

OFFICE OF THE CITY AUDITOR
PERFORMANCE AUDIT
October 2019

**Guidance Needed to
Manage City's Use of
Drones**



CITY OF
KANSAS CITY,
MISSOURI

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CITY OF FOUNTAINS
HEART OF THE NATION



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MISSOURI

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October 14, 2019

Honorable Mayor and Members of the City Council:

This audit of drones focuses on whether the city has policies to address risks associated with city drones. A drone is a small unmanned aircraft system operating in the national airspace and regulated by the Federal Aviation Administration (FAA).

The city does not have policies to address the use of drones by departments that report to the city manager. Drone technology and the regulatory environment are evolving. Operating drones for city business can expose the city to a range of risks including personal injury, property damage, invasion of privacy, and violation of FAA regulations that need to be addressed.

Four city departments and the Kansas City Missouri Police Department, a state agency, have drones. When we began the audit, not all city drones were registered or city remote pilots certified as required by FAA regulations. The failure to register a drone or operate a drone without being certified could result in civil and criminal penalties of up to \$25,000. The Police Department's drones are registered and its pilots certified and the department has written policies and procedures.

The city has not provided departments with guidance on evaluating their need for drones or methods for securing drone services. Some city departments have purchased drones, while other departments report having access to drone services from the Kansas City Missouri Police Department. While there is no single method for incorporating drones into a department's operations, alternatives should be systematically evaluated.

We recommend that the city manager develop citywide guidance for departments on operating drones and on determining the need and methods for acquiring drone services.

The draft report was sent to the city manager on September 12, 2019, for review and comment. His response is appended. We would like to thank all city departments and the Kansas City Missouri Police Department for their assistance and cooperation during this audit. The audit team for this project was Terry Bray and Nancy Hunt.


Douglas Jones
City Auditor

Guidance Needed to Manage City's Use of Drones

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Introduction

Objectives

We conducted this audit of the citywide use of drones under the authority of Article II, Section 216 of the Charter of Kansas City, Missouri, which establishes the Office of the City Auditor and outlines the city auditor's primary duties.

A performance audit provides "findings or conclusions based on an evaluation of sufficient, appropriate evidence against criteria. Performance audits provide objective analysis to assist management and those charged with governance and oversight in using the information to improve program performance and operations, reduce costs, facilitate decision making by parties with responsibility to oversee or initiate corrective action, and contribute to public accountability."¹

This report is designed to answer the following question:

- Has the city developed guidance for departments on the purchase and operation of drones?

Scope and Methodology

Our review focuses on whether the city has policies to address risks associated with drones. Our audit methods included:

- Surveying departments to identify those owning or operating drones.
- Interviewing department staffs to determine why drones were acquired, how drones are or could be used, and whether pilots are certified, drones are registered, and policies and procedures are in place; and to identify potential risks of operating drones.
- Reviewing federal regulations, state statutes, and city administrative regulations to identify drone requirements and restrictions.

¹ Comptroller General of the United States, *Government Auditing Standards* (Washington, DC: U.S. Government Printing Office, 2011), p. 17.

- Reviewing professional literature to understand regulations and challenges cities face with emerging drone technology.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. No information was omitted from this report because it was deemed privileged or confidential.

Background

What Is a Drone?

A drone, regulated under 14 Code of Federal Regulations 107 (14 CFR 107), is a small unmanned aircraft system operated in the national airspace. It weighs less than 55 pounds on takeoff, including everything attached to or on board the drone. A drone is a flying robot that can be remotely controlled by a pilot or through software-controlled instructions.

Federal Aviation Administration Regulates Drones

The Federal Aviation Administration (FAA) regulates drones or small unmanned aircraft systems through 14 CFR 107. This regulation provides general information, operating rules, remote pilot certification, and waivers.

Current FAA regulations for drones include, but are not limited to the following, unless covered by an exception or waiver:

- Drones must be registered.
- Drone pilots must be certified.
- Drones should be flown at an altitude of less than 400 feet.
- Drones should be operated only during daylight hours.
- Drones should be within visual line of sight of the pilot or trained visual observer.
- Drones should not be operated over people.
- Serious personal injury or property damage caused by a drone must be reported to the FAA.

Current and Potential Use of Drones

Management and staff in departments suggested the following uses for drones:

- Aerial photographs of major road and construction projects.
- Inspections of bridges and construction projects.
- Survey work.
- Capturing current site, housing, and neighborhood conditions.
- Conducting projects for the Economic Development Corporation.
- Identifying illegal burns and unmaintained swimming pools.
- Conducting healthy home risk assessments.
- Improving enforcement efforts.
- Managing regulatory risks.
- Checking pump stations and water treatment plants.
- Accessing areas where crews have a hard time performing visual inspections such as near creeks and in wooded areas.
- Visual inspections of cropland to determine crop or flood damage.
- Checking building roofs, waste water stacks, sewer lines, and in-flow levels from creeks.
- Discovering missing man hole covers.
- Locating water main breaks in hard to reach areas.
- Mapping crime scenes.
- Supporting Police Operation 100, search and rescue, lost children, and flooding events.

While departments are using drones for some of these purposes, not all drones have been put in service.

Findings and Recommendations

Departments Need Guidance on Drone Use for City Business

Not All Drones Registered or Pilots Certified

Although the FAA requires drones to be registered and drone pilots to be certified, only two city departments and the Police Department had complied with these requirements. When we began this audit, we identified three drones in city departments that were not registered and two city drone pilots that were not certified. (See Exhibit 1.) The three unregistered drones were subsequently registered and departments without a certified drone pilot reported they are no longer flying their drones.

Exhibit 1. Drones and Certified Drone Pilots by Department

Department	Number of		
	Drones	Registered Drones	Certified Drone Pilots
City Planning & Development ²	1	1	1
Health	3	1	0
Public Works	1	1	1
Water Services	1	0	0
Kansas City Missouri Police Department	22	22	13 ³

Source: Surveys and interviews with departments.

Although the FAA currently issues warning letters and is trying to increase awareness about the agency's drone rules, the FAA could seek civil and criminal penalties for noncompliance with regulations. Failing to register a drone and operating a drone without a remote pilot certification could result in potential civil penalties of up to \$25,000 for persons violating FAA regulations, with a separate violation occurring each day the violation continues. Criminal penalties for noncompliance related to the operation of drones could include fines and imprisonment of up to three years for not registering a drone and up to three years for operating a drone without a remote pilot certification.

² The Kansas City Missouri Economic Development Corporation provided the City Planning and Development Department with a drone that is under the control of the department.

³ The Kansas City Missouri Police Department is a state agency. It operates drones under a certificate of authorization or waiver (COA) issued by the FAA which allows the department to self-certify its pilots. The chief of police's goal is to have all of the department's pilots certified under 14 CFR 107.

Citywide Guidance on the Use of Drones Needed

The Police Department, a state agency, is the only department that has an adopted drone policy.⁴ The city has not adopted a citywide policy to guide the management and operation of drones by city departments that report to the city manager. Drone technology and the regulatory environment is evolving. Having citywide written guidance communicated to employees is essential to safe drone operation. At a minimum, a policy should require that drones operated for city business be in compliance with applicable laws and regulations in effect at the time of operation.

Recommendation To protect the city and the public, the city manager should develop a policy for city departments on the operation of drones.

Guidance on Evaluating Drone Need and Methods of Securing Drone Services Needed

Departments are excited about the use of drone technology; however, they do not always address risks that need to be considered. For example, the Risk Management Division had not obtained insurance coverage for drone activities because the division was not aware city departments were using drones.⁵

Management and staff identified a number of potential drone-related risks including:

- Damage, loss, or theft of a city drone.
- Misuse of a city drone.
- Use of a city drone for personal benefit.
- Personal injury caused by a city drone.
- Property damage caused by a city drone.
- Invasion of privacy caused by a city drone.
- Harm to the city's reputation.
- Inadequate drone maintenance.
- Lack of drone insurance coverage.
- Violation of FAA regulations.
- Hacking of city drone controls or data.
- Changing regulatory environment.
- Non-compliance with record retention requirements.
- Drone flying off or falling from the sky.

⁴ The City Planning and Development Department has a draft drone policy.

⁵ The Risk Management Division subsequently obtained an aviation insurance policy for unmanned aircraft systems with coverage beginning September 17, 2019.

Before purchasing a drone, management should think about whether the department has a need for a drone, how the department could incorporate a drone into its operations, and whether it is better to buy a drone or contract for drone services. Questions to help evaluate the need for a drone could include:

- How would a drone support the department's mission and goals?
- How much drone work is anticipated?
- Is the work predictable or would it be for unplanned events or emergencies?
- What are the hardware and software needs?
- Is staff capable of planning how to capture, process, use, and store captured data or images?
- How many pilots are needed?
- How much pilot training is required?
- How much time will be taken away from an in-house pilot's regular responsibilities to pilot drones?
- What are the current FAA regulations and who will keep this knowledge up-to-date?
- Could a drone owned and operated by another department or outside vendor be a cost effective method of meeting the department's needs?

According to the city's former corporate safety and risk manager, contracting with an outside vendor for drone services would better protect the city's interests and allow the vendor to assume the risks. Drone crashes can be costly. Costs could reflect the damage or harm to the drone and drone attachments, property damage, and personal injury. Drones may also present legal concerns and issues related to privacy. If the city contracted for drone services, risks could be transferred to the vendor.

The city's Emergency Management Division, General Services Department, and the Parks and Recreation Department reported that they could request drone services from the Kansas City Missouri Police Department. The Police Department has a fleet of 22 registered drones, 13 pilots, and adopted policies and procedures, and operates drones under a certificate of authorization or waiver (COA) from the FAA. The four city departments that own or have access to a drone have a total of six drones, but only two certified pilots.

There is not a single correct method for incorporating drones into a department's operations, but alternatives should be systematically examined. Departments should not expend public resources on drones until a business need and plan for addressing that need are identified and evaluated.

Recommendation To make better use of public assets and resources, the city manager should develop citywide guidance for departments on how to evaluate whether to purchase a drone for a single department's use, or to contract with another department, the Kansas City Missouri Police Department, or an outside vendor for drone services.

Recommendations

1. The city manager should develop citywide guidance for departments on the operation of drones.
2. The city manager should develop citywide guidance for departments on how to evaluate whether to purchase a drone for a single department's use, or to contract with another department, the Kansas City Missouri Police Department, or an outside vendor for drone services.

Appendix A

City Manager's Response

CITY OF FOUNTAINS
HEART OF THE NATION



KANSAS CITY
MISSOURI

Office of the City Manager

RECEIVED

OCT 08 2019

CITY AUDITOR'S OFFICE

Date: October 8, 2019
To: Douglas Jones, City Auditor
From: Troy M. Schulte, City Manager 
Subject: Response to Performance Audit: *Guidance Needed to Manage City's Use of Drones*

1. ***The city manager should develop citywide guidance for departments on the operation of drones.***

Agree. An administrative regulation will be developed to address this issue.

2. ***The city manager should develop citywide guidance for departments on how to evaluate whether to purchase a drone for a single department's use, or to contract with another department, the Kansas City Missouri Police Department, or an outside vendor for drone services.***

Agree. An administrative regulation will be developed that will seek to limit the number of drones used in city operations.