



# SURVEILLANCE TECHNOLOGY SPECIFICATION REPORT

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



## 2023



## 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 UAV technology that can offer a wide range of services ranging from search and rescue to providing overhead and tactical views of a fire scene. The UAV technology will assist Firefighters to collect vital information about on-going fires with the primary goal of providing situational awareness in the event of a fire.

The Skydio X2E drone is a UAS solution for aerial situational awareness to assess and identify fire hot spots that may not be visible to the naked eye, for fire scene reconstruction to aid in investigations, as well as search and rescue operations. The X2E is powered by an AI-driven autonomous flight engine that enables unparalleled 360° obstacle avoidance, autonomous tracking, GPS-denied navigation, and complete workflow automation. Built for first responders, the Skydio X2E is designed and assembled in the USA and is compliant with high standards set by the National Defense Authorization Act (NDAA). Skydio drones are trusted by the US government and the Department of Defense to perform mission critical work in the most challenging environments.

The Skydio X2E includes field-tested artificial intelligence building upon Skydio 2/2+'s groundbreaking technology foundation, 4K 12 megapixel color camera, 320x256 resolution FLIR Boson thermal camera, GPS night flight capability, up to 35 min flight time, up to 3 mile range, and rucksack portability.



To maximize the use of the Skydio X2E, Skydio Cloud is a set of cloud services that helps manage drone operations. It integrates with Skydio drones to provide services such as:

- **Fleet management:** Allows users to automatically upload flight telemetry, search for flights, and view and replay flight paths
- **Media sharing:** Enables users to upload and manage flight media
- **Live streaming:** Allows users to view real-time footage from their mobile device or browser
- **Live situational awareness:** Allows users to share live situational awareness with others in their organization
- **Remote operations:** Allows users to see, document, and analyze any location at any time

## **PURPOSE**

The Skydio X2E is designed to enhance various operational capabilities for fire departments, including the Detroit Fire Department. Here are some specific purposes it serves:

- Real-Time Aerial Surveillance: Provides live aerial footage of fire incidents, allowing commanders to assess the situation from above.
- Search and Rescue Operations: Assists in locating missing persons or victims in hard-to-reach areas, especially in large-scale emergencies.
- Situational Awareness: Offers critical information about building layouts, hotspots, and the spread of fire, improving decision-making during emergency responses.
- Training and Simulation: Serves as a training tool for firefighters to simulate scenarios and improve their tactical skills.
- Pre and Post-Incident Analysis: Aids in pre-incident planning and reviewing incidents after they occur to improve future response strategies and operational protocols.
- Safety Monitoring: Helps assess structural stability and hazardous conditions, ensuring the safety of firefighters on the ground.
- Community Engagement: Can be used in community outreach programs to educate the public about fire safety and prevention.

Collaborative efforts with other city departments presents several opportunities to maximize the use of this technology in many ways. Here are some additional advancements of the Skydio X2E:

## **Infrastructure Inspection**



- Building and Facility Monitoring: The X2E can inspect rooftops, bridges, and other hard-to-reach areas for maintenance and safety assessments.
- Utility Inspections: It can monitor power lines and pipelines, identifying issues that need immediate attention.

## Urban Planning

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

## Environmental Monitoring

- Wildlife Observation: The Skydio X2E can help track and monitor local wildlife, contributing to conservation efforts.
- Pollution Tracking: It can be used to detect and monitor pollution levels in urban areas, supporting environmental protection initiatives.

## Community Engagement

- Public Demonstrations: The drone can be used for community events, highlighting technology in action and encouraging public interest in innovation.
- Educational Programs: The X2E 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 landscape in the City of Detroit.

## DEPLOYMENT

The Detroit Fire Department and/or its partners will deploy Skydio UAS technology when there is a need that falls under the use cases described above. Additionally, Skydio drones can be used to gain 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, Skydio UAS will be deployed on a limited basis for the duration of an incident, project or mission.



## **FISCAL IMPACT**

The Detroit Fire Department has received grant money that is set to expire on May 31, 2023. This technology deployment will be using grant funds to make this purchase. Additionally, by using Skydio Drones to do an autonomous collection of photos of a fire scene, the Detroit Fire Department can drastically reduce the man hours that it would normally take them to collect all the evidence and photos needed to reconstruct a fire scene for fire investigations or conduct a search and rescue. Leveraging Skydio's drones for real time situational awareness at an emergency can help incident commanders more efficiently deploy personnel and resources and mitigate the emergency more effectively, thereby potentially realizing cost savings in equipment and duty time hours.

## **CIVIL RIGHTS AND LIBERTIES IMPACTS**

Skydio has years of experience ensuring that advanced technology integrations protect civil liberties while promoting public safety. Skydio has a deep bench of employees with experience building and leading technology programs in public safety agencies. Skydio understands that civil liberties should be at the center of any technology integration. Skydio brings unrivaled expertise to the task of supporting Detroit Fire in building out an effective drone program capable of earning--and sustaining--the public trust.

Skydio is an industry leader in promoting the responsible use of drones. In 2020, Skydio became the first (and still the only) drone company to release a set of ethical and policy principles to govern our work. Known as the Skydio Engagement and Responsible Use Principles (SERUP), those principles outline our core values of accountability, transparency, and the protection of privacy and civil liberties. They also delineate our commitment to proactively promote best practices on the responsible use of our products with our customers.

Consistent with that commitment, Skydio worked with DRONERESPONDERS, the world's largest association of public safety agencies dedicated to the use of drones, to develop a set of responsible use principles specific to public safety--the Five C's. That document provides clear, easy-to-implement guidance to public safety agencies developing or expanding drone programs arranged around five core principles. The principles begin with Community Engagement and Transparency, providing best practices to help agencies engage in an ongoing conversation with the communities they serve. On the core issue of Civil Liberties and Privacy, the principles provide a range of recommendations designed to help agencies to implement best-in-class protections.



## The Five C's: Principles for the Responsible Use of Drones by Public Safety Agencies

Skydio's experience in this topic is more than academic. Fritz Reber, Skydio's head of public safety integration, formerly served as a Captain at the Chula Vista Police Department, and stood up the Department's world-leading DFR program. Brendan Groves, Skydio's VP of Regulatory & Policy Affairs, formerly oversaw the US Department of Justice's drone program, laying the foundation for a nationwide expansion of the program and working with Chiefs of Police across the country to develop their own programs. No other drone company offers the same level of in-house experience.

Spurred by our commitment to responsible use, Skydio is developing a range of technical features designed to automate transparency, accountability, and the protection of privacy and civil liberties for public safety agencies. We are building a suite of tools to support agencies and communities focused on transparency (e.g., enabling automated reporting of flights) and accountability and privacy (e.g., ensuring that authorized pilots conduct authorized flights and activities).

Skydio will support the Detroit Fire Department in constructing a UAS program that is built to last by placing privacy and civil liberties at the center. While Detroit Fire will be in the lead, Skydio will provide critical, proactive assistance to program managers. Among other areas, Skydio can advise Detroit Fire in developing operational policies and procedures that incorporate best-in-class practices on responsible use, drawing on the 5 C's and our employees' expertise. We would advise and support Detroit Fire's engagements with civil society stakeholders--a critical part of expanding any public safety drone program. Skydio will also help to shape and explain the technology used to implement the UAS program in a manner consistent with privacy and civil liberties. The end result will be a UAS program that earns--and keeps--the support of the local community.

### **AUTHORIZED USE**

Trained and supervised employees of the City of Detroit will operate Skydio UAS to serve the following purposes:

#### **Training**

Proficiency in operating a UAV requires hours of continuous practice to enhance navigation skills. Training prepares pilots for emergency responses, promotes equipment familiarity and maintenance, and facilitates



collaboration and communication with other emergency responders. By dedicating time to flight practice, drone pilots can better serve the community and contribute to the overall effectiveness of the Detroit Fire Departments drone program.

## Public Safety

- Emergency Response: The drone can provide real-time aerial views to assist first responders during emergencies, such as fires or natural disasters.
- Search and Rescue: It can be deployed to locate missing persons or assess dangerous situations from above.
- Aerial Reconnaissance: The UAV can deploy to quickly assess 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 UAV 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 UAV 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: Drones can fly overhead to assess traffic congestion and determine its cause
- Accident scene investigations: Drones can collect evidence or help manage incidents at accident and crime scenes
- Forensic investigations: Drones can be used for forensic investigations
- Mapping: Drones can be used for mapping
- Scientific research: Drones can be used for scientific research
- Collaboration and Information Sharing: DFD 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

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## Community Engagement

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- Educational Programs: The X2E 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 the Skydio X2e UAV has a wide range of capabilities, there are certain uses that will be expressly prohibited by the Detroit Fire Department for all pilots of this equipment. These include:

**Violations of Privacy:** The DFD prohibits the use of the UAV 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. Pilots 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 the UAV 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 UAV is operated in compliance with all applicable aviation regulations. It will not be used in a manner that interferes with air traffic or poses a risk to manned aircraft.

**Unlawful Activities:** The drone 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 UAV pilots will:

**Familiarization with Privacy Guidelines:** Before flying a DFD drone, all pilots 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 a drone, it is crucial to respect people's privacy. Pilots 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, pilots will maintain a safe distance from people and private properties while flying. If emergency circumstances make this unavoidable, pilots 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. Pilots 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 UAV Capabilities:** UAV's come with various features and capabilities, including high-resolution cameras and zoom capabilities. Familiarization with the capabilities of DFD UAV's and the camera will ensure that pilots are not inadvertently capturing private information. Understanding the range and resolution of the UAV camera will help pilots make informed decisions about where and how they fly.

**Obtain Consent:** If a pilot 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 pilots are respecting the rights of the citizens.

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

## **DATA COLLECTION**

The operator has ultimate control over whether or not to record photos or videos with the Skydio drone's 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 Skydio drone's 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 Skydio drones and can review the images and video via the Skydio Enterprise 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 Skydio drones wirelessly to the Skydio Enterprise Controller are encrypted to AES128 standards. This ensures that the data cannot be intercepted or decrypted by unauthorized individuals. The



enterprise controller can also be set to require a password to gain access, thereby adding additional security to the data and preventing unauthorized access.

### **DATA RETENTION**

The operator flying the Skydio 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, that data is stored in a removable memory card onboard the drone. Once the drone lands, 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 on the agency's data retention policies. The data on the SD cards can then be uploaded to Detroit Fire's evidence collection database or stored on the SD card. The data can be retained as long or as short of a period as Detroit Fire determines.

- I. 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.
- II. 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.
- III. 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 detail: Comply with the City of Detroit Freedom of Information Act. All request will be approved and reviewed by our Law Department, prior to releasing any information.



- I. Which governmental agencies, departments, bureaus, divisions or units, or non-governmental persons or entities will be approved: All request will be approved and reviewed by our Law Department, prior to releasing any information.
- II. For surveillance technology sharing to the governmental agency, department, bureau, division or unit, or non-governmental person or entity; All request will be approved and reviewed by our Law Department, prior to releasing any information.
- III. For surveillance technology sharing from the governmental agency, department, bureau, division or unit, or non-governmental person or entity; All request will be approved and reviewed by our Law Department, prior to releasing any information.
- IV. For surveillance data sharing to the governmental agency, department, bureau, division or unit, or non-governmental person or entity; All request will be approved and reviewed by our Law Department, prior to releasing any information.
- V. Where applicable, the type of information of surveillance data that may be disclosed to the governmental agency, department, bureau, division or unit, or non-governmental person or entity; and
- VI. Where applicable, any safeguards or restrictions that will be imposed on the surveillance technology or data receiving governmental agency, department, bureau, division or unit, or nongovernmental person or entity regarding the use or dissemination of the provided surveillance technology or data; All request will be approved and reviewed by our Law Department, prior to releasing any information.

## **DEMANDS FOR ACCESS TO SURVEILLANCE DATA**

All request will be approved and reviewed by our Law Department, 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 DFD SkydioX2E drones will need to acquire and maintain the following training and certifications:

- Acquire a FAA Part 107 Remote Pilot Certificate
- Maintain recurrent Part 107 Re-Certification every two(2) years
- Log eight(8) hours each of night flight and daytime flight practice
- Perform consistent practice maneuvers to maintain competency



## COMPLAINTS

All complaints for the Detroit Fire Department should be submitted directly to our Fire Administration Division at 313-596-2900, and the concerns will be addressed in a timely manner.

## SUMMARY

By integrating the use Skydio X2E UAV's 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:

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