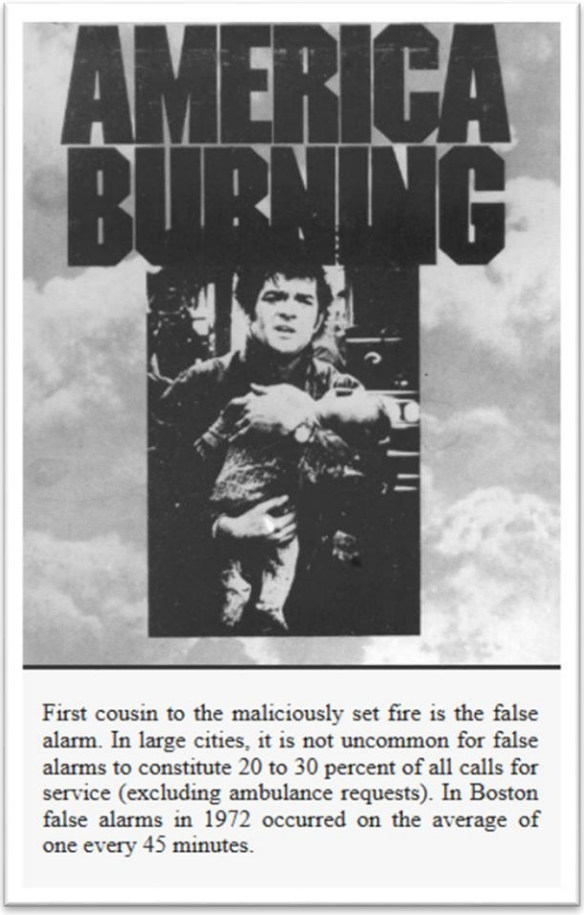
EXAMINATION OF THE IMPACT OF IMPLEMENTING THE UL SOLUTIONS FIRE ALARM SYSTEMS CERTIFICATION PROGRAM

A work product developed in partnership between the International Public Safety Data Institute and the UL Solutions (ULS) Fire Alarm Systems Certification Program.

June 2025

Updated October 2025



America Burning was published in 1973, a product of the National Committee on Fire Prevention and Control. The quote above can be found in Chapter 1, "The Nation's Fire Problem," on page 4.

The data shows that for more than 35 years, false alarms have consistently accounted for about 25 percent of non-EMS calls, a costly burden that puts firefighters at risk and strains community resources. The UL Fire Alarm Systems Certification Program, adopted through Central Station Services (CSS) requirements in National Fire Protection Association (NFPA) 72, sets higher standards for system installation, monitoring, and maintenance.

This report demonstrates that stronger fire alarm certification standards can change the trajectory and deliver safer outcomes, a fire service goal for more than fifty years.

Executive Summary

The UL Solutions Fire Alarm Systems Certification Program (ULS FASCP) has existed for decades. It aims to improve the reliability of commercial fire alarms through a community's adoption of more stringent fire alarm maintenance, service, and record-keeping processes. However, as the program's implementation occurs locally, it is difficult to understand its outcomes fully.

In 2020, UL Solutions approached the International Public Safety Data Institute to determine if the use of the ULS FASCP impacts commercial fire alarm occurrences. That engagement led to a pilot study comparing two cities, which indicated a lower commercial fire alarm rate in the community that utilized the UL FASCP.

This report describes the process, methodology, and result as IPSDI and ULS continued comparing communities that implemented the ULS FASCP versus those that did not.

Introduction

In the decades of its existence, the UL Solutions Fire Alarm Systems Certification Program (ULS FASCP) has been adopted in numerous communities nationwide, both large and small. ULS has long surmised that communities adopting the program would have a lower rate of commercial fire alarms, thus preventing unnecessary responses by their local fire department.

In 2020, ULS approached the International Public Safety Data Institute (IPSDI) to help determine if using the ULS FASCP impacted commercial fire alarm occurrences. A preliminary comparison between two cities evolved into a larger project examining the commercial fire alarm occurrences in communities that use the ULS FASCP. In addition to communities using the ULS FASCP, the study partners also examined commercial alarm occurrences in neighboring non-user communities and those that do not share a common border.

Definitions

Specific definitions that describe the dimensions and scope of the project are below. See Annex A for additional definitions, including fire alarms, monitoring, and maintenance.

Central Station Service: The use of a system or a group of systems, including the protected premises fire alarm system(s), in which the operations of circuits and devices are signaled to, recorded in, and supervised from a listed central station that has competent and experienced operators who, upon receipt of a signal, take such action as required by this Code. Related activities at the protected premises, such as equipment installation, inspection, testing, maintenance, and runner service, are the responsibility of the central station or a listed alarm service local company. Central station service is controlled and

operated by a person, firm, or corporation whose business is the furnishing of such contracted services or whose properties are the protected premises (NFPA, 2025).

Commercial Alarm: A fire department response to an activated fire alarm in a property other than a one- or two-family dwelling. Typically, calls classified as a 'commercial alarm' require a response from several fire apparatus and higher staffing levels to achieve an effective response force.

Community/Department Classifications:

- **Neighbor**: A community or fire department is classified as a Neighbor if it shares any portion of a jurisdictional boundary with a User community or fire department.
- **Non-User**: A community or fire department that does not utilize the ULS FASCP and does not share a jurisdictional boundary with a User community or fire department.
- **User:** A community or fire department that utilizes the ULS FASCP.

National Fire Incident Reporting System (NFIRS): A system created by the United States Fire Administration to capture incident data from a fire department's response to calls for service. More information: www.usfa.fema.gov/nfirs

National Fire Operations Reporting System (NFORS): A system created by the International Public Safety Data Institute to provide real-time analytical tools that fire departments can use to make data-informed decisions. More information: i-psdi.org

Time Periods:

For the purposes of this project, we defined the following time intervals.

- **Pre-Pandemic**: March 1, 2019, through March 1, 2020
- **Pandemic**: March 2, 2020, through March 1, 2022
- **Post-Pandemic**: March 2, 2022, through January 1, 2024

UL Solutions Fire Alarm Systems Certification Program (ULS FASCP): The Program sets minimum standards for alarm system compliance. All service elements, including signal monitoring, retransmission, runner service, and record-keeping, comply with NFPA 72, nationally recognized codes, and applicable UL standards. Compliance is confirmed by a systematic follow-up program promoting transparency between alarm companies, monitoring facilities, authorities having jurisdiction, and alarm system subscribers.

Scope of Work

When scoping this project, IPSDI envisioned two distinct phases. Phase 1 identified the necessary data elements listed below.

#	Element	Description
1	Community/Department	The community or fire department providing commercial alarm data
2	State	The principal state in which the fire department is located
3	CPSE accreditation status	Fire department holds or does not hold Center for Public Safety (CPSE) accreditation
4	Program status	Whether the community or fire department is a program User, Neighbor, or Non-User.
5	All responses (Total #)	Total number of apparatus responses made by a fire department over a specified period
6	Fire Alarm-related responses (Total #)	Total number of a fire department's apparatus responses to an incident type that includes the keyword "alarm" or "structure fire"
7	Commercial alarms (Total #)	Total number of commercial fire alarms (applicable for departments whose alarm types indicate property use)
8	Fire alarm responses (average per month)	Total number of fire alarm responses divided by the number of months with data available
9	Fire alarm responses (average per day)	Total number of fire alarm responses divided by the number of days with data available
10	Days with Available Data	Calculated as the number of days within the specified period for which data is available for a specific fire department; a day is excluded if zero incidents are reported
11	Months with Available Data	Calculated as the total number of months within the specified period for which data is available for a specific fire department; a month is excluded if zero incidents are reported

The overall average proportion of aggregated alarm calls is grouped by the departments classified as:

1. User
2. Non-User
3. Neighbor
4. User and Neighbor combined

Fire departments were *excluded from the study* if they had less than twelve (12) months of data or fewer than 100 incidents. They were also excluded if their data was interrupted or suffered quality issues during the subject period.

At inception, the returned data encompassed a 3-year moving window ending in the current month. Newer datasets replaced older exports from fire departments throughout the project. The project's evolution led to examining commercial alarm data for the pre- and post-pandemic period and during the COVID-19 pandemic, as defined above.

Data Sources

The primary data sources informing the project were historical data from the National Fire Incident Reporting System (NFIRS) and live data from IPSDI's National Fire Operations Reporting System (NFORS) Analytics platform.

IPSDI previously ingested the NFIRS legacy data and made it available in the FireCARES (firecares.nfors.org) community risk assessment (CRA) tool. The appropriate data was pulled from this source for comparison and analysis as communities/fire departments were identified as Users, Non-Users, or Neighbors.

IPSDI ingests NFORS Analytics data through connections with fire department data sources, such as their Computer Aided Dispatch (CAD) and Record Management System (RMS). This allows individual departments to conduct a wide range of analytics, providing near real-time access to fire response data for those communities. For the project, select data was ingested into a separate repository, offering project-specific filtering, dashboard creation, and visualizations.

Methodology

The project began by ensuring that standard definitions (i.e., commercial alarms) were applied to all study fire departments selected for inclusion. Due to the varying nomenclature for call types among fire departments, the manual screening process for call type inclusion was very time-consuming. Some departments have 10 to 15 response classifications, while others have nearly 500.

Each department's alarm types and response categories were evaluated to identify their nomenclature for a commercial fire alarm. Once identified, IPSDI staff reviewed those call categories at least twice and ULS FASCP staff verified them to ensure the inclusion of correct alarm types and the exclusion of incorrect alarm types. This review process was repeated for each community included in the study.

Pilot Study

The project partners undertook a pilot test to assess feasibility. The pilot included two communities, a User and a Non-User. Both communities are on the East Coast and feature a full-service, all-career fire department. That initial test case indicated a lower rate of fire alarms in the User city (4.9%) versus a higher rate in the Non-User city (9.0%). This lower rate is indicative of fewer fire department responses, which should result in reduced risk to the citizens, property owners, and firefighters.

	Florida city	Virginia city
Program status	User	Non-User
Fire department type	full-service, all-career	full-service, all-career
Fire Alarm Rate	4.9%	9.0%

Community/Department Selection

Additional communities that fell into the three categories were then identified in a collaborative effort between ULS and IPSDI. The initial communities were active NFORS Analytics customers, providing access to near-real-time data to observe changes.

Other classifications of communities included comparison within a single state, within a specific department type (e.g., providing emergency medical service), and by community size (e.g., metro departments defined by the Metropolitan Fire Chiefs Association as having greater than 350 personnel).

Further refinement of that criterion attempted to identify when the community adopted or instituted the ULS FASCP, thus providing the ability to view alarm activity before and after implementation.

Data Comparison

Calls for service were then ingested from IPSDI NFORS Analytics into a separate system, permitting the compilation of data and dashboards for User, Non-User, and Neighbor communities.

The commercial alarm instances were compared as ratios to total calls (which included emergency medical service calls), total fire calls (all fire calls but excluding EMS calls), and total alarm calls.

It bears noting that medical calls are the most frequent response type for agencies that provide Emergency Medical Services (EMS). Of those that provide EMS, those calls account for 75 to 80 percent of their call volume. Because of this, calls for commercial alarms become a tiny percentage of their call volume year over year. We also noted that jurisdictions with a preponderance of building types other than single-family homes generated more fire alarm activity than a similarly sized community with many single-family homes.

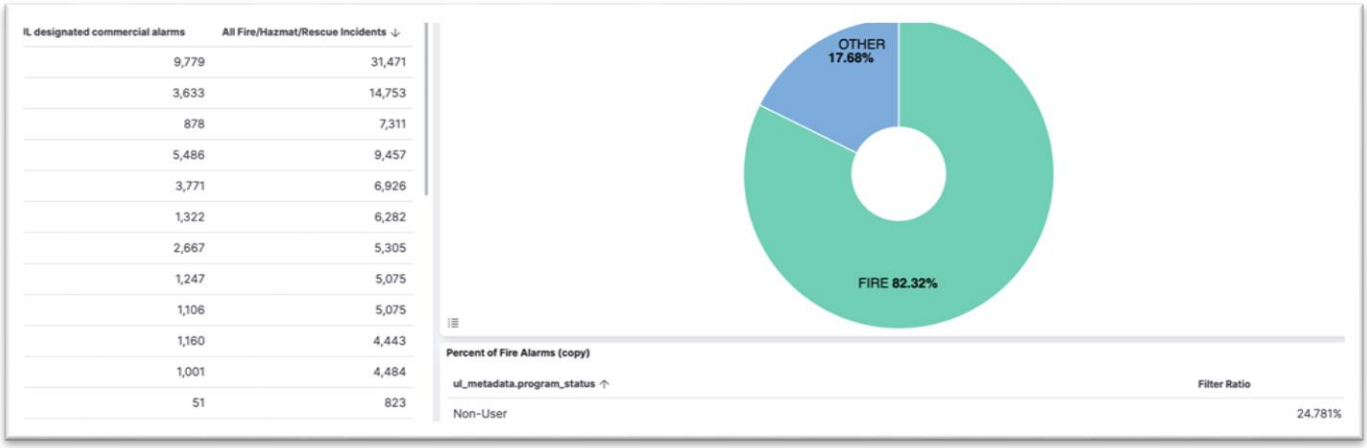
As previously noted, the departments were initially selected from NFORS Analytics subscribers. The departments were further scrutinized to ensure they had available data for the same time period (i.e., pre-pandemic, pandemic, post-pandemic). The initially selected communities are served by fully career fire departments.

Additional departments were added to increase the number of departments for review. These were Non-User or Neighbor departments that were not NFORS Analytics users, but for which data was available from other sources.

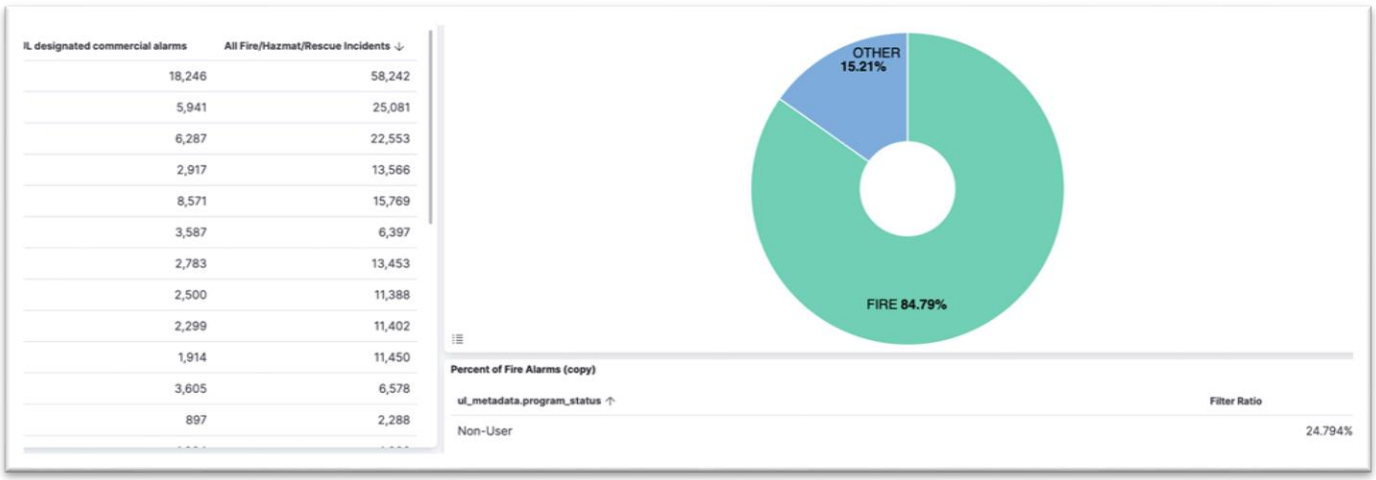
Time Period

The project scope stated that the period for analysis would be a rolling 3-year period. While that concept did initially provide some insight, further scoping was necessary. The pandemic appeared to affect the total number and the percentage of commercial alarms across all examined departments, regardless of participation in the ULS FASCP. Given the widespread impacts of stay-at-home and work-from-home orders, this is not unexpected. However, to determine if this was a localized or generalized trend, data were reviewed across the three different time segments. Those results can be seen in Figures 1 and 2 below.

1 Pre-Pandemic



2 Pandemic Period



When reviewed using the pandemic period segments, there appears to be fluctuation, often an increase. That increase has not significantly reduced or returned to pre-pandemic levels in many cases. Research to specifically determine the root of the change is needed before any certainty of causation can be determined. A potential cause is a shift to a work-from-home model, thus reducing the alarm calls in business occupancies (a relatively small number of alarms annually in most jurisdictions) while increasing the number of alarms in apartment buildings and other dwelling units.

Results

Initial results were reviewed for all selected NFORS Analytics departments. This included 9 Users, 9 Neighbors, and 26 Non-Users. As noted above, their call volume was calculated as a ratio against all calls (including EMS), all fire calls (omitting EMS), and all alarm calls.

An initial review of the 'all community' data indicated significant variance across similarly situated cities in different states. To determine if state selection impacted the results, two states—California and Florida — were selected for additional review.

California

California cities communities chosen included two Users, two Non-Users, and one Neighbor. Results are shown in Figure 3.

Figure 3 California Group Results

UL designated commercial alarms	Incident Category = "FIRE" or "OTHER" ↓
16,616	36,050
5,480	20,769
59	7,345
0	1,647

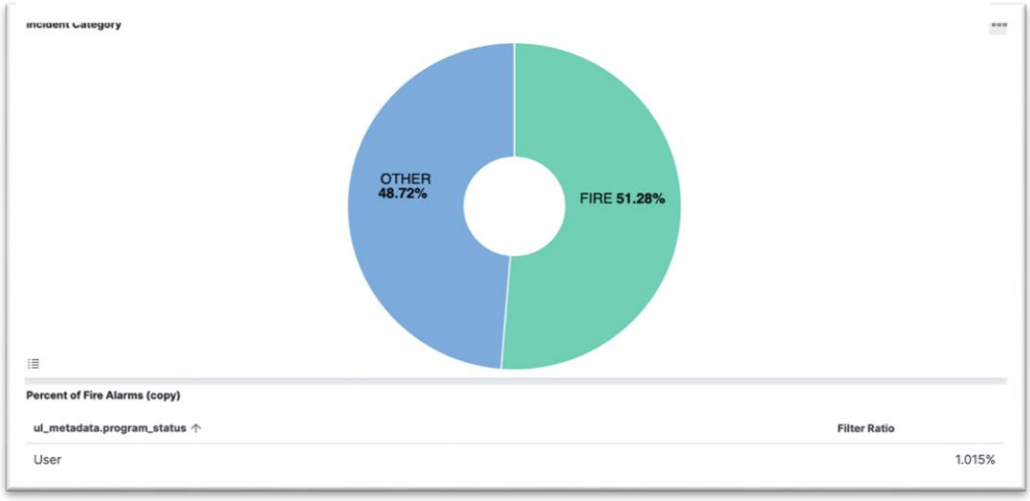
One California community is notable for having an exceptionally small number of alarm calls. That city has the lowest rate of commercial alarms of any community in the study.

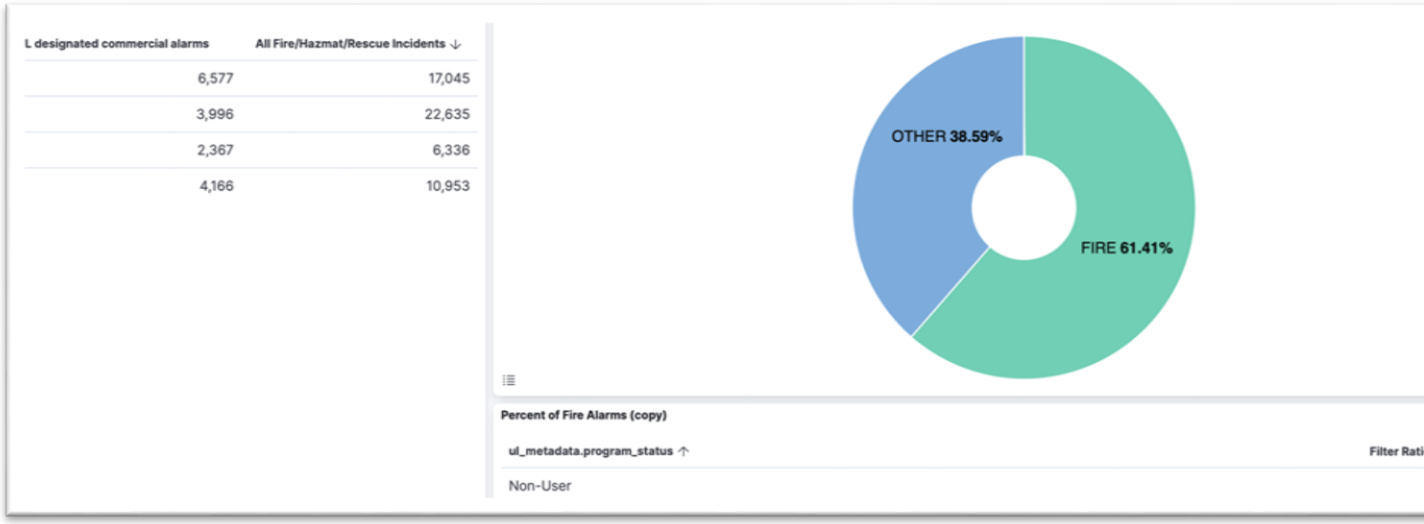
The stark difference between that community's low rate of commercial alarms (Figure 3) and others, particularly Non-User communities, required further review of the incoming data, call typing, and methodology to ensure the accuracy of the results. All data quality and process tests indicated an accurate portrayal of that community's commercial alarm experience. It should also be noted that this city has been a ULS FASCP User for decades. However, more research is needed to examine that community's experience in detail to understand cause and effect better.

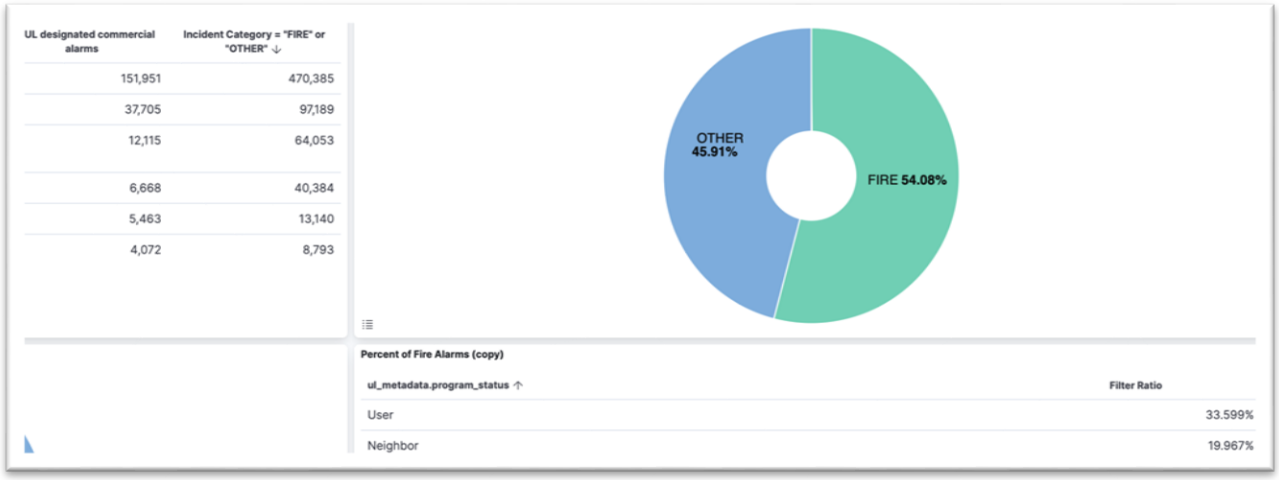
Florida

As shown in Figure 4, a similar review was completed for Florida communities, including one User, four Non-Users, and two Neighbors. All Florida communities provide transport EMS; thus, the rate of fire alarms related to all calls is significantly less than some other cities. One specific community has a substantial concentration of elderly high-rise housing, which also appeared to increase the amount of commercial fire alarm activity.

4 Florida Group Results







Discussion

Multiple factors impact the risk of injury from fire. Reducing unnecessary responses to alarms can reduce fire department risk during the response. In 2022 alone, NFPA estimated that over 20,000 apparatus collisions (NFPA, 2023) led to over 800 injuries among firefighters. The impact of rising repair costs and the difficulty in acquiring new fire apparatus (McLoone, 2023) highlights the necessity of minimizing risks during emergency responses. One effective way to achieve this is by reducing the number of emergency responses, which can significantly lower associated risks. A key strategy for decreasing the number of responses is to address the issue of false or unwanted alarms. It is also important to note the economic benefit of reducing unwarranted or false fire alarm activations. Tanos (2021) indicated that the financial cost of fire alarm responses is a billion-dollar problem. Proper use and maintenance of commercial fire alarms can reduce

User and Non-User cities were chosen for comparison to determine the outcome of implementing the UL program. However, the reason for including Neighboring departments or communities in the study may not be as explicit. While providing background for the study, the ULS FASCP team noted that User communities and fire departments mandate capability and capacity for alarm system technicians and companies. A working hypothesis suggests that those companies and technicians likely do not limit their service and maintenance to just the User community. Consequently, the Neighbor communities would also benefit. Cities in Florida and California provided evidence for this hypothesis, as the rate of fire alarm activity was comparable between the User and the Neighbor.

Why is the result somewhat static? The alarm rate was observed to be somewhat static in many of the User communities. There are many possible causes for that to occur. Many of those cities have stable built environments and have not experienced significant new construction or community change. This results in a stable risk environment with small

fluctuations in the total number of responses each year as well as the percentage of certain types of responses. An effort was made to correlate the steady state with the starting point that the user community adopted the requirement to adhere to the UL program requirements. In several cases, the rate of commercial alarms dropped in the years after adoption. After this drop, the rate of alarms remained steady.

The rate of commercial fire alarms may be best viewed as an indicator of a jurisdiction's alarm 'health'. Just as body mass index (BMI) can indicate an individual's health, the commercial alarm rate can be used to gauge the health of a community or fire department. Like BMI, commercial alarm data is easy to collect, non-invasive, and can be tracked over time. While it is not a comprehensive measure, it can provide insights into code compliance, community risk reduction efforts, and the engagement of building owners and maintainers. Similarly, it is a measure that responds to improvement initiatives, such as the ULS FASCP program. Conversely, an increase in commercial alarm activity may indicate a lack of positive actions being taken.

The ULS FASCP program's date and method of adoption differ for each community. Some communities may adopt it by policy, others by local ordinance. While ULS FASCP has a robust and accurate listing of its User communities, the starting date for most communities is less available. This is due to location adoption variation and agency staff fluctuation, thus reducing historical knowledge availability.

Conclusion

This project examined the impact of implementing the Underwriters Laboratory (ULS FASCP) Solutions Fire Alarm Systems Certification Program (ULS FASCP) in communities or fire departments that chose to adopt its critical tenets.

Our initial effort to compare a User and Non-User community yielded a positive result: the User community had a lower rate of commercial fire alarms. While we did see this same positive pattern in several other city comparisons, there were also some instances of no variance between Users and Non-Users, and inverse benefit in others.

Mixed results across reviewed communities are likely due to several factors, many of which cannot be contemplated within the scope of this study.

Challenges with the quality of data to review are certainly one factor. As noted in the methodology, the study primarily accessed data from IPSDI's subscription-based Analytics platform. That data is ingested from a community's computer-aided dispatch system or record management system. Despite high confidence in IPSDI's data science, analytics tools, and methods to ingest data, the quality of data input into the above-noted systems remains varied. It is hoped that the planned January 2026 transition from NFIRS to NERIS will improve fire data collection and quality. However, it may only result in the same poor quality in a new format. Unless and until fire departments, including leadership and line

personnel, approach data entry with the same vigor and attention to detail as firefighting and patient care, high fidelity research will be hampered.

Further research is needed to identify and examine the locations of fixed property use for commercial fire alarms. This investigation could help uncover why certain occupancy types experienced a higher number of alarms in the post-pandemic period than before. Additionally, it would be beneficial to explore potential correlations between population characteristics, utilizing Census and Social Vulnerability Index (SVI) data, and alarm rates.

Community risk reduction efforts, particularly those that utilize the ULS FASCP, should be actively promoted and implemented whenever possible. By reducing the number of commercial fire alarms, irrespective of their origin, we can lower the risks to the community and its residents and the firefighters responding to emergencies.

Sources

McLoone, Chris. (December 2023) 2024 Outlook: Improvement But Not Out of the Woods. Fire Apparatus and Emergency Equipment.

National Fire Protection Association survey of fire departments for US fire experience (1980-2022)

National Fire Protection Association, National Fire Alarm and Signaling Code (2025)

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Annex A – Additional Pertinent Definitions

Central Station Service – The use of a system or a group of systems, including the protected premises fire alarm system(s) in which the operations of circuits and devices are signaled to, recorded in, and supervised from a listed central station that has competent and experienced operators who, upon receipt of a signal, take such action as required by this Code. Related activities at the protected premises, such as equipment installation, inspection, testing, maintenance, and runner service, are the responsibility of the central station or a listed alarm service local company. Central station service is controlled and operated by a person, firm, or corporation whose business is the furnishing of such contracted services or whose properties are the protected premises.

NFPA 72 – National Fire Alarm and Signaling Code

Remote Supervising Station Service – The use of a system including the protected premises fire alarm system(s) in which the operations of circuits and devices are signaled to, recorded in, and supervised from a supervising station that has competent and experienced operators who, upon receipt of a signal, take such action as required by this Code. Related activities at the protected premises, such as equipment installation, inspection, testing, and maintenance, are the responsibility of the owner. *(AHJ requirements for listing can also apply for this Supervising Station category)*.

Proprietary Supervising Station Service – The use of a system or a group of systems including the protected premises fire alarm system(s) in which the operations of circuits and devices are signaled to, recorded in, and supervised from a supervising station under the same ownership as the protected premises that has competent and experienced operators who, upon receipt of a signal, take such action as required by this Code. Related activities at the protected premises, such as equipment installation, inspection, testing, maintenance, and runner service, are the responsibility of the owner. Proprietary supervising station service is controlled and operated by the entity whose properties are the protected premises. *(AHJ requirements for listing can also apply for this Supervising Station category)*.

Systematic Follow-up Program – The service provided by listing organizations that have listed prime contractor(s) and central stations and where individual protected premises fire alarm systems are certificated or placard. Systematic follow-up programs provide ongoing audit/inspection of the prime contractor and respective systems, as well as the operations of central stations confirming compliance with NFPA 72.

Listed – Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material, or service meets appropriate designated standards or has been tested and found suitable for a specified purpose.

Annex B – Challenges to ULS FASCP Implementation

Implementing the ULS FASCP is often challenging as the needs of building owners, jurisdictions, and fire departments often do not align. ULS FASCP staff compiled the following insights into challenges they have encountered during program implementation:

- The Authority Having Jurisdiction (AHJ)'s understanding and enforcement of NFPA 72 and the ULS FASCP, including the extent to which AHJs recognize that NFPA 72 possesses a fundamental solution to fire alarm and impaired fire sprinkler issues via Central Station Service (CSS).
- The experience and competency of Fire Marshal personnel
- The extent to which demographics impact an AHJ (e.g., population, age, economics, construction density, fire load, socioeconomic aspects, etc.).
- The number, type, and age of commercial structures and fire alarm systems within a jurisdiction.
- Fire department or fire marshal office staffing, capabilities, competencies, and role.
- Code knowledge, adoption process competencies, situational awareness, etc.
- Limited potential to utilize objective rather than subjective data sources
- Fire alarm-protection/life safety system requirements ~ Existing and accepted compliance levels ~ complacency
- Negative influence, anti-lobbying, non-supportive positions by building owners, alarm industry, and other uninformed AHJs in geographical area(s)
- Political minutia and difficulties for code changes/amendments/adoption