HAAS ALERT

Preventing Fire Crew Collisions in the Nation's Capital

Facing a national spike in first responder struck-by collisions, DC Fire and EMS equips Safety Cloud® R2V™ (Responder-to-Vehicle) and R2R™ (Responder-to-Responder) digital alerting to transform road safety.

CASE STUDY | DECEMBER 2021

Preventing Fire Crew Collisions in the Nation's Capital

December 2021

Agency Name: DC Fire and EMS Department
Location: Washington D.C.
Fleet Type: Emergency Services
Fleet Size: 400+
Goal: Protect Responding Firefighters

For firefighters responding to emergencies in Washington, DC, danger often begins before even reaching the scene.

The nation's capital ranks as one of the most congested cities in the country, with a population of more than 685,000 - larger than Vermont or Wyoming - living and working in a dense urban environment that spans less than 70 square miles total.

A crew of 1900 Firefighters, EMTs, and Paramedics serve at DC Fire and EMS Department which responds to all hazards in the city including traffic incidents and injuries, fire prevention and suppression, homeland security activities, and much more. Responders at DC Fire and EMS Department serve the community through a fleet of over 400 vehicles and apparatus including engine companies, ladder trucks, medic units, life support ambulances, and an assortment of special operations vehicles.

On nearly every call, says Deputy Fire Chief Sean Egan, the agency's crews face nearly as much risk on the road as they do when they arrive on-scene.

"For most of our calls, motor vehicle traffic is a significant factor that increases risk and negatively impacts response time," says Chief Egan. "We're responding in a densely populated environment with lots of narrow and one-way roads, steady foot traffic, and a constant flow of commuters. So for us, every run carries significant risk, no matter what kind of incident we're responding to."

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For decades, fire crews and first responders everywhere have relied on lights and sirens to get the attention of motorists, but statistics show that responders on the road are facing more danger than ever. Emergency Service Vehicle Incidents (ESVIs), including collisions and struck-by incidents involving First Responders, are the second leading cause of US firefighter fatalities, accounting for well over 450 deaths since 1994.[1] In 2016 alone, nineteen firefighters died in ESVIs, comprising 28% of on-duty firefighter fatalities that year.[2]

Many ESVI's involve civilian vehicles as well, placing civilians at an even higher risk of fatality than firefighters; National Highway Traffic Safety Administration (NHTSA) reports that civilians accounted for over 73% of the fatalities in ESVIs between 2011 and 2015.[3]

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In 2019, Chief Egan and leaders at DC Fire and EMS Department decided that the department had to take action to address the dangerously high risk of collisions. But there were few options available to address the problem; brighter lights and louder sirens weren't helping, and advanced Traffic Incident Management practices like utilizing blocker engines didn't seem to make a difference in getting the attention of drivers.

1 Fahy et al. , 2017
2 USFA, 2017
3 NHTSA, 2017

DC Fire and EMS on scene.

"We started exploring available solutions that could help us improve motorist awareness, reduce driver distractions, and generally just get people to move over," says Chief Egan. "That's when we first learned about Safety Cloud and digital alerting."

Safety Cloud - A Smarter Way To Alert

HAAS Alert's collision prevention service Safety Cloud enhances emergency alerting on the road by alerting nearby motorists inside their vehicle that an emergency vehicle is nearby. To equip the service, fleets connect a small transponder named the HA-5™ to the emergency lightbar and mount the device to the vehicle dashboard. When activated, Safety Cloud delivers real-time digital alerts over cellular networks to nearby approaching civilian motorists. These alerts, called R2V™ (Responder-to-Vehicle) alerts, are received through navigation apps and connected car systems already in use by hundreds of millions of drivers, including WAZE. Studies show that digital alerts give drivers more advance warning of emergency vehicles than traditional lights and sirens so that they are more likely to slow down and move over in accordance with road laws.

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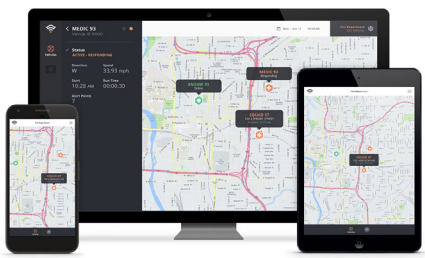
HA-5 Transponder

Safety Cloud offered DC Fire and EMS Department a novel solution for reducing the risk of civilian collisions that their fire crews had to face on every run. But the service also provided another option that was particularly useful to firefighters in DC: in addition to alerting civilians, Safety Cloud could also alert other responders.

Chief Egan says that the District of Columbia's intricate road system and constant traffic often requires multiple responders to navigate different routes to reach the same destination. As a result, unexpected overlaps and intersections with other responding vehicles are frequent, and carry a heightened risk of collision between emergency vehicles. Given the size of emergency vehicles and the pressure on responders to reach incidents quickly, these collisions can be particularly dangerous and destructive.



Safety Cloud Dashboard

To address this issue, Safety Cloud also enables R2R™ (Responder-to-Responder) alerting between equipped apparatus. While R2V alerts are received by approaching motorists through infotainment displays and mobile devices, R2R alerts are received inside the emergency vehicle cabin through a small LED unit mounted to the A-Frame of the vehicle. When Safety Cloud detects a likely or imminent intersection between two equipped apparatus, the LED begins flashing, providing the vehicle operator with early warning of the potential hazard so that they can reduce speed and prevent a collision.

R2R LED Indicator

Safety Cloud also includes a real-time Situational Awareness Dashboard, which enables fleet managers to see the location and responding status of every equipped vehicle in a secure, web-based portal. The Dashboard also adds an additional layer of visibility for department leaders by tracking and summarizing mission-critical response statistics including incident volume, response time, and more. In addition, departments can easily share Dashboard access with partner agencies and fleets to facilitate and support coordinated response. Chief Egan says that this capability in particular was valuable for DC Fire and EMS Department, which works directly with both local, regional, and federal partners on a daily basis.

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In addition to its features, Safety Cloud also met several other key requirements for DC Fire and EMS Department. First, the system could be rolled out to any and all vehicles in the agency's fleet, regardless of the particular age or brand of each apparatus. While other technologies require proprietary hardware or connectivity platforms, Safety Cloud's universal adaptability ensured that every DC Fire and EMS Department vehicle that needed protection could equip the service. In addition, Safety Cloud didn't require the displacement or modification of the agency's legacy IT infrastructure or systems, which effectively eliminated any need for time-consuming software migrations or internal change management. Chief Egan says that, taken together, Safety Cloud's potential to help the department both reduce the risk of collisions on the road and improve its overall awareness and visibility compelled the department to move forward with the service.

The Deployment

When DC Fire and EMS Department leaders decided to equip Safety Cloud, they began to explore procurement options. Working with the National Highway Traffic Safety Administration (NHTSA), the department secured a grant through the Federal Highway Administration (FHWA) to fund the deployment and testing of the solution. Safety Cloud was then equipped on 84 of the most frequently used Fire and EMS vehicles in the department's fleet, including both the HA-5 unit and R2R LED units.

Once Safety Cloud was activated, DC Fire and EMS Department worked closely with HAAS Alert and NHTSA officials to monitor the reliability, effectiveness, and value of the solution. According to Chief Egan, the department believed success of the project relied on multiple factors.

"We were interested to see how the solution worked in the field, but we were equally interested in understanding how it might contribute to our operations and response readiness."

In the 12 months that followed the deployment, DC Fire and EMS Department responders trained and worked in the Safety Cloud system. Drivers and responders alike were receiving alerts and were able to make the safe decision to slow down and move over. Chief Egan wanted to see these alerts in action for himself.

"Our crews started reporting to us that they were noticing a real difference in driver behavior," Chief Egan said. "It truly was a big 'aha' moment when I went out on a run to see the alerts for myself for the first time. I was impressed at the difference in how many drivers were slowing down and moving over."

Egan also notes that crews appreciated the simplicity of digital alerting. "The great thing about this system is that it operates as an integrated part of the vehicle. Our guys can focus on the mission and don't have to take an extra step to be protected."

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The Outcome

Over the course of a year on Safety Cloud, DC Fire and EMS Department initiated nearly 444,000 emergency vehicle deployments in response to more than 212,000 911 calls. "We had something like 20% of our fleet equipped with Safety Cloud, and those vehicles delivered more than 630,000 digital alerts in that time," says Chief Egan. "That just gave us a small snapshot into the reality we face operating emergency vehicles through an intensely congested, high-volume location."

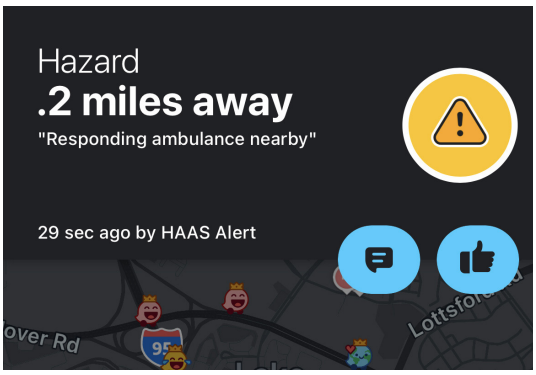
"That number of alerts just drives home how much risk our crews face on a daily basis." says Chief Egan. "Every single driver we alert could prevent a catastrophe, so this kind of protection is something that we know helps protect our firefighters when they're vulnerable on the road."

A detailed analysis of R2R alerting also confirmed that alerting responders of nearby emergency vehicles helped to reduce the risk of those collisions as well. Data revealed that DC Fire and EMS Department apparatus operators reduced their speed by an average of 25% within the first second of receiving an R2R alert.

"That reduction in speed is crucial for reducing the risk of a really tragic collision," remarked Chief Egan.

> **"Every single driver we alert could prevent a catastrophe."**

The success of DC Fire and EMS Department year-long pilot of Safety Cloud R2V and R2R alerting led department leadership to keep Safety Cloud equipped on its vehicles. Today, the department's emergency vehicle specifications now include a requirement that all new emergency vehicles be equipped with Safety Cloud R2R and R2V alerting.



DC Fire and EMS Department mobile Waze alert

"This service brings emergency alerting into the modern world," Chief Egan said. "Everything we can do to keep our firefighters safe and ensure they get home at night is worth the investment."

About HAAS Alert

HAAS Alert makes roads and communities safer by delivering digital alerts from emergency response and other municipal fleets to nearby drivers and other emergency personnel in the area. The company streams real-time alerts and other vital safety information to motorists and connected cars via in-vehicle and navigation systems when emergency vehicles are approaching and on-scene. HAAS Alert's mission is to build lifesaving mobility solutions to make vehicles and roads safer and smarter.

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