

# POLICIES & PROCEDURES



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Use of Unmanned Aircraft Systems for Inspections

BPP 124

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## Summary

This policy outlines the Building Division conditions and guidelines for use of Unmanned Aircraft Systems (UAS), as an inspection tool for completing building inspections.

## Background

Unmanned Aircraft Systems (UAS), commonly referred to as drones, are becoming an essential tool for conducting certain types of building inspections. While this technology and the practices surrounding its use are evolving, more jurisdictions are adopting the technology because of some significant advantages that include:

- Speed and time savings
- Improved inspector safety
- Visual clarity and accuracy of inspections
- Critical and effective tool for post-disaster response

In 2022, the Building Division began a yearlong pilot project to assess the viability of drone technology as an inspection tool for hazardous or difficult-to-inspect installations. The pilot project was successful and led the Building Division to determine that incorporating UAS technology into the Building Division's regular operations would improve safety, increase efficiency, and provide a higher level of code compliance than might otherwise be achieved through traditional methods of validation.

Laws, regulations, and standards that apply to the Building Division's UAS program include:

- [CFR Title 14, Part 107](#)
- [ORS 837.362](#), [ORS 837.360](#), and [ORS 192.345](#)
- [OAR 166-200-250](#)
- [NFPA 2400 \(2019 ed.\)](#)

Program resources for operations and piloting include:

- [FAA Part 107 Remote Pilot in Command - Student Study Guide](#)
- [FAA Part 107 Remote Pilot in Command – UAS Airman Certification Standards](#)
- [NIST standards for flight proficiency](#)
- [NIST course guidelines](#)
- [DJI Mavic 3 User Guide and Maintenance](#), [DJI Matrice 30 User Guide and Maintenance](#)

The Building Division has established a UAS program in an effort to provide a framework for building inspection operations with UAS technology to move forward in a manner that is transparent, effective, and, compliant with all applicable laws and regulations.

Use of UAS technology allows a building inspector to supplement the visual sensory evaluation of an installation without compromising safety; high-definition cameras allow building safety inspectors to see even small details such as nailing placement. If an inspector can safely and efficiently conduct an inspection without a UAS, the inspector is encouraged favor the use of traditional sensory inspection methods. However, if the inspector cannot safely and efficiently conduct an inspection without a UAS, the inspector is encouraged to use the UAS.

### **Policy**

All City staff that operate UAS technology in connection with a building inspection must comply with applicable laws and regulations, and this policy.

### **Key Roles**

1. **Key Personnel:** The following are positions of personnel identified with defined roles in support of the City's UAS program:
  - a. Remote Pilot in Command (RPIC): The FAA-licensed pilot who conducts pre-flight checks, flight operations, and post flight checks. This individual is the responsible person in charge of all aspects of the flight, including pre- and post-flight activities relating to the flight.
  - b. UAS Coordinator: The Building Official or designee (in most cases the RPIC).
  - c. Crew: Members of the Building Division's staff who may provide visual, tactical, or organizational support to the RPIC.
  - d. Visual Observer: A designee, preferably another FAA-licensed pilot, who provides visual support and guidance to the RPIC in circumstances where the pilot is not able to maintain line of sight with the UAS during physically constrained or challenging inspections.

### **Pilot Standards**

2. **Pilot Certification:** All building inspectors acting as UAS pilots must be licensed by the Federal Aviation Administration (FAA) as UAS Drone Pilots and must have obtained the required Part 107 FAA certification. Once certified, each UAS pilot must complete National Institute of Standards and Technology (NIST) agility training to demonstrate piloting proficiency skills.
3. **Pilot Continuing Education:** All UAS pilots must complete continuing education to maintain the FAA Part 107 license. A UAS pilot may complete NIST agility and proficiency training on an annual basis in-house or through a qualified third party.

### **Flights and Operations**

4. **Types of Inspections:** The Building Division's staff may use UAS's for visual inspections such as (but not limited to) solar installations, high-bay warehouses, roof nailing, trusses, fire sprinklers, rooftop mechanical, shear wall, framing, and final inspections.
5. **Pre-flight Safety Check:** The RPIC must conduct a pre-flight safety check prior to all flights. The Building Division maintains a pre-flight safety checklist and the RPIC must complete it prior to each flight.

6. **Flight Log:** The RPIC must ensure that all flights are logged in a flight log that is kept adjacent to the UAS storage area. This includes record of any incidents.
  - a. **Crashes/Incidents:** If there is an accident involving the UAS, the RPIC must immediately inform the Building Official and take any action required by the FAA, depending on the incident and if there is resulting damage. Incidents resulting in damage to persons or property, other than the UAS, must be reported to the City's designated risk manager. If there is a UAS collision with an object, the RPIC must immediately ground and inspect the UAS for damage. Any parts that are damaged must be immediately repaired or replaced prior to the next flight.
7. **Flight Operational Constraints:** Each pilot must operate within the FAA rules for UAS operations including the regulation of airspace, observation of ceiling limits, observation and avoidance of manned aircraft, operation in inclement weather, operation with limited visibility, UAS limits, and other precautions.
8. **Ceiling:** Prior to each flight, the RPIC must determine the vertical limit of the airspace the UAS will operate within, which is generally 400 feet, with some exceptions for no-fly zones or airport flightpath areas. With the adjacency of the Aurora Airport, Wilsonville has areas that are limited-height fly zones.
9. **Minimizing In-flight Conflicts:** Prior to a UAS flight, the RPIC must have a plan to avoid conflicts during the following points:
  - a. Launch
  - b. Flight recovery
  - c. Lost communication link event
  - d. Loss of GPS signal
10. **Pre-Mission Briefing:** If the RPIC requires the assistance of a Crew or Visual Observer, the RPIC must conduct a pre-mission briefing with these staff to cover the requirements of this policy, and protocols for pre-flight, during flight, and post-flight.
11. **Operations Over People:** The City does not currently own UAS that meet the requirements for any of the four FAA "operations over people" categories. Before each flight, the RPIC must ensure the following requirements have been met:
  - a. The UAS will not operate over any person who is not under a covered structure or in a stationary covered vehicle;
  - b. The UAS will pose no undue hazard to other aircraft, people, or property in the event of a loss of control of the aircraft for any reason; and
  - c. The UAS will not be operated in a careless or reckless manner so as to endanger the life or property of another.

If these requirements cannot be satisfied, then the flight must not take place. If it becomes clear to the RPIC that these requirements cannot be satisfied during a UAS flight, the flight must be immediately and safely terminated.

## General

12. **Privacy - Photos or Video Recording:** Inspectors are very mindful and respectful of privacy and potential perception issues. Inspectors rarely take photos or video during flights as it is not necessary to verify the installation. If capturing photos or videos are necessary, pilots must attempt to take reasonable precautions to avoid inadvertently recording or transmitting images of areas where there is a reasonable expectation of privacy.
13. **Records Retention Periods:** Photos or videos of UAS flights may be recorded when specifically authorized by the Building Official for a business case use. If photos or video are captured, they must be retained as

follows: photos or videos taken during a final inspection must be retained for the life of the structure, and photos or videos taken during any other inspection must be retained for 2 years.

- 14. Data Storage:** The City does not store data obtained by a UAS in third party storage and the Building Division does not have intergovernmental agreements regarding disclosure of data.
- 15. Insurance:** UAS inspection activity is covered under the City's general liability policy as long as the UAS is operated under FAA rules and by a certified Part 107 UAS FAA Pilot.
- 16. Website:** The Building Division maintains a webpage with information for the public about the use of UAS to perform building inspections, which is available here: <https://www.wilsonvilleparksandrec.com/building/page/drone-program>.
- 17. Maintenance:**
  - a. The UAS Coordinator is responsible for ensuring that the City's UAS fleet is maintained at intervals designated by the vehicle manufacturer, and that staff perform routine maintenance such as checking battery condition, inspecting propellers, or cleaning the UAS.
  - b. The UAS Coordinator is responsible for determining when maintenance requiring invasive procedures that may invalidate a warranty must be performed, and for arranging for the manufacturer or its authorized agent to conduct this maintenance.
  - c. If a UAS collides with an object, the RIPC must immediately ground and inspect the UAS for damage. Any parts that are damaged must be immediately repaired or replaced prior to the next flight.
- 18. Other Jurisdictions:** Building Division staff are encouraged to maintain regular contact with the staff of other jurisdictions that use UAS technology to network and share new developments and best practices.
- 19. Battery Charging and Storage:** UAS batteries must be stored in a constantly attended location in their case during normal business hours. The RIPC must ensure that UAS batteries are charged after each use to ensure availability for the next flight. Battery charging must be conducted only during business hours when staff are present and batteries must be removed from chargers when they are not charging.
- 20. Citizen Concerns and Community Outreach:** The Building Division recognizes a certain stigma and public perception can exist with the use of UAS technology for inspections. The Building Division inspectors ascribe to high ethical standards, including the [ICC Code of Ethics](#), in the conduct of their duties as public officials. Inspectors go through an extensive background check upon hire, and are required to attend continuing education to maintain their required state and national certifications. Any concerns or complaints from community members relating to use of UAS technology shall be taken seriously, and where there are privacy concerns, staff will consider other alternative approaches to conducting the inspection where possible and where the inspector's safety can be maintained.