

Next-Generation Traffic Incident Management



Local Programs



Training



Data



Technology

Header Photos Source: Enforcement Engineering, Inc

UNMANNED AIRCRAFT SYSTEMS FOR TRAFFIC INCIDENT MANAGEMENT

Serious and fatal traffic incident investigations require detailed measurements that often close roadways for extended periods. Unmanned aircraft systems (UAS) have proven to be effective in reducing the amount of time needed to document fatal crash scenes, and there is great potential for their application to other traffic incident management (TIM) related purposes, including, but not limited to:

- ▶ Situational awareness
- ▶ Detour route monitoring
- ▶ Incident verification
- ▶ Queue detection and monitoring
- ▶ Secondary crash detection
- ▶ Response vehicle routing

UAS encompass the hardware and software components required for the flight of an unmanned aerial vehicle (UAV), commonly referred to as a “drone.” UAS are battery-operated aircraft remotely controlled by a pilot to capture images using high-definition digital cameras. Software is also available that enables the pilot to establish the perimeter of an area the UAS will fly and the pattern it will use. UAS are well-suited for many tasks, and the cost to operate is a fraction of manned air operations.

Benefits of UAS

Saves Lives

- ▶ Increased situational awareness
- ▶ Safety of incident responders and motorists
- ▶ Reduced likelihood of secondary crashes
- ▶ Less time in the roadway

Saves Time

- ▶ Less time required for data collection
- ▶ Shorter road/lane closures
- ▶ Reduced time on-scene
- ▶ Faster crash investigations

Saves Money

- ▶ Lower cost compared to manned aircraft
- ▶ Reduced investigative man hours
- ▶ Reduced congestion and impact on climate change
- ▶ Cost-effective measuring and mapping

State of the Practice

As of March 2020, almost 1,600 public safety agencies, 1,100 of which were law enforcement, were using UAS. Many law enforcement agencies use UAS for traffic crash scene mapping while others are exploring applications for TIM, disaster response, special events, and training. Examples of how agencies are using UAS and their effectiveness include:¹

- ▶ A study by the National Institute of Justice found that UAS are 1 hour faster than robotic total station and 2 hours faster than manual total station in a controlled comparison.
- ▶ In North Carolina, a field comparison of UAS credited a more than 300 percent time saving over 3D laser mapping.



Source: Steve Rhode PublicSafetyFlight.org

An image captured by an UAS monitoring traffic after an incident.

- ▶ In more than 125 actual crash investigations, the Washington State Patrol estimates an 80 percent reduction in road closure time at serious crashes because of the implementation of UAS for scene mapping.
- ▶ The Tippecanoe, Indiana Sheriff's Office found that using UAS reduced overall scene time by 60 percent.
- ▶ The Michigan State Police use Geographic Information System (GIS) analysts to process all crime and crash scene images in processing software.
- ▶ Following Hurricane Michael, the Florida Highway Patrol used UAS to provide video images and photographs of roadway queues on Interstate 10.
- ▶ In Daytona Beach, the Police Department has acquired four UAS specifically for use in planned special events, like the Daytona 500 race and "Bike Week."
- ▶ The Puerto Rico Police Academy uses UAS in TIM training to bring a different, aerial perspective to the TIM training practicum that is held on a closed parking lot with actual response vehicles.
- ▶ The towing and recovery industry is an important part of TIM, and they are beginning to use UAS for complex recovery operations at roadway incidents.

Resources

[FHWA EDC-6 Next-Generation TIM](#)

¹ FHWA primer entitled, "Unmanned Aircraft Systems for Traffic Incident Management", 2021, FHWA-HOP-20-063.

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