



**CITY COUNCIL MEETING
STAFF REPORT**

Meeting Date: June 19, 2023	Subject: Building Division – Unmanned Aircraft Systems (UAS) (Drone) Inspection Tool Update Staff Members: Dan Carlson, Building Official; Mike Ditty, Building Inspector III; and Carl Brown, Building Inspector III. Department: Community Development	
Action Required <input type="checkbox"/> Motion <input type="checkbox"/> Public Hearing Date: <input type="checkbox"/> Ordinance 1 st Reading Date: <input type="checkbox"/> Ordinance 2 nd Reading Date: <input type="checkbox"/> Resolution <input type="checkbox"/> Information or Direction <input checked="" type="checkbox"/> Information Only <input type="checkbox"/> Council Direction <input type="checkbox"/> Consent Agenda	Advisory Board/Commission Recommendation <input type="checkbox"/> Approval <input type="checkbox"/> Denial <input type="checkbox"/> None Forwarded <input checked="" type="checkbox"/> Not Applicable Comments: N/A	
Staff Recommendation: N/A		
Recommended Language for Motion: N/A		
Project / Issue Relates To: Technology to improve building inspections		
<input type="checkbox"/> Council Goals/Priorities:	<input type="checkbox"/> Adopted Master Plan(s):	<input checked="" type="checkbox"/> Not Applicable

ISSUE BEFORE THE COUNCIL:

Update on the use of drone technology to conduct building inspections by the Building Division in order to gain efficiency, improve inspections, and increase inspector safety. This technology also provides a critical and effective tool for post-disaster response.

EXECUTIVE SUMMARY:

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 and cutting edge for inspections, 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

This staff report explains how the Building Division uses this technology as it becomes more prevalent, provides efficiency in inspections, and reduces safety risks. For future Council consideration, the Building Division intends to pursue a more formal program for utilizing drones as part of its building inspections. The intention for today's presentation is to conduct a demonstration for Council to show how this technology works, to provide some context for the Division's best practices and policies, and to share highlights as the program continues to develop.

In 2022, the Building Division began a yearlong project to assess the viability of drone technology as an inspection tool for dangerous or difficult-to-inspect installations. During this time, the Division has learned a lot and come to regularly rely on this technology in limited-use scenarios.

The following are some key elements of the program:

- **Pilot Certification:** Inspectors are licensed by the Federal Aviation Administration (FAA) as UAS Drone Pilots and have obtained the required Part 107 FAA certification. Once certified, each pilot will complete National Institute of Standards and Technology (NIST) agility training to demonstrate piloting skills. Continuing education is also part of the program.
- **Flight Log:** All flights are recorded in a flight log. This includes record of any incidents. Our professional staff operate out of an abundance of caution and will not operate if the conditions are questionable.
- **Flight Operational Constraints:** Each pilot must operate within the FAA rules for UAS operations.
- **Ceiling:** Each flight requires a pilot to validate the airspace to ensure the maximum ceiling height, which is generally set at 400 feet, with some exceptions for no-fly zones or airport flightpath areas.
- **Types of Inspections:** The Building Division utilizes drones for inspections such as (but not limited to) solar installations, high-bay warehouses, roof nailing, trusses, fire sprinklers, rooftop mechanical, shear wall, framing, and finals. The high-definition cameras allow inspectors to see even the small details such as nailing placement.
- **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. The drone has features that serve as a set of eyes just as if the inspector was in the immediate vicinity. On rare occasions,

flights may be recorded where specifically authorized by the Building Official for a business case use. If photos or video are captured, they are required to be retained as per ORS 837.862.

- **Insurance:** Drone inspection activity is covered under the City's general liability policy as long as the drone is operated under FAA rules and by a certified Part 107 UAS FAA Pilot.
- **Website:** The Building Division will maintain a webpage with information for the public about the use of drones to perform building inspections.
- **Other Jurisdictions:** Building staff maintain regular contact with other jurisdictions who use drone technology including Bend, Deschutes County, and Clark County, WA. The purpose is to network and share new developments and best practices.

So far, contractors and building owners have been very open and receptive to the Division's use of drones. Feedback has been positive as it offers some compelling advantages. For example, contractors for rooftop installations are no longer required to meet staff on-site to provide a ladder for rooftop access. This saves significant time and expense. It is also much safer for staff by minimizing risk potential and avoiding potential injury from falls. We would rather crash a drone than unnecessarily risk the injury of one of our highly trained and valued inspectors.

Future program development:

Staff continue to find uses for the technology that makes them better at performing more accurate and timely inspections. In addition, recently staff were provided an opportunity to attend a weeklong training with focus on emergency responder and disaster recovery. Staff were trained in the use of UAS systems for providing rapid assessment, disaster recovery, and post-disaster evaluation. To our knowledge, Wilsonville has the only Building inspection staff in the state with this training. This could be very advantageous to our community in the event of a natural disaster in providing timely rapid assessment information to decision makers.

EXPECTED RESULTS:

As noted, more accurate inspections and safer for inspectors in difficult-to-access installations. More efficient and timely inspections.

TIMELINE:

Current and ongoing. The program is in its infancy. It was piloted for a year and now drones are a critical tool for certain inspections. The program continues to evolve and will be modified over time.

CURRENT YEAR BUDGET IMPACTS:

Budgetary impacts for this program crossing two fiscal years (FY)(excluding staff time) include staff training, certification, and hardware. The Building Division partnered in the purchase of the first drone in 2022 with Parks. In 2023, the Division purchased a secondary dedicated drone with all-weather capability, zoom, and lighting. The hard cost of the inspection program thus far totals (\$18,103) and includes:

- Inspector training and FAA Part 107 certification for three (3) inspectors (\$1,850)
- DJI Mavic 3, ½ drone, maintenance, batteries, and accessories with Parks (\$3,008)

- DJI M30, drone, software, maintenance, batteries, and accessories (\$13,245)

COMMUNITY INVOLVEMENT PROCESS:

Contractor and homeowner reception has been welcome. Staff notify homeowners who are present before flying and staff have yet to experience any pushback. When staff fully explain what they are doing and are not recording, homeowners are inquisitive and appreciate the extra measure of quality assurance.

POTENTIAL IMPACTS OR BENEFIT TO THE COMMUNITY:

This program provides a safer built environment while saving time and money for the City and for contractors. It keeps our staff out of harm's way while ensuring a high degree of accuracy in approving installations. It offers an advantage in post disaster response, assessment, and recovery.

ALTERNATIVES:

Conduct inspections without the use of this technology. In the case of inspector safety being in question for difficult installations, the installation may not be thoroughly inspected if at all.

CITY MANAGER COMMENT:

N/A

ATTACHMENTS:

N/A