest 2021 edition of the standard requires fixed pipe extinguishing systems in a single hazard area to be arranged for simultaneous automatic operation upon actuation of any one of the systems. The purpose of this provision is to make sure that any area where two or more hazards can be simultaneously involved in a fire have extinguishing systems operate simultaneously in order to apply the extinguishing agent to the entire area where the fire could be occurring or where it could spread to.

Section 3.44 of NFPA 96 defines the term single hazard area as: “where two or more hazards can be simultaneously involved in fire by reason of their proximity, as determine by the Authority Having Jurisdiction (AHJ)”. The standard provides common examples of such arrangements that require simultaneous operation and other installations that do not. However, the standard does not specify separation distances for hazards that provide the AHJ guidance on what constitutes as a single hazard area.

Research Goal: The project goal is to conduct a comprehensive review of both technical and popular literature to understand safe separation distances between hazards in a single hazard area in commercial cooking operations and develop a research plan to determine the maximum distance between hazards that would constitute as a single hazard area in a commercial cooking operation.

Project Tasks:
Task 1: Literature review: Conduct a literature review of technical and popular literature to understand separation distances for hazards in a single hazard area as defined by NFPA 96. The literature review should include reviewing published peer-reviewed journal articles, conference proceedings, technical reports, and other technically valid sources. The literature review must focus on:
- Reviewing applicable codes and standards to summarize the fire safety requirements of the separation distances for hazards in a single hazard area.
- Review the technical substantiation for the provisions in current standards.
- Review applicable test procedures to summarize the fire scenarios including separation distances for hazards in single hazard areas.
- Identify fire incidents where hazards including (1) a single hazard area and (2) multiple single hazard areas were involved in a fire and contributed to the simultaneous operation of the fixed fire extinguishing system, and also scenarios where simultaneous operation did not occur.
- Based on the review of these incidents, summarize any insights regarding the distances between hazards in a single hazard area as well as the distance between single hazard areas.
- FPRF does not have a fire incident database. It is recommended that these incidents be researched from a variety of technical sources including but not limited to news reports, fire investigation reports and other relevant technical sources.
Identify what types of hazards, their sizes, and functions are present in single hazard areas to help determine the limitations of evaluating separation distance between hazards in a single hazard area and the separation distance between multiple single hazard areas.

**Task 2: Gap Analysis:** Identify the gaps between the findings of the literature review and the current provisions in standards on the single hazard area in commercial cooking operations requiring simultaneous operation of the fire extinguishing systems.

**Task 3: Develop a Research Plan:** Develop a research plan to further address the gaps and clarify the parameters (maximum distance between hazards) in a single hazard area in commercial cooking operations.

**Task 4: Final Report:** Develop a draft final report based on the findings from the project tasks. Review the draft report with the project panel and submit a final report after considering the panel’s comments.

**Schedule:** This research project must be completed within 6 months of project initiation.

**How this information will be used:** Project deliverables will be useful for NFPA Technical Committees responsible for NFPA 96 and NFPA 17A.