3 Fire Station Alerting System Trends:
Reducing Response Times, Improving First Responder Health, and Upgrading Within Budget

How system reliability, situational awareness, and the concept of "embrace don't replace" can drastically reduce turnout times, improve first responders' health and well-being, and decrease your system costs.

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Your fire station alerting system is the foundation for executing a safe, smart, and successful emergency response. It's responsible for notifying, connecting, and enabling dispatch centers and fire departments to effectively respond to life-critical situations quickly and safely. As public safety organizations are continually forced to do more with less, it's vital now more than ever that the foundation keeping your community safe is strong and reliable.

Throughout this field report, we will unpack some key trends to consider when selecting a new alerting system or optimizing your current system. These considerations focus on how:

- Better system efficiency and dependability can result in reduced turnout times, improved ISO scores, and greater first responder situational awareness

- Features protecting first responder wellbeing should be a top priority

- A reliable and data-driven system is achievable on a limited budget, without having to completely replace all of your existing infrastructure

System Reliability and Speed Impact Turnout Times, ISO ratings, and Improve Situational Awareness

Time is critical when orchestrating a successful emergency response - responding quickly and effectively makes all the difference in saving lives, reducing injuries, and minimizing property damage.

A critical component of any reliable system is having multiple redundancies and backups in place. In the event of a power outage or network failure, backup solutions ensure system uptime is maintained, and automated internal and external monitoring help designated personnel quickly determine problems and restore systems to full operational capacity. Redundant automated alerts help ensure first responders are given critical event information across a variety of different channels and devices.

With a reliable system in place, speed and efficiency in a coordinated response becomes the next priority. According to the NFPA 1710, the standard for alarm handling time at dispatch is 64 seconds. Station

During a 2018 public safety industry survey conducted by PURVIS, **82% of respondents identified system reliability as the most important quality** when vetting IT solutions.

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turnout time should be at or below 60 seconds for EMS and 80 seconds for fire incidents. There is a constant need to review and revise processes in response to community needs, organizational changes, new locations, compliance and interoperability requirements, and/or new technologies. Regardless of changing needs and requirements, a primary factor in improving response times is a rapid and reliable fire station alerting solution that integrates with a communication center's computer-aided dispatch (CAD) system.

A CAD-integrated alerting system works alongside dispatch center personnel to automatically and instantaneously deliver incident details to the appropriate responders. Instead of manually alerting each station, a CAD-integrated system enables the dispatcher to focus on working the incident by collecting relevant information and processing it. Similarly, the system removes potential miscommunication between the dispatch center and the station and enables first responders to respond more quickly to the situation.

System reliability and speed directly improve the outcomes of an emergency response, but they also indirectly influence several other important factors. The reliability and effectiveness of a station's emergency communications system is one of the four main criteria of an ISO fire rating score - an indication of the level of community protection by a fire department in a particular area. Not only do better ISO scores signify that a station has a history of delivering reliable and rapid responses to emergency events, but a better score can also translate to lower homeowners insurance premiums, as it means homes are at lower risk of serious fire damage. These savings are passed on to home buyers

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and property owners within the community which can lead to greater residential and economic development over time. In order to earn a favorable ISO score, departments must be diligent about tracking and reporting turnout times. A good fire station alerting system tracks these metrics automatically, thereby helping stations better identify opportunities for improvement and optimization.

At the end of the day, a reliable alerting system improves a station's ability to respond and delivers better results to the community at large. Through repetitive and redundant systems, event information is communicated to first responders across various channels, helping raise situational awareness and better prepare personnel for what they are about to encounter. Adding comprehensive incident data to the alerting process improves the clarity of information, and when presented across multiple communication channels, provides first responders with the full scope of information they need to respond to an incident as safely and as smartly as possible. The result is a more repeatable, reliable, and rapid response system that better communicates and prepares first responders.

From the Field

Montgomery County Fire Rescue Service (MCFRS) operates 43 stations run by two dispatch centers (one primary and one backup). They were looking for a fire station alerting solution that was flexible to meet their current needs and scalable to meet any future requirements.

PURVIS implemented a tailored system that helps to streamline the alerting process, reduce call processing times, and reduce turnout times. The system interfaces with the MCFRS's CAD system.

> Our new system has **decreased response times, introduced heart healthy alerting, and provided the station personnel multiple forms of visual and audio alerting** that has provided resounding positive feedback from field personnel.
>
> *- Former Montgomery County Battalion Chief*

PURVIS FSAS hardware in the fire stations includes speakers with volume controls, monitors for visual alerts, turnout timers, printers, strobe lights, night vision lighting and dorm remotes. The latter allows the department to dynamically change how each dorm room is alerted. For example, if one day a dorm room is used to house an engine company and the next day it is used to house a ladder company, MCFRS personnel can select what type of alerts will be active in that room with the simple push of a button. MCFRS personnel have the ability to prioritize and listen to multiple audio feeds and avoid unnecessary alerts.

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Increased System Functionality Can Improve First Responders' Health and Well-Being

The rigors of firefighting, rescue, and victim extrication can take an immense toll. With shifts ranging from 12 to 36-hours at a time, interrupted sleep is almost a guarantee. When a call comes in, startling alarms and bright lights take their toll immediately as heart rates soar in response to alerts and again later with the onset of fatigue due to sleep deprivation.

In 2013, a doctor from the University of Pittsburgh specializing in immunology and stress-management, teamed up with local Pittsburgh firefighters to better understand and help limit the negative health effects of stress. Within the first two-hour session, there was an immediate and unanticipated observation - the constant noise of radio chatter and citywide alarms filled the firehouse, even if the particular station was not involved in the alert. The result was that first responders were perpetually on high-alert, disrupting the chemical and physiological balance of the body and activating stress-reactive areas of the brain. This constant stress takes its toll on the long-term physical and mental health of firefighters.

According to the United States Fire Administration, **heart attacks are the leading cause of death** for active-duty firefighters.

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Your station alerting system can be configured in ways that promote firefighter health and wellness, mitigate firefighter stress within the station, and ultimately prioritize the health and wellbeing of your first responders. These system components could include:

- **Targeted alerting** that activates only the stations required for a specific incident

- **Ramped audio levels** that awaken firefighters slowly without the acute stress that abrupt and loud tones can produce.

- **Ramped low-intensity lights** that gradually illuminate dorms, bunk rooms and exit corridors so that first responders don't lose precious seconds adjusting to bright lights and can safely navigate the egress while preserving their night vision.

- **A consistent, automated voice** that is often easier to understand than a human voice. The consistency and clarity of an automated voice makes it easier and less stressful for first responders to gather necessary information efficiently.

- **Customizable day/night settings** that allow interior volume levels to be lower at night and higher during the day. Speaker zones, such as outdoor speakers, can also be automatically turned on/off at specific times of day.

- **Ambient noise level sensors** that detect ambient background noise and automatically adjust volume levels accordingly to ensure critical audio alerts are heard in noisy areas such as drive bays.

- **Zone-specific notification** that provides custom tones and announcements, appropriate speaker activation – by unit/incident, individual bunk or personal space, or all –so first responders not needed for a call can continue sleeping, while those required can begin responding immediately.

- **Automated controls** that open and close doors, display apparatus status, turn off appliances, control egress lighting, and activate traffic signals, letting responding individuals concentrate on the incident.

> A 2017 study conducted by the National Fallen Firefighters Foundation reported that **cardio-vascular disease accounts for about 50% of all firefighter on-duty deaths.**

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From the Field

PURVIS partnered with the Pittsburgh Bureau of Fire to prioritize first responder health and to implement a new "silent" alarm system that alerts only the fire and EMS stations that are being dispatched to a call - no longer broadcasting alerts over radio to every station and first responder on duty. Full deployment of the system in April 2020 consisted of the two Allegheny County dispatch centers and 42 City of Pittsburgh fire stations.

Fire station components and devices installed within the system in Pittsburgh consist of station control units with touch screens for local interaction with the system, dorm remotes that enable the department to dynamically change how each dorm room is alerted, ramped lighted speakers with zoned audio, ambient noise sensors, rip & run printers, flat panel message boards, reader boards, multi-colored tower lights and push buttons.

> Our new system **will help reduce stress**, which is very important for the livelihood and the life-work balance for our firefighters. But also, equally important, is the efficiency this brings to the Pittsburgh Bureau of Fire. **Not only will it be more efficient as far as getting us out of the station... we get out of the station with more information.**
>
> *- Pittsburgh's Fire Bureau Chief*

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Upgrading Your Legacy System Doesn't Have to Break the Bank

According to a 2018 industry survey conducted by PURVIS, fire departments and dispatch centers across the country agree that system upgrades are a top priority. But as departments and dispatch centers continue to experience budget constraints, the reality of purchasing a brand new system isn't always feasible. What if your existing system could be upgraded? What if you could add on new components or functionality to achieve the customization you need without the added costs? Whether you're looking to optimize your current system or are in the market for a new one, it's imperative to consider how your system can or will adapt over its entire lifespan. Many alerting systems are built to last 15-20 years or more - while your requirements might change, your system is unlikely to. Your system, whether new or old, should be scalable and adaptable in a way that allows you to expand on the system and make regular updates without incurring significant costs.

A good alerting system will make use of standard, off-the-shelf equipment and in-station hardware. This makes upgrades and replacements easy over the course of the system's useful life. Using nonproprietary equipment also makes it easy to integrate to existing systems and makes purchasing and maintenance more cost-effective. Additional system features to look for include the ability to add:

- **devices within stations** to expand on the features and functionalities of the core system that was part of the initial deployment

- **new stations** as they are built and/or renovated

- **new departments as agencies consolidate** and dispatch centers take on dispatch responsibilities for additional agencies

Particularly in a regional setting, a common starting point for a base alerting system is in the dispatch center. At a much lower startup price point, this provides you with automated voice and tone alerting over the radio network and also the ability to alert over SMS, mobile app and email. From there you can add station equipment in one, multiple, or all stations in the future, thereby enabling IP alerting to the stations and creating redundancy with ongoing radio alerts.

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From the Field

In the City of Los Angeles, PURVIS is implementing the PURVIS FSAS in every LAFD fire station. The core legacy system is being fully replaced with the PURVIS FSAS but all of the existing alerting devices and functionality that exists in the stations is being retained. PURVIS is installing a custom interface to the existing alerting components, which allows the City to upgrade to a modern system without having to do a full system replacement all at once. This significantly reduces the up front costs and allows the City to gradually replace alerting devices with modern components over time in a fiscally manageable way.

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PURVIS Systems' Fire Station Alerting System™ (FSAS)

PURVIS' Fire Station Alerting System™ is an IP-based alerting solution designed to automate the process of alerting fire and rescue personnel, enhance communications, and decrease response times. Its rich features and functionality proactively support the day-to-day operations and environmental health, comfort, and safety of first responders. Our system integrates seamlessly with your community's computer-aided dispatch system (CAD) and is able to automatically and instantaneously deliver incident details in a way that is tailored to the needs of fire and rescue personnel.

For more information, please visit PURVIS.com/what-we-do/fire-station-alerting/.

About PURVIS

PURVIS is a technology solutions partner with 45+ years of experience in the public safety industry that develops, implements, modernizes, and maintains life-critical solutions for fire departments, dispatch centers, and emergency medical services.

Seconds save lives. We understand the critical role technology plays in response times and make it our mission to implement solutions that empower you to handle life-critical situations quickly and safely. As your trusted partner, we tailor technology solutions to your organization and provide expertise, training, and around-the-clock support that you can count on. We work to solve challenges, so you can focus on protecting life, safety, and property.

PURVIS Systems has engineering and technical services contracts with nationwide clients such as:

- New York City Fire Department (FDNY)
- Boston Fire Department
- District of Columbia
- Charleston County, SC
- DuPage County, IL
- Los Angeles Fire Department (LAFD)
- Kitsap County, WA
- Ft. Collins, CO
- Williamson County, TX
- Jacksonville, FL
- Pittsburgh, PA
- Montgomery County, MD
- Various other government establishments

If you have questions about what to look for in a fire station alerting solution or partner, let's connect. Our team of public safety industry veterans is ready and willing to help answer any questions and steer you in the right direction.

For more information, please visit PURVIS.com/what-we-do/fire-station-alerting/.