SURVEILLANCE TECHNOLOGY SPECIFICATION REPORT

2025

This report was completed by the Detroit Fire Department in accordance with requirements outlined under Chapter 17, Article V of the Detroit City Code.

OVERVIEW

The Detroit Fire Department (DFD) is committed to operating with full transparency and the utmost respect for the citizens and governing authorities of the City of Detroit. The intent of this report is to satisfy the requirements set forth in ordinance 2021-17, Chapter 17, Article V, section 17-5-454 of the Detroit City Code.

This Report defines the specifications, purpose, and fiscal impact of proposed surveillance equipment for the DFD. It is available to the public on the designated page of the City's website. The Report remains available to the public for as long as the related surveillance technology remains in use by, or in the possession of, the City of Detroit Fire Department.

DESCRIPTION

The Detroit Fire Department is seeking tethered drone technology to assist with special events and other technical operations. Tethered drones are unmanned aerial vehicles that remain connected to a ground station via a cable (tether), providing them with power and data transmission. This tethered connection allows for extended flight times, real-time data transfer, and enhanced stability. Oftentimes, tethered drones are used for observation, security, and emergency response applications, where long-duration, continuous monitoring is needed.

Key capabilities of tethered drones are as follows:

Extended Flight Time:

Tethered drones can fly for hours or even days, as they receive continuous power from the ground station via the tether. This eliminates the need for frequent battery changes, making them ideal for long-duration surveillance missions.

Real-time Data Transmission:

The tether allows for secure and reliable data transfer between the drone and the ground station, enabling real-time video feeds, sensor data, and communication with the ground crew.

Enhanced Stability:

The tether helps to stabilize the drone in strong winds or turbulent conditions.

Reduced Risk of Fly-aways:

The tether prevents the drone from flying away or drifting out of control, increasing safety, especially in urban environments or over crowds.

Enhanced Communications Capabilities:

Tethered drones can utilize advanced communication technologies, such as 4G, 5G, or radio, for data transmission and communication.

Exempt from Some Regulations:

In some jurisdictions, tethered drones are exempt from certain drone regulations, such as the need for an operator's license.

Key features of tethered drones provide a number of benefits that are more difficult to achieve with unterhered drones:

- A dedicated power supply gives unlimited flight duration for prolonged operations
- EO/IR Cameras offer day or night observation and heat signature detection
- Encrypted Live Feeds give secure transmissions to incident command or EOC
- The rapid deployment system makes a tethered drone operational in under 5 minutes and their rugged ground station provides durable control hardware for field conditions

Significant Applications of Tethered Drones include:

Observation and Security:

.Tethered drones can provide continuous monitoring of critical infrastructure, borders, and public events.

Public Safety:

.They can be used for traffic management during large events, emergency response, and disaster relief efforts.

Industrial Inspections:

Tethered drones can inspect pipelines, power plants, and other industrial facilities.

Military Applications:

They can be used for surveillance, border security, and base protection.

Communications Relay:

Tethered drones can serve as aerial nodes to establish temporary communication networks in remote or disaster-stricken areas.

PURPOSE

Tethered drone technology holds the potential to enhance various operational competencies for the Detroit Fire Department. Here are some of the primary purposes it serves:

Persistent Aerial Observation

- Continuous live feed without the limitations of battery life.
- Ideal for long-duration incidents like structure fires or hazardous materials scenes.

Real-Time Situational Awareness

- Delivers high-angle visuals to command staff for better tactical decisions.
- Supports live thermal imaging to detect heat sources through smoke or walls.

Incident Command Support

- Provides a stable, elevated vantage point for coordination, accountability, and scene management.
- Helps commanders monitor personnel movement and perimeter conditions.

Search and Rescue (SAR)

- Thermal cameras detect human heat signatures in low-visibility or night conditions.
- High-resolution zoom assists with rooftop or difficult terrain searches.

Hazard Monitoring

- Tracks fire spread, hazardous plumes, or chemical leaks without risking firefighter exposure.
- Enables safe observation of potentially unstable structures.

Crowd and Event Monitoring

- Useful during parades, protests, or festivals for crowd control and emergency response readiness.
- Integrates with public safety teams for coordinated over watch.

Training and Post-Incident Review

- Records high-angle training exercises for review and improvement.
- Captures footage of real events for after-action reports and lessons learned.

DEPLOYMENT

The Detroit Fire Department will deploy tethered UAS technology when there is a need that falls under the use cases described. Additionally, tethered drones can assist in gaining real time situational awareness by viewing the live stream video on the cloud server or controller without recording any images. The operator can choose whether to capture photos and record video, based on the specific needs of the situation and guided by the standard operating procedures established by the Detroit Fire Department. Unlike other forms of fixed and static surveillance technology that remain present 24/7, tethered drones will be deployed on a limited basis for the duration of an incident, project or mission.

FISCAL IMPACT

On April 24, 2025, The Detroit Fire Department received approval of a Port Security Grant for counter terrorism technology. Funding from this grant will cover the cost of all tethered drone hardware. With annual software and maintenance cost of approximately $3600.00 per vehicle, there is a potential for cost savings by implementing tethered drones in fire operations:

Reduced Use of Expensive Apparatus

- Replaces aerial trucks for overhead views
- Results in a per hour per incident cost saving

Personnel Efficiency

- Fewer firefighters needed for recon
- Frees up resources for core tasks

Property Damage Reduction

- Early hotspot detection via thermal imaging
- Prevents secondary fires and collapse risks

Faster Incident Resolution

- Real-time data = quicker decision-making
- Reduces scene time and mutual aid costs

Lower Liability & Injury Risk

- Better visibility improves on-scene safety
- Preventing one injury claim saves thousands of dollars

Cheaper Maintenance vs. Apparatus

- Drone system: approx. $2–3K/year
- Aerial truck maintenance: approx. $10K+/year

Improved Planning & Prevention

- Supports smarter fire prevention
- Potential to lower ISO rating, city-wide insurance premiums

CIVIL RIGHTS AND LIBERTIES IMPACTS

The Detroit Fire Department is committed to ensuring that all surveillance and data technologies are used solely for the purposes of emergency response, public safety, and life preservation. The tethered drone program will be implemented in strict alignment with constitutional rights, community expectations, and principles of responsible governance.

Key Safeguards and Protections

Purpose-Limited Use

- Tethered drones are deployed only during active emergency response, including fire incidents, search and rescue, and hazardous materials monitoring.
- No use for routine law enforcement surveillance, protests, or individual targeting without explicit legal authority and inter-agency protocols.

Fixed-Position Operation

- Tethered drones are stationary, operating in a limited vertical and geographic range (typically no higher than 150 feet).
- These drones do not roam or patrol, significantly limiting their potential to gather extraneous data.

Transparency & Public Accountability

- All deployments will be logged and subject to review by DFD leadership and oversight committees.
- Public reporting and community briefings will ensure open dialogue on drone use.

Data Collection & Retention

- Video feeds are used solely for operational awareness and post-incident review.
- Data is stored securely and retained only as long as required by policy and legal standards.

Non-Invasive Surveillance

- Tethered drones do not use facial recognition, license plate readers, or other personally identifying analytics.
- Their function is strictly observational, focused on incident zones and fire ground safety.

Equity and Access Considerations

- Deployment decisions are based on incident type and safety need, not neighborhood, demographic, or socioeconomic characteristics.
- DFD remains committed to equitable service delivery across all communities in Detroit.

Oversight and Review

- Use of tethered drones will be reviewed annually with oversight input from the Department of Innovation and Technology
- DFD welcomes public feedback and remains open to policy refinements to ensure continued alignment with civil rights values.

Tethered drones offer Detroit a safer, more efficient way to protect lives and property, while maintaining the highest standards of privacy, accountability, and civil liberty protections. Their stationary and emergency-specific nature

makes them one of the least intrusive forms of aerial surveillance technology available today.

AUTHORIZED USE

Trained and supervised employees of the City of Detroit will operate tethered drones to serve the following purposes:

Training

Training prepares drone operators for emergency responses, promotes equipment familiarity, and facilitates collaboration and communication with other emergency responders. By dedicating time to flight practice, tethered drone operators can better serve the community and contribute to the overall effectiveness of the Detroit Fire Departments drone program.

Public Safety

- Emergency Response: The tethered drone can provide real-time aerial views to assist first responders during emergencies, such as fires or natural disasters.
- Search and Rescue: Tethered drones can be deployed to locate missing persons or assess dangerous situations from above.
- Aerial Reconnaissance: Deploy for quick assessment of emergencies, such as fires or hazardous incidents, by capturing high-resolution aerial imagery and videos. This allows the DFD to gather real-time information and make informed decisions about response strategies.
- Fire Suppression Support: The tethered drone can be utilized to provide valuable support during fire suppression operations. It can help identify hotspots, assess the spread of fire, and monitor the effectiveness of firefighting efforts from a safe distance.
- Emergency Response Pre-Planning: The aerial imagery and data captured by the TETHERED DRONE can be used for analyzing and planning emergency response strategies. The DFD can gain insights into the layout of buildings, potential hazards, and access routes, which can assist in developing effective emergency response plans.
- Traffic management: tethered drones can fly overhead to assess traffic congestion and determine its cause
- Accident scene investigations: Tethered drones can collect evidence or help manage incidents at accident and crime scenes

- Forensic investigations: Tethered drones can be used for forensic investigations
- Collaboration and Information Sharing: Tethered drones may be helpful to other city departments in the course of their duties. Sharing information and equipment will minimize the potential for duplicate resources and maximize the use of our current fleet, resulting in a cost savings for the City. Collaboration between the DFD and other city entities leverages this technology, allowing all parties involved to allocate their resources more efficiently and potentially reduce the costs associated with emergency response, building inspections and other job related uses for drones within the city's boundaries.

Infrastructure Inspection

- Building and Facility Monitoring: Tethered drones can inspect rooftops and other hard-to-see areas for maintenance and safety assessments.
- Utility Inspections: Tethered drones can monitor power lines and pipelines, identifying issues that need immediate attention.

Urban Planning

- Data Collection: Tethered drones can gather aerial data for city planning and development projects, helping in the analysis of land use and environmental impact.
- Traffic Management: Tethered drones can be used to monitor traffic flow and congestion, aiding in the development of better transportation systems.

Environmental Monitoring

- Wildlife Observation: Tethered drones can help track and monitor local wildlife, contributing to conservation efforts.

Community Engagement

- Public Demonstrations: Tethered drones can be used for community events, showcasing technology in action and encouraging public interest in innovation.
- Educational Programs: Tethered drones can serve as a tool for educational initiatives, teaching locals about drone technology and its applications.

These advancements can contribute to a safer, more efficient, and environmentally conscious urban landscape in Detroit. Detroit Fire prohibits use of this technology by unauthorized personnel for reasons outside of serving the citizens of the City of Detroit. Also prohibited are any activities such as random patrols, targeting specific individuals, groups, or areas, or any use case not related to the mission and values of Detroit Fire and the community it serves.

PROHIBITED USE

While tethered drones have a wide range of capabilities, there are certain uses that are expressly prohibited by the Detroit Fire Department for all operators of this equipment. These include:

Violations of Privacy: The DFD prohibits the use of tethered drones for any purpose that would compromise the privacy of individuals or infringe upon their rights. DFD drones will not be used for unauthorized surveillance or any activity that invades personal privacy. Operators will avoid capturing images or videos of individuals without their permission. Whenever possible, the DFD will notify people in the vicinity before flying a drone to ensure their consent.

Unauthorized Access: DFD will not use tethered drones to gain unauthorized access to private properties or restricted areas. The DFD will strictly adhere to legal and ethical guidelines when operating the drone.

Interference with Air Traffic: The DFD will ensure that the tethered drones operate in compliance with all applicable aviation regulations. They will not be used in a manner that interferes with air traffic or poses a risk to manned aircraft.

Unlawful Activities: The tethered drones will not be used for any unlawful activities, such as harassment, vandalism, or any action that violates local, state, or federal laws.

To ensure adherence to privacy protocols, all DFD tethered drones operators will:

Familiarization with Privacy Guidelines: Before flying a DFD tethered drone, all operators will read and agree to the regulations set forth in this agreement. Take the time to research and understand these laws to ensure that you operate your drone within the legal boundaries.

Fly responsibly and Respect Privacy: When flying tethered drone, it is crucial to respect people's privacy. Operators will avoid flying over private properties without permission, particularly in areas where individuals may have a reasonable expectation of privacy, such as their homes or backyards.

Maintain a Safe Distance: To minimize the risk of capturing private information, operators will maintain a safe distance from people and private properties while flying. If emergency circumstances make this unavoidable, operators will make every effort to keep a reasonable distance to respect the privacy of others, and avoid getting too close to sensitive areas where private activities may be taking place.

Be Mindful of Public Spaces: While capturing footage in public spaces is generally more acceptable, it is still important to exercise caution and respect people's privacy. Operators will avoid focusing on individuals who may not want to be filmed, especially if they are engaging in private activities. The aim is to capture the overall scene without unnecessarily intruding on people's personal space.

Educate Themselves on Tethered Drone Capabilities: Tethered drones come with various features and capabilities, including high-resolution cameras and zoom capabilities. Familiarization with the capabilities of DFD's tethered drones and the camera will ensure that Operators are not inadvertently capturing private information. Understanding the range and resolution of the tethered drone camera will help operators make informed decisions about where and how they fly.

Obtain Consent: If an operator plans to capture footage in areas where privacy concerns may arise, they will make every attempt to obtain consent from individuals who may be affected. This will help to avoid any potential privacy issues and ensure that operators are respecting the rights of the citizens.

Any violations of DFD privacy expectations by any operator or collaborating entity will result in immediate deletion of any recorded footage and the offending operator will be banned from using DFD tethered drone technology.

DATA COLLECTION

The operator has ultimate control over whether or not to record photos or videos with the tethered drones' main payload cameras. For flight safety and warranty purposes, Skydio drones collect and retain GPS position data (when available), telemetry data and low resolution video of the entire flight. This data is recorded and retained onboard the drone and can be deleted by the operator or another authorized individual based on DFD's standard operating procedures.

As stated, the operator has ultimate control over whether or not to record photos or videos with the tethered drones main payload cameras. DFD will minimize the chance of inadvertent data capture through a combination of thorough training of the operators and a well-established set of standard operating procedures.

The drone operator or other authorized person can access all recorded media stored on tethered drones and can review the images and video via the tethered drones controller or by accessing the SD card on any standard desktop/laptop computer. The authorized person can then choose to retain or delete that media according to Detroit Fire Department's established policies and procedures.

DATA PROTECTION

Videos transmitted from tethered drones wirelessly to a cloud based server are encrypted to AES128 standards. This ensures that the data cannot be intercepted or decrypted by unauthorized individuals.

DATA RETENTION

The operator flying the tethered drone has complete control on whether or not to record video or capture photos with the drone. If the operator decides to capture photos or record video footage, the data is stored in a removable memory card. The operator can remove the memory card and access the data using any standard laptop or desktop computer. The data can be managed from there based following the DFD data retention policy.

The limited time period, if any, surveillance data will be retained. Such information shall include a statement explaining why the designated retention period is no greater than that which is absolutely necessary to achieve the specific purpose or purposes enumerated in the Surveillance Technology Specification Report; The City of Detroit Fire Department will store data and retain information that matches the requirements set forth by the State of Michigan.

I. The specific conditions that must be met to retain surveillance data beyond the retention period identified pursuant to Subsection i above; The specific conditions to keep any data beyond the retention period only if an identified incident occurs upon data review.
II. The process utilized to regularly delete surveillance data after the retention period stated in Subsection i has elapsed and the auditing procedures that will be implemented to ensure data is not improperly retained; The Detroit Fire Department will comply with the State of

Michigan General Retention Schedule #18 Fire/Ambulance Departments.

SURVEILLANCE DATA SHARING

If a City department is seeking authorization to share access to surveillance technology or surveillance data with any other governmental agencies, departments, bureaus, divisions or units, or non-governmental persons or entities in the absence of a judicial warrant or other legal mandate, the City department shall comply with the City of Detroit Freedom of Information Act.

DEMANDS FOR ACCESS TO SURVEILLANCE DATA

The City of Detroit Law Department reviews and approves or denies a request prior to releasing any information.

AUDITING AND OVERSIGHT

The Detroit Fire Department will comply with the Drone laws in the United States of America defined by 49USC 44809.

TRAINING

All operators of tethered drones will perform consistent practice maneuvers to maintain competency

COMPLAINTS

Submit all complaints to the DFD Fire Administration Division at 313-596-2900, and any concerns will be addressed in a timely manner.

SUMMARY

By integrating the use of tethered drones into regular operations, the Detroit Fire Department aims to improve efficiency, safety, and overall effectiveness in serving the community.

Please direct any questions concerning this report to:

Anthony Watts, Director of Special Projects, Detroit Fire Department

313.817.9655 (cell) wattsa5209@detroitmi.gov (email)