

Date: November 17, 2023

To: Honorable Mayor and City Council

From: Christina D. Day, AICP, Director of Planning

Subject: Additional Information on Drones and Advanced Air Mobility Aircraft and Zoning Case 2023-014

During its consideration of Zoning Case 2023-014, City Council expressed a desire for additional background information before making a decision on the case. Staff has compiled information on drones and Advanced Air Mobility, privacy concerns, noise concerns, peer city standards, and existing standards in the Zoning Ordinance to support this request. To summarize:

1. Additional information on Advanced Air Mobility aircraft is provided.
2. State law includes privacy protections associated with drones.
3. Noise varies greatly among different drone models, but is generally at or below 75 decibels (dB) from the proposed 150- and 300-foot buffer distances, at or below 68 dB during flight, and the loudest at the delivery location.
 - The city has no ability to control or regulate the delivery location or flight path as part of operations.
4. Other cities have taken three general approaches to address commercial drone delivery hubs in their communities: no regulations, interpretation as an existing defined land use, or adoption of a newly defined land use.
 - Other use-specific standards are limited to a Planned Development (PD) district.
5. Several peer cities use the term “rotary wing aircraft” in their heliport definitions and cities with a vertiport definition use the terms “rotary wing” or “tiltrotor aircraft” which is more permissive than our “helicopter” language – indicating allowance of modern, Advanced Air Mobility aircraft without changes to their ordinances.
6. Open storage screening requirements have been in the Zoning Ordinance since 1971, and P&Z recommended consistent application of the standards to land uses, existing and proposed, in the interest of fairness. The take-off and landing area is exempted from screening; only storage of materials was required to be screened consistent with other business interests. The screening is similar in height to the items screened, and no impacts of screening open storage have been heard to date beyond financial impacts that would be common to all businesses. Screening consisting of landscaping, masonry, or

concealed placement is required for open storage, including shipping containers, throughout the city.

This memo and the attached exhibits include a more detailed discussion of these topics.

1. Drones and Advanced Air Mobility

Advanced Air Mobility (AAM) aircraft include a range of technologies, such as unmanned aerial vehicles, vertical take-off and landing (VTOL) aircraft, and electric or hydrogen aircraft. Drones – referred to as unmanned or uncrewed aircraft (UAs) in most industry settings – are included when referring to AAM.

The proposed amendments to the Zoning Ordinance are largely for drones engaged in the delivery of commercial goods. This is reflected by the proposed definition, which identifies “*unmanned aircraft... [used] to distribute commercial goods by air.*” Under this definition, drones engaged in the transport of people would not be included within the proposed commercial drone delivery hub (large) land use. A fact sheet showing several commercial delivery drones in use is provided in Exhibit A.

AAM aircraft that transport people, whether piloted or drone-operated, would be captured under the amended definitions for heliports and helistops. The proposed amendments include the addition of the phrase “passenger aircraft” to ensure that future drone taxis are subject to the same requirements as a helicopter or other AAM aircraft with an onboard pilot.

It is worth noting that drone taxis are not anticipated in the near future, as that industry is currently focused on the development and introduction of AAM aircraft with onboard pilots. The first commercial passenger flights in the United States are expected in 2025 and initial operations are expected to use existing helicopter infrastructure. As the sector matures, operators plan to introduce “vertiports,” which would form a mobility network. Flights to locations other than a heliport or vertiport are not part of the current discussion on AAM to staff’s knowledge, but may be part of the long-term vision.

Both the [Texas Department of Transportation](#) and the [U.S. Department of Transportation](#) have assembled working groups to develop plans for the introduction of AAM service and infrastructure. [Dallas Fort Worth International Airport](#) has signed a memorandum of understanding with an AAM operator to explore development of a vertiport network in the region.

The city’s helicopter regulations are relatively strict. Heliport and helistop are allowed by right in only the CE and CB-1 zoning districts, citywide; however, the use is disallowed within 1,000 feet of an existing residence, or land within the Neighborhoods Future Land Use category. Additional details on this regulation can be found in Section 10.1000 of the [Zoning Ordinance](#). The availability to request an SUP is found in 10 of 15 commercial districts for Helistop and 7 of 15 for Heliport. Both uses are prohibited in residential districts, with the exception of the Agricultural district, which allows a heliport by SUP. Additionally, the Ordinance has use-specific standards in Section 15.600 that provide for setbacks from specific uses and the ability for City Council to waive the setbacks. If amended, AAM service would be required to abide by the same regulations, with very little opportunity for by-right operations (essentially only in the Legacy Business Park area, where the distance requirements can be met).

2. Privacy Concerns

Privacy is a key concern among the public when discussing drones, as these aircraft are equipped with cameras for navigation. Questions about the specifications of the cameras, data relay, and data storage are best directed to drone operators, but staff generally understands that:

- Cameras for navigation tend to be fairly low-resolution and do not have a zoom capability, as they only need to be able to identify immediate hazards; and
- Data is not recorded.

The city cannot adopt or enforce any ordinance related to the operation of a drone. This is specifically restricted by the State of Texas in [Government Code 423.009](#). Under the Government Code, the city may adopt ordinances regarding:

- The use of a drone during a defined special event, such as the Plano Balloon Festival;
- The city's use of a drone, such as by the Plano Police Department; or
- The use of a drone near a facility or infrastructure owned by the city, subject to approval by the FAA and a public hearing.

Chapter 423 of the Government Code contains language protecting privacy. In 2022, the US District Court for the Western District of Texas struck the privacy-related sections of Chapter 423 as unconstitutional ([NPPA v. McCraw](#)). However, on October 23, 2023, the 5th Circuit Court of Appeal overturned the district court's decision ([NPPA v. McCraw](#)). Staff reports provided previously were written based on the 2022 decision.

The FAA generally does not restrict the flight paths that commercial delivery drones take to their destinations, provided the drone stays within the airspace below 400 feet above ground level and does not enter restricted airspace, such as around commercial airports. There are broad restrictions on operation over people and vehicles, which is only permitted under certain criteria outlined in [Subpart D of Part 107 of the Code of Federal Regulations](#).

3. Noise Concerns

Drones generate noise the same as any other motorized vehicle. Study into noise emission, perception of noise, and noise abatement is limited but ongoing. Many factors can affect noise, including aircraft size, take-off weight, travel speed, distance from the ground, ground and weather conditions, rotor speed, and aircraft design. The size and weight of drones in active operation vary significantly, and, as such, it is difficult to come up with a typical maximum noise exposure level. Noise studies for drones in use by Amazon Prime Air, Flytrex (Causey Aviation), UPS, Wing Aviation, and Zipline are available from the FAA as part of published [Final Environmental Assessments](#).

Select key measurements are provided in the table below, and a comparison showing typical sound exposure levels of various outdoor and indoor noise sources is provided in Exhibit B. Ground level measurements from 150 and 300 feet of the launch pad were chosen, if available,

as these are the proposed buffer distances from a drone staging area to sensitive land uses. Measurements for Zipline’s drone are not included, as the available noise study is for a model not used in urban settings.

| Drone Operator/Model | Distance from Receiver | Max. Sound Exposure Level |
|-----------------------------------|---|---------------------------|
| Amazon Prime Air MK27-2 | 142 ft. from launch pad | 83.0 dB |
| | 306 ft. from launch pad | 75.8 dB |
| | 165 ft. above ground level (typical cruising altitude) | 67.7 dB |
| | 32.8 ft. above ground level (typical delivery altitude) | 96.5 dB |
| Flytrex FTX-M600P | 150 ft. from launch pad | 69.7 dB |
| | 216 ft. above ground level (typical cruising altitude) | 66.4 dB |
| | 0 ft. above ground level (typical delivery altitude) | 81.0 dB |
| UPS Matternet Model M2 | 150 ft. from launch pad | 79.0 dB |
| | 250 ft. above ground level (typical cruising altitude) | 67.8 dB |
| | 20 ft. from landing pad (typical safety distance) | 90.1 dB |
| Wing Aviation Hummingbird 7000W-B | 150 ft. from launch pad | 75.2 dB |
| | 150 ft. above ground level (typical cruising altitude) | 65.2 dB |
| | 28.3 ft. above ground level (typical delivery altitude) | 86.5 dB |

Noise exposure is highest at the delivery point, as this is where the drone is closest to the receiver and also maintains a hover. The city does not have the ability to regulate or control where drones perform deliveries due to FAA pre-emption and State laws restricting drone ordinances.

4. Peer City Standards

Staff researched the zoning regulations of other cities in Texas that are known to have commercial drone delivery operations. Staff also researched a small number of notable cities outside Texas that have used their zoning ordinances to support or restrict commercial drone delivery hubs. These findings are provided in Exhibit C. Generally, cities made one of three interpretations:

1. The use is accessory or incidental to another permitted use, such as a retail store.
2. The use is contained within an existing defined land use, such as a warehouse/distribution center or heliport, and is subject to the same standards.
3. The use is defined separately as a new land use.

There are very few examples of cities using zoning to regulate commercial drone delivery hubs and only one example of use-specific regulations. A general drone ordinance establishing requirements for the operation of unmanned aircraft within the city is more common, but these do not control land use and this type of ordinance regulating the operation of an aircraft is specifically prohibited by the State of Texas in [Government Code 423.009](#).

5. Definitions: Rotary Wing Aircraft vs. Helicopter

Staff also researched how peer cities in Texas define heliports and helistops in their zoning ordinances to determine whether the proposed changes were appropriate. Staff also looked at a small number of communities outside Texas that have introduced a new vertiport land use to their zoning ordinances. These findings are provided in Exhibit D. In summary:

- Many cities use the term “rotary wing aircraft” in the definition of a heliport, which is consistent with the proposed amended definition;
- Dallas uses the term “rotary wing aircraft” in their definition of a heliport, which is the land use applicable to the vertiport at the Kay Bailey Hutchison Convention Center Dallas; and
- The two cities with vertiport definitions use the phrases “tiltrotor aircraft” and “rotary wing aircraft,” which is consistent with the proposed amended definition.

6. Open Storage and Screening

The purpose of these amendments is to provide a solution that will allow operators in Plano as a permanent land use, consistent with community standards, for the foreseeable future. As trends change, the ordinance will need to be updated.

Screening is required for open storage throughout the city as described in [Article 19 of the Zoning Ordinance](#). These requirements are largely the same today as they were in 1971 when they were introduced. Specifically:

- Open storage must be screened from view of streets in the LI-1 and LI-2 districts;
- Open storage must be screened from view of streets and neighboring properties in all other districts; and
- Screening may be provided in the form of another building, a masonry wall between six and eight feet high, or landscaping in the form of an irrigated living screen between six to eight feet high. P&Z may waive the screening requirement if no public purpose would be served or if there are natural features, such as topography or vegetation, that provide sufficient screening.

Open storage is defined in the Zoning Ordinance as “*The keeping outside of goods, materials, containers, vehicles, trailers, or other equipment on a lot or tract.*” This includes shipping containers, such as the ones that some commercial drone delivery operators use to store their aircraft when not in use. It also includes trailer-mounted generators, which are common for operators who do not have shore power, or power directly available from the primary building.

Currently, any person or business that wishes to utilize a shipping container for storage is subject to the requirements for open storage, no matter the land use. The city receives requests from other businesses on a somewhat regular basis, looking to store goods, such as shipping containers or modified shipping containers, on their property, and the Zoning Ordinance provides

a consistent answer to these requests. Containers are included in the definition of open storage and are therefore subject to the location and screening requirements for open storage.

The proposed amendments would allow a commercial drone delivery operator to locate open storage, including shipping containers, within the designated drone staging area. The open storage must be screened, with the exception of the landing pads, unless waived by the Planning & Zoning Commission as part of the site plan approval process.

The location of a designated drone staging area is not as restrictive as the location of open storage. For example, open storage is not permitted in front of a building in the Retail (R) district, but a drone staging area would be allowed in front of a building. Allowing the drone staging area to be located in front of a building provides greater separation from neighborhoods located behind the shopping center and appears to be a preferred location for drone delivery operators based on discussions with operators and site visits. The below image shows, in red, the approximate location of a commercial drone delivery hub in Frisco. Open storage could be located in this drone staging area, provided that it is directly associated with an active commercial drone delivery hub land use and is screened appropriately.



It is important to emphasize that the proposed amendments exempt landing pads from the screening requirement, and screening would only be required for other open storage, such as shipping containers. An 8-foot tall masonry fence should pose no more of a navigational hazard than the 8-foot tall container it screens.

Additionally, at the direction of the Planning & Zoning Commission, the amendments include an allowance for the Commission to waive the screening requirements at the time of site plan approval.

These screening standards for open storage apply citywide, no matter the use, as having varying screening standards for structures that are the same except for their use is likely to cause confusion and enforcement issues over time. For example, a superstore with an accessory commercial drone delivery hub could have two sets of shipping containers: one used for overflow storage associated with the superstore and one used for drone storage located in the drone staging area. Under the proposed regulations, both of these shipping containers must be screened.

UNMANNED AIRCRAFT (DRONES) REFERENCE SHEET (1/3)

Summary of commercial delivery drones currently in use in Texas



Source: Amazon.com Inc.



Source: Amazon.com Inc.



Source: Flytrex Inc. via Business Insider



Source: Flytrex Inc.

AMAZON PRIME AIR MK27-2 UA

Amazon Prime Air serves two markets in College Station, TX, and San Joaquin County, CA. The operator received Part 135 air carrier certification to operate within a 43.7 square mile service area.

The MK27-2 is a hybrid rotary wing and fixed wing "tail sitter" aircraft, which takes off and lands vertically and switches to a horizontal orientation in flight. Deliveries are dropped from a compartment in the aircraft tail.

MK27-2 Key Statistics

Max. 91.5lbs take-off weight
 Max. 5lbs payload
 Approx. 4 mile service radius
 52 knots cruising speed
 180 feet AGL cruising altitude
 13 feet AGL delivery altitude

CAUSEY AVIATION UNMANNED FLYTREX FTX-M600P UA

Causey Aviation Unmanned and Flytrex provide delivery service in Granbury, TX, and in North Carolina. The operator received Part 135 air carrier certification to operate within a 16.6 square mile service area in each of the North Carolina markets. An application to expand the Part 135 certificate to Granbury and Rowlett is under review by the FAA.

The FTX-M600P is a rotary wing aircraft. Deliveries are lowered by a tether.

FTX-M600P Key Statistics

Max. 33.4lbs take-off weight
 Max. 6.6lbs payload
 Approx. 2 mile service radius
 29 knots cruising speed
 230 feet AGL cruising altitude
 82 feet AGL delivery altitude

The information provided in this summary is taken from publicly-available sources including company websites, press releases, and reports by the Federal Aviation Administration. The City of Plano does not take responsibility for the accuracy, reliability, or completeness of the information.

UNMANNED AIRCRAFT (DRONES) REFERENCE SHEET (2/3)

Summary of commercial delivery drones currently in use in Texas



Source: DroneUp LLC via Ars Technica

DRONEUP WATTS INNOVATIONS PRISM UA

DroneUp has 34 hubs across the United States, including 11 in the Dallas-Fort Worth Metroplex. Operations are currently under Part 107.

The PRISM unmanned aircraft is a rotary wing aircraft available in a quadcopter (4 rotor) or coaxial (8 rotor) configuration. Deliveries are lowered by a tether.

PRISM Key Statistics

- Max. 35lbs take-off weight (Quadcopter)
- Max. 55lbs take-off weight (Coaxial X8)
- Max. 5lbs payload (Quadcopter)
- Max. 25lbs payload (Coaxial X8)
- Approx. 1 mile service radius
- Max. 51 knots cruising speed
- 300 feet AGL cruising altitude
- 80 feet AGL delivery altitude



Source: Watts Innovations Inc.

WING AVIATION HUMMINGBIRD 7000W-A UA

Wing Aviation serves two American markets in Texas and Virginia, and is also active in Australia, Finland, and Ireland. The operator received Part 135 air carrier certification to operate two hubs in Frisco and Little Elm, TX with a total 97.3 square mile service area.

The Hummingbird 7000W-A is a hybrid rotary wing and fixed wing “convertiplane” aircraft. Deliveries are lowered by a tether.

Hummingbird 7000W-A Key Statistics

- Max. 15lbs take-off weight
- Max. 2.65lbs payload
- Approx. 4 mile service radius
- 56 knots cruising speed
- 300 feet AGL cruising altitude
- 23 feet AGL delivery altitude



Source: Wing Aviation™



Source: Wing Aviation™

The information provided in this summary is taken from publicly-available sources including company websites, press releases, and reports by the Federal Aviation Administration. The City of Plano does not take responsibility for the accuracy, reliability, or completeness of the information.

UNMANNED AIRCRAFT (DRONES) REFERENCE SHEET (3/3)

Other commercial delivery drone operators of note

AMERIFLIGHT MATTERNET MODEL M2 UA

Ameriflight is a Dallas-based cargo airline that received FAA approval to add the M2 UA to their fleet in May 2023, allowing drone delivery nationwide. Early operations will be focused on healthcare and e-commerce.



Source: Matternet

M2 Key Statistics

Max. 29.1lbs take-off weight
Max. 4.4lbs payload
31 knots cruising speed
250 feet AGL cruising altitude
Delivery performed at ground level

MANNA MNA-1090 UA

Manna is a Dublin-based operator that in March 2023 announced plans to enter the Dallas market. They are partnering with developer Hillwood to bring drone delivery to the AllianceTexas development (Fort Worth).



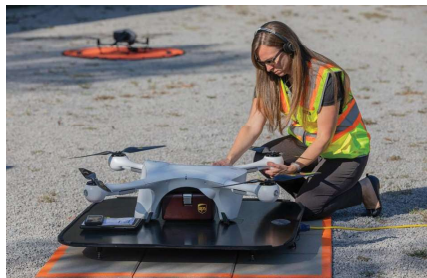
Source: Manna Drone Delivery via Business Insider

MNA-1090 Key Statistics

Max. 4.4lbs payload
Approx. 1.8 mile service radius
43 knots cruising speed
200 feet AGL cruising altitude
50 feet AGL delivery altitude

UPS FLIGHT FORWARD MATTERNET MODEL M2 UA

UPS has a Part 135 certificate for operations in Florida, North Carolina, and Ohio. Service areas are up to 40.4 square miles, but flights are between distribution centers rather than to customers' residences.



Source: UPS via Forbes

M2 Key Statistics

Max. 29.1lbs take-off weight
Max. 4.4lbs payload
31 knots cruising speed
250 feet AGL cruising altitude
Delivery performed at ground level

ZIPLINE SPARROW "ZIP" UA

Zipline has a Part 135 certificate for operations in Arkansas, North Carolina, and Utah.

The P1 Zip is a fixed wing aircraft with approved service areas up to 1,675 square miles, ideal for rural areas. Deliveries are made using a parachute system as the aircraft cannot hover.

The P2 Zip is a hybrid rotary wing and fixed wing "convertiplane" aircraft that was recently announced in March 2023. Deliveries are lowered by a tether.



Source: Zipline International Inc.

P1 Zip Key Statistics

Max. 49.3lbs take-off weight
Max. 4lbs payload
Approx. 50 mile service radius
50 knots cruising speed
250 feet AGL cruising altitude
60 feet AGL delivery altitude

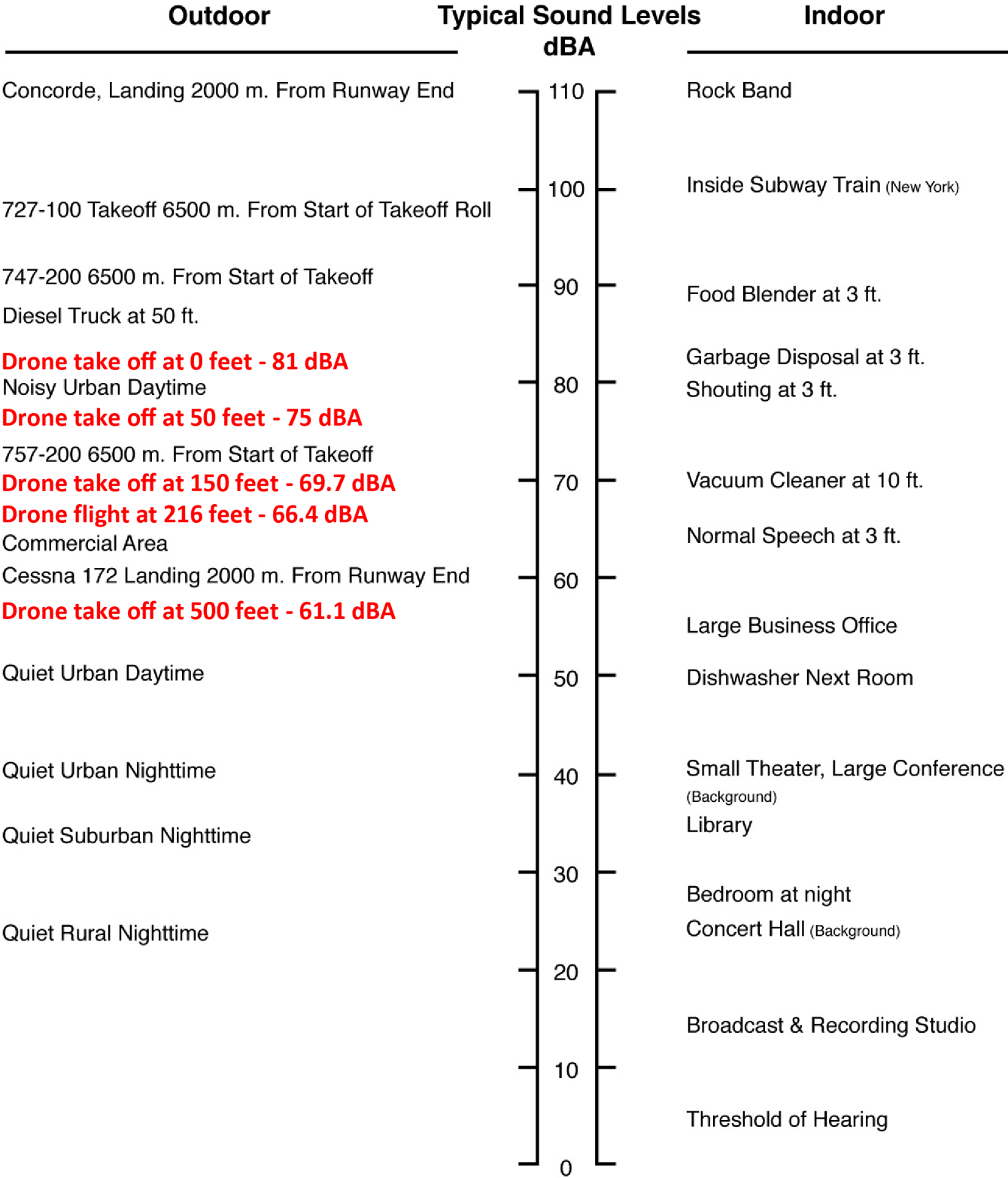


Source: Zipline International Inc.

P2 Zip Key Statistics

Max. 55lbs take-off weight
Max. 8lbs payload
Approx. 10 mile service radius
60 knots cruising speed
300 feet AGL cruising altitude
300 feet AGL delivery altitude

The information provided in this summary is taken from publicly-available sources including company websites, press releases, and reports by the Federal Aviation Administration. The City of Plano does not take responsibility for the accuracy, reliability, or completeness of the information.



Common environmental sound levels, originally from "Expressway Corridor Environmental Healthy Study" prepared by HMMH dated September 2019. Drone noise data from "Noise Assessment for Causey Proposed Package Delivery Operations with Flytrex FTX-M600P Unmanned Aircraft," prepared by HMMH dated February 28, 2022.

| UNMANNED AIRCRAFT (DRONES) ZONING REGULATIONS | | |
|---|---|--|
| Municipality | Land Use Interpretation | Standards and Regulations |
| Albion, MI | Drone (Unmanned Aerial) Center: no definition. | Permitted by right in industrial districts. |
| Allen, TX | Heliport: A landing facility for rotary wing aircraft subject to regularly scheduled use and may include fueling or servicing facilities for such craft. | Requires an SUP. |
| Bentonville, AR | Long-term Temporary Use or Structure: Land uses that are not permanent in nature and often include, but are not limited to, carnivals, circuses, tent revivals, real estate sales offices, construction facilities, special sales events, community events, private special events, and Christmas tree stands. | Requires an SUP. |
| College Park, GA | Unmanned Aircraft System Dispatch and Delivery Center: A property and/or building thereon that serves as a base for drones to initiate delivery of commercial products or services to retail or wholesale customers which may, but does not have to, contain storage capacity for said commercial products or service tools and/or the control center for dispatch and flight regulation of said drones, and which has been approved for drone usage by FAA registration and waiver. | Permitted by right in industrial districts; requires an SUP in one commercial district. |
| College Station, TX | Consumer, small-scale aerial distribution: The use of drones or similar devices weighing less than 100 pounds on takeoff, including everything on board or otherwise attached to the drone, to enable the receipt, storage, and distribution of packages by air. Distribution of consumer packages by land must be limited to 5 trips per day. | Use and definition are specific to a PD; take-off and landing area are shown on a concept plan as an exhibit to the PD; landscape buffer required. |
| The Colony, TX | Helistop: A landing pad for occasional and infrequent use by rotary wing aircraft not exceeding a gross weight of six thousand (6,000) pounds and not for regularly scheduled stops and subject to approval by the City of The Colony. | Requires an SUP. |
| Dallas, TX | Use is unlisted. | Allowed incidental to a primary use, but otherwise, no use-specific standards. |
| Frisco, TX | Use is unlisted. | One location has a temporary use on an existing helipad. Use may be added in the future. |
| Garland, TX | Use is unlisted. | Allowed incidental to a primary use; use is currently unlisted but may be added in the future. |

UNMANNED AIRCRAFT (DRONES) ZONING REGULATIONS

| Municipality | Land Use Interpretation | Standards and Regulations |
|------------------------|---|--|
| Granbury, TX | <p>Kiosk: A small, free-standing, one-story structure having a maximum floor area of 350 square feet and used for commercial purposes, such as automatic teller machines or the posting of temporary information and/or posters, notices, and announcements. If a kiosk is to be occupied, it shall have a minimum floor area of 25 square feet.</p> | No specific standards beyond the restrictions contained in the “Kiosk” definition. |
| Holly Springs, NC | <p>Temporary use: no definition provided.</p> | Requires a temporary use permit. |
| Little Elm, TX | Use is unlisted. | Allowed incidental to a primary use, but otherwise, no use-specific standards. |
| Mesquite, TX | Use is unlisted. | Allowed incidental to a primary use, but otherwise, no use-specific standards. |
| Murphy, TX | Use is unlisted. | Allowed incidental to a primary use, but otherwise, no use-specific standards. |
| Richardson, TX | <p>Has not made a determination to date, but may technically be permitted in the current definition of Helipad: A landing pad for use by rotary wing aircraft not including on-site servicing or fueling facilities for such aircraft.</p> | Helipad requires an SUP if determined to be this use. |
| Rogers, AR | Use is unlisted. | Allowed incidental to a primary use, but otherwise, no use-specific standards. |
| San Joaquin County, CA | <p>Warehouse, Storage, and Distribution: Storage and distribution facilities with incidental onsite sales to the public or public storage in small individual spaces exclusively and directly accessible to a specific tenant. Small showrooms may be included as an accessory use.</p> | No specific standards. |

| HELICOPTERS AND ADVANCED AIR MOBILITY (AIR TAXIS) ZONING REGULATIONS | | |
|--|---|--|
| City | Land Use Definition | Standards and Regulations |
| Plano, TX | Heliport: an area of land or water or a structural surface which is used, or intended for use, for the landing and taking off of helicopters , and any appurtenant areas which are used, or intended for use for heliport buildings and other heliport facilities. | Requires SUP. Sec. 15.600 1,000 feet setback from sensitive uses. |
| Allen, TX | Heliport: a landing facility for rotary wing aircraft subject to regularly scheduled use and may include fueling or servicing facilities for such craft. | Requires SUP. |
| Austin, TX | Heliport: means the area of land, water, or a structure used or intended to be used permanently for the landing and takeoff of helicopters , together with appurtenant buildings and facilities. | Requires heli-facility permit. Article 4 (Heliports and helicopter operations) of Chapter 13-1 (Aviation Services) of Title 13 (Transportation Services) of the Code of the City of Austin. |
| Arlington, TX | Heliport: An area designed to be used for the landing or takeoff of helicopters , including operating facilities, such as maintenance, loading and unloading, storage, fueling, or terminal facilities. | Requires an SUP. |
| Carrollton, TX | No defined land use. | |
| Chicago, IL | Vertiport: A landing facility for one or more tiltrotors or helicopters that may include fueling stations, helicopter or tiltrotor storage or other service-related functions, such as, but not limited to, service or maintenance hangers. Vertiports may only be located at ground level. | |
| The Colony, TX | Heliport: means an area of land, water or a structural surface containing fuel facilities that is designed, used or intended to be used for the landing and takeoff of helicopters , and any appurtenant areas including buildings or other facilities such as parking, maintenance and repair facilities. Helistop: means a minimum facility without the logistical support provided by a heliport at which helicopters land and take off, including the touchdown area and parking and related facilities other than maintenance and repair buildings. A helistop may be at ground level or elevated on a structure. | Permitted by right in PD, HC, and I. Heliport permitted by SUP in A, LC, and BP. Helistop permitted by SUP in A, O2, SC, GR, LC, and BP. |
| Dallas, TX | Heliport: A facility for the landing and taking off of rotary wing aircraft . | By right with Residential Adjacency Review in IR and IM. By SUP in other districts. |

HELICOPTERS AND ADVANCED AIR MOBILITY (AIR TAXIS) ZONING REGULATIONS

| City | Land Use Definition | Standards and Regulations |
|----------------|--|---|
| Frisco, TX | <p>Airport/Heliport: A place where aircraft and/or helicopters can land and take off, usually equipped with hangars, facilities for refueling and repair, and various accommodations for passenger.</p> <p>Helistop (Accessory Use): An accessory use where helicopters can land and take off but excluding refueling, maintenance, repairs, and storage of helicopters.</p> | <p>Airport/heliport by SUP in I district.</p> <p>Helistop by SUP.</p> <p>Hospital definition includes helistop.</p> <p>Municipal uses definition includes helistop.</p> |
| Garland, TX | <p>Airport/Heliport: An area reserved or improved for the landing or take-off of aircraft, including rotary wing aircraft, which may include hangars, fueling, repair, and servicing facilities for aircraft, as well as facilities for passengers.</p> <p>Helipad: An area of land or water, or a structural surface, which is used or intended for use for the landing and taking off of helicopters. The term does not include refueling, maintenance, repairs, or overnight storage of helicopters.</p> | <p>Airport/heliport permitted by SUP in HC and IN only.</p> <p>Helipad permitted by SUP in other districts.</p> |
| Irving, TX | <p>Aviation facilities such as airports and heliports: not defined.</p> | <p>Aviation facilities such as airports and heliports are considered environmentally sensitive land uses and generally not permitted except in a Site Plan Zoning District approved by P&Z and Council. (<i>Note: seems the same as Plano's PD process</i>)</p> |
| McKinney, TX | <p>Airport, Heliport, Landing Field, and Aircraft Hangar: A landing area, runway, or other facility designed, used, or intended to be used for air transportation, including all necessary taxiways, control towers, aircraft storage and tie-down areas, hangars, and other necessary buildings, facilities, and open spaces. Auxiliary facilities may include parking, waiting rooms, fueling, and maintenance equipment.</p> <p>Helistop: A designated, marked area on the ground or the top of a building or structure where helicopters may land, load and takeoff. This accessory use does not include the fueling or storage of aircrafts.</p> | <p>Airport etc. permitted by SUP in I1 and by right in AP.</p> <p>Helistop permitted by SUP as an accessory use.</p> <p>Hospital may include a helipad.</p> |
| Orlando, FL | <p>Vertiport: An identifiable ground or elevated area, including any buildings or facilities thereon, that has been designated to be used for the takeoff and landing of tiltrotor aircraft and rotorcraft.</p> | <p>Use-specific standards in Part 4P.</p> <p>Permitted by SUP.</p> |
| Richardson, TX | <p>Helipad: means a landing pad for use by rotary wing aircraft not including on-site servicing or fueling facilities for such aircraft.</p> | <p>Permitted by SUP.</p> |


HELICOPTERS AND ADVANCED AIR MOBILITY (AIR TAXIS) ZONING REGULATIONS


| City | Land Use Definition | Standards and Regulations |
|-----------------|---|---|
| San Antonio, TX | <p>Heliport: That area used by helicopters or other steep gradient aircraft for take-offs and landings. Such area may include passenger, cargo, maintenance and overhaul facilities, plus fueling service, storage space, tie-down area, hangars and other accessory buildings and open spaces.</p> <p>Helistop: That area used by helicopters or other steep gradient aircraft for the purpose of takeoffs and landings. Such area may be used for the pickup or discharge of passengers and cargo, storage space, and tie-down area, but shall not include maintenance, overhaul, or fueling services and facilities.</p> | <p>Permitted by SUP.</p> <p>Article III (Heliports, Helistops) of Chapter 3 (Airports) of the Code of Ordinances of San Antonio.</p> <p>500 feet setback to noise-sensitive uses, Council may reduce to no less than 250 feet.</p> |
| Sugar Land, TX | <p>Helipad (Accessory): An accessory use where helicopters can land and take off but excluding refueling, maintenance, repairs, and storage of helicopters.</p> <p>Heliport: A place where helicopters can land and take off, equipped with hangars, facilities for refueling and repair, and various accommodations for passengers.</p> <p>Helicopter: means an aircraft whose support in the air is derived from the aerodynamic forces acting on one or more rotors turning about a substantially vertical axis. (Note: this could be interpreted to include AAM aircraft)</p> | <p>Helipad and heliport permitted by CUP.</p> <p>Municipal airport land use includes helipads.</p> <p>750 feet setback to noise-sensitive uses.</p> <p>2,400 feet setback to other helipads/heliports.</p> <p>Also, Article VII (Heliports and Helistops) of Chapter 4 (Licenses, Permits, and Business Regulations) of the Code of Ordinances of Sugar Land.</p> |

DATE: October 3, 2023

TO: Honorable Mayor & City Council

FROM: Planning & Zoning Commission

VIA: Mike Bell, AICP, Development Review Manager acting as Secretary of the Planning & Zoning Commission
Christina D. Day, AICP, Director of Planning 

SUBJECT: Results of Planning & Zoning Commission Meeting of October 2, 2023 

AGENDA ITEM NO. 3 - ZONING CASE 2023-014
PETITIONER: CITY OF PLANO

Request to amend Article 8 (Definitions), Article 14 (Allowed Uses and Use Classifications), Article 15 (Use-specific Regulations), and related sections of the Zoning Ordinance to allow commercial drone delivery hubs and to include provisions for advanced air mobility aircraft. Tabled on August 21, 2023. Project #ZC2023-014.

APPROVED: 6-2

| | | | |
|-------------------------------|-------------------|------------------|-------------------|
| Speaker Card(s) Received: | Support: <u>0</u> | Oppose: <u>1</u> | Neutral: <u>1</u> |
| Petition Signatures Received: | Support: <u>0</u> | Oppose: <u>0</u> | Neutral: <u>0</u> |
| Other Responses: | Support: <u>0</u> | Oppose: <u>2</u> | Neutral: <u>2</u> |

First Vice Chair Cary and Commissioner Lisle voted in opposition to the item.

RESULTS:

The Commission recommended the item for approval as follows (additions are indicated in underlined text; deletions are indicated in strikethrough text):

- Amend Section 8.200 (Terms Defined) of Article 8 (Definitions), such amended and new definitions to read as follows:**

Commercial Drone Delivery Hub (Large)

An area of land, structural surface, building, or structure with one or more designated drone staging areas for use by unmanned aircraft, including but not limited to those defined under Commercial Drone Delivery Hub (Small), to distribute commercial goods by air. This includes any appurtenant areas used or intended for use for unmanned aircraft system buildings, structures, and other facilities.

Commercial Drone Delivery Hub (Small)

An area of land, structural surface, building, or structure with one or more designated drone staging areas for use by small unmanned aircraft systems (sUAS) under 55 pounds total take-off weight or as

3. Amend Section 14.200 (Nonresidential Districts Use Table) of Article 14 (Allowed Uses and Use Classifications), such portions of the section to read as follows:

| NONRESIDENTIAL ZONING DISTRICTS | | | | | | | | | | | | | | | | |
|---------------------------------------|--------------|---------------------------|----------------------|------------|-----------------------|--------------------------|-----------------------|-----------------------------------|---------------------------|----------------------------|--------------------------|--------------------------|---------------------------------|---------------------------|---------------------------|------------------------------------|
| Use Type | Use Category | O-1 - Neighborhood Office | O-2 - General Office | R - Retail | LC - Light Commercial | CC - Corridor Commercial | UMU - Urban Mixed-Use | BG - Downtown Business/Government | CB-1 - Central Business-1 | CE - Commercial Employment | RC - Regional Commercial | RE - Regional Employment | RT - Research/Technology Center | LI-1 - Light Industrial-1 | LI-2 - Light Industrial-2 | NBD - Neighborhood Business Design |
| Commercial Drone Delivery Hub (Large) | EIPS | | | | | | | | | ∞ ∞ | | | | ∞ ∞ | ∞ ∞ | |
| Commercial Drone Delivery Hub (Small) | EIPS | | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ |

4. Amend Section 14.300 (Use Table Notes) of Article 14 (Allowed Uses and Use Classifications), such note to read as follows:

| Number | End Note |
|--------|----------------------------|
| 3 | {Reserved} See Sec. 15.100 |

5. Amend Section 15.100 ([Reserved]) of Article 15 (Use-specific Regulations), such section to read in its entirety as follows:

Sec. 15.100 [Reserved] Commercial Drone Delivery Hubs

These regulations apply to both commercial drone delivery hub (large) and commercial drone delivery hub (small) uses, except where individually referenced.

.1 Commercial Drone Delivery Hubs (Large)

A commercial drone delivery hub (large) may be allowed, if and where granted a specific use permit, in the CE, LI-1, and LI-2 districts if the requirements of this section are met.

.2 Commercial Drone Delivery Hubs (Small)

A. A commercial drone delivery hub (small) is allowed as a primary use in the CE, LI-1, and LI-2 districts when the requirements of this section are met.

B. A commercial drone delivery hub (small) is allowed as an accessory use to a permitted food/grocery store, restaurant/cafe/teria, retail store, shopping center,

superstore, or warehouse/distribution center use in any district when the requirements of this section are met.

- C.** When a detached accessory building is occupied or intended to be occupied for an accessory commercial drone delivery hub (small), the floor area is limited to a maximum of 10% of the total floor area of the building containing the primary use.

.3 Drone Staging Areas

- A.** The drone staging area must be designated on an approved site plan.
- B.** The drone staging area must not be placed:
- i.** Within any required building setbacks;
 - ii.** Within any required landscape edge;
 - iii.** Within fire lanes, easements, maneuvering aisles, customer pick-up lanes, or required loading zones and parking spaces; or
 - iv.** So as to obstruct visibility or interfere with pedestrian or vehicle circulation.
- C.** As an accessory use, the drone staging area is limited to 10% of the total lot area or 1,000 square feet, whichever is greater. A drone staging area located inside of or on the roof of the building containing the primary use is not subject to this limitation.
- D.** When located at grade, any goods, materials, containers, trailers, or other equipment must be screened according to the requirements for open storage in Sec. 19.200. Landing pads are exempt from this screening requirement. The Planning & Zoning Commission may waive these requirements with approval of a site plan.
- E.** When a drone staging area is located on top of a building:
- i.** Any roof-mounted mechanical equipment, excluding landing pads, is subject to the mechanical screening requirements in Sec. 20.300; and
 - ii.** Any additional structure, parapet wall, screening, safety railing, or other appurtenance associated with the commercial drone delivery hub is subject to the maximum height requirement of the district, except a single mast up to 10 feet in height for a windsock may exceed the maximum height requirement.
- F.** Antennas and antenna support structures are subject to the requirements in Sec. 15.200.

G. Proximity to Noise-Sensitive Uses

- i.** The drone staging area for a commercial drone delivery hub (small) shall not be located within 150 feet of any property upon which a dwelling, retirement and supportive housing facility, or public park is located.
- ii.** The drone staging area for a commercial drone delivery hub (large) shall not be located within 300 feet of any property upon which a dwelling, retirement

and supportive housing facility, or public park is located. The 300-foot buffer requirement may be reduced to 150 feet if City Council finds that issuance of the specific use permit would not be detrimental or injurious to the public health, safety, or general welfare of the neighborhood.

iii. The measurement of the required buffer is to be made in a straight horizontal line from the edge of the drone staging area to the closest property line of a property containing a dwelling, retirement and supportive housing facility use, or public park.

.4 Parking and Loading

- A. Parking is not required for an accessory commercial drone delivery hub use.**
- B. Loading spaces shall be provided for a commercial drone delivery hub as per the requirements in Sec. 16.1400 for retail, commercial, and industrial uses. Loading spaces are not required for an accessory commercial drone delivery hub use.**
- C. The Planning & Zoning Commission may decrease the amount of required parking for a site by up to 10% to accommodate the drone staging area for a commercial drone delivery hub with approval of a site plan. The parking reduction is revoked if the commercial drone delivery hub use is removed.**

6. Amend Section 16.700 (Off-Street Parking Schedule) of Article 16 (Parking and Loading), such portion of the section to read as follows:

Parking Space Schedule for Nonresidential Uses in all Districts

| Zoning Districts or Uses | Minimum Required Off-Street Parking or Spaces for Nonresidential Uses |
|---|---|
| <u>Commercial Drone Delivery Hub (Large) or Commercial Drone Delivery Hub (Small)</u> | <u>One space per 1,000 square feet of floor area for storage or warehousing, plus one space per 300 square feet of floor area for office, customer service, or other areas. A minimum of one parking space per 300 square feet of the designated drone staging area is required for commercial drone delivery hubs with no buildings.</u> |

To view the hearing, please click on the provided link:
<https://planotx.new.swagit.com/videos/273003?ts=6003>

JR/kob

- cc: Mike Bell, Development Review Manager
Eric Hill, Assistant Director of Planning
Christina Sebastian, Land Records Planning Manager
Melissa Kleineck, Lead Planner
Justin Cozart, Sr. GIS Technician
Jeanna Scott, Building Inspections Manager
Dorothy Alatorre, Sr. Administrative Assistant - Neighborhood Services

AGENDA ITEM NO. 3

PUBLIC HEARING: Zoning Case 2023-014

PETITIONER: City of Plano

DESCRIPTION: Request to amend Article 8 (Definitions), Article 14 (Allowed Uses and Use Classifications), Article 15 (Use-specific Regulations), and related sections of the Zoning Ordinance to allow commercial drone delivery hubs and to include provisions for advanced air mobility aircraft. Tabled on August 21, 2023. Project #ZC2023-014.

SUMMARY:

The purpose of this request is to add new land use definitions and regulations for commercial drone delivery services, consistent with the procedures for considering new and unlisted land uses in Section 14.400 of the Zoning Ordinance. Amendments to the Heliport and Helistop land use definitions are also requested to allow service by advanced mobility aircraft. These amendments are in conformance with the Comprehensive Plan and position the city ahead of these emerging technologies. For these reasons, staff recommends approval, as noted in the following recommendation section.

STAFF PRELIMINARY REPORT - REMARKS

BACKGROUND:

The topics of commercial drone delivery and advanced air mobility have been discussed at three prior Planning & Zoning Commission (Commission) meetings. The discussion originated from a request by a commercial drone delivery operator to construct a drone delivery hub, which is not listed as a use in the Zoning Ordinance. Section 14.400 of the Zoning Ordinance outlines the procedures for considering and adding new uses.

October 3, 2022

At the October 3, 2022, Commission meeting ([staff report](#) | [video](#)), staff presented information to the Commission with a request to determine whether commercial drone delivery hubs should be listed as a new land use in the Zoning Ordinance. The Commission noted the following comments, and they recommended additional information be brought forward at a future date:

1. The standards should address noise and privacy in whatever capacity the city is able to regulate or control these issues.
2. The Commission desired an opportunity for oversight through a specific use permit approval process.
3. Various stakeholders, including drone companies, should be involved in formulating the standards to ensure that what is considered and adopted is workable across the industry and will not require frequent or immediate amendments. The standards should consider what operations will look like in the near future, not just what is occurring today.
4. Drone taxi service amendments were generally acceptable as proposed.

June 19, 2023

At the June 19, 2023, Commission meeting ([staff report](#) | [video](#)), staff presented additional information and options for potential standards. This meeting was attended by representatives from commercial drone delivery companies, who also made presentations to the Commission. The Commission provided the following direction on the proposed commercial drone delivery hub land use options:

1. Two new land uses for small and large commercial drone delivery hubs are appropriate and should be tied to a federally-defined aircraft classification.
2. A small commercial drone delivery hub should not require a specific use permit. It should be permitted as a primary use in a limited number of districts and an accessory use in most nonresidential districts.
3. A large commercial drone delivery hub should always require a specific use permit and should be permitted in a limited number of districts.

4. A 150-foot setback from noise-sensitive uses is appropriate as a starting point and could be reviewed in the future with more data on noise exposure.
5. Opportunities to reduce parking requirements for properties with a commercial drone delivery hub should be explored.

After discussion, the Commission directed staff to prepare amendments to the Zoning Ordinance for consideration and called a public hearing.

August 21, 2023

At the August 21, 2023, Commission meeting ([staff report](#) | [video](#)), a public hearing was held on the proposed Zoning Ordinance amendments. At this meeting, staff was provided the following direction in response to the proposed standards for commercial drone delivery hubs:

1. Review the proposed standards related to small commercial properties and address any potential barriers to these properties having a commercial drone delivery hub. Specifically, staff was directed to review the maximum size of the take-off and landing area for an accessory commercial drone delivery hub (small) use and the required buffer from noise-sensitive uses.
2. Determine whether reducing parking requirements would be appropriate for properties with a commercial drone delivery hub.
3. Remove the requirement to screen any goods, materials, containers, trailers, and other equipment the same as open storage.
4. Remove the requirement to screen a take-off and landing area located on the roof of a building as rooftop mechanical or commercial antenna equipment.

After discussion, the Commission tabled the request and directed staff to refine the proposed standards for commercial drone delivery hubs.

Federal Aviation Administration and State Regulation

As discussed in the previous staff reports and Commission meetings, regulation of drones and other aircraft is largely preempted by the Federal Aviation Administration (FAA) or restricted by the State. The FAA has set rules for the operation of unmanned aircraft and is active alongside other government and corporate bodies in developing regulations, air traffic control systems, and safety technology for unmanned aircraft and advanced mobility aircraft. The State has limited involvement but passed legislation restricting the ability of municipalities to adopt or enforce ordinances regulating the operation of an unmanned aircraft in [Texas Government Code Section 423.009](#). The proposed Zoning Ordinance amendments regulate only land use, which is within the city's regulatory power. The proposal has been reviewed by the Office of the Chief Counsel of the Federal Aviation Administration, and they did not identify any preemption issues. They specifically stated, "*State and local laws may regulate the location of UAS takeoff and landing areas, which is what the proposal does.*"

REMARKS

This report summarizes the overall proposal along with the amendments made since the last Commission meeting. These amendments are based on the Commission's direction and stakeholders' feedback. To aid the Commission, a copy of the proposed amendments with tracked changes – comparing the proposed amendments to those previously presented on August 21, 2023 – is provided in Exhibit A. The proposed amendments are provided in full as part of the staff recommendation at the end of this report.

PROPOSED CHANGES

Definitions

Two new land use definitions are proposed: Commercial Drone Delivery Hub (Small) and Commercial Drone Delivery Hub (Large). These land uses are functionally identical, except that Commercial Drone Delivery Hubs (Large) would be subject to more restrictive location standards than Commercial Drone Delivery Hubs (Small). The distinction between the two is that Commercial Drone Delivery Hubs (Small) are limited to small unmanned aircraft systems (sUAS), which are under 55 pounds total take-off weight. For simplicity, “drone hub” will be used in this report to refer to both proposed land uses collectively.

Commercial Drone Delivery Hub (Small)

An area of land, structural surface, building, or structure with one or more designated drone staging areas for use by small unmanned aircraft systems (sUAS) under 55 pounds total take-off weight or as defined in Section 44801 of Title 49, United States Code, as amended, whichever is the lesser, to distribute commercial goods by air. This includes any appurtenant areas used or intended for use for unmanned aircraft system buildings, structures, and other facilities.

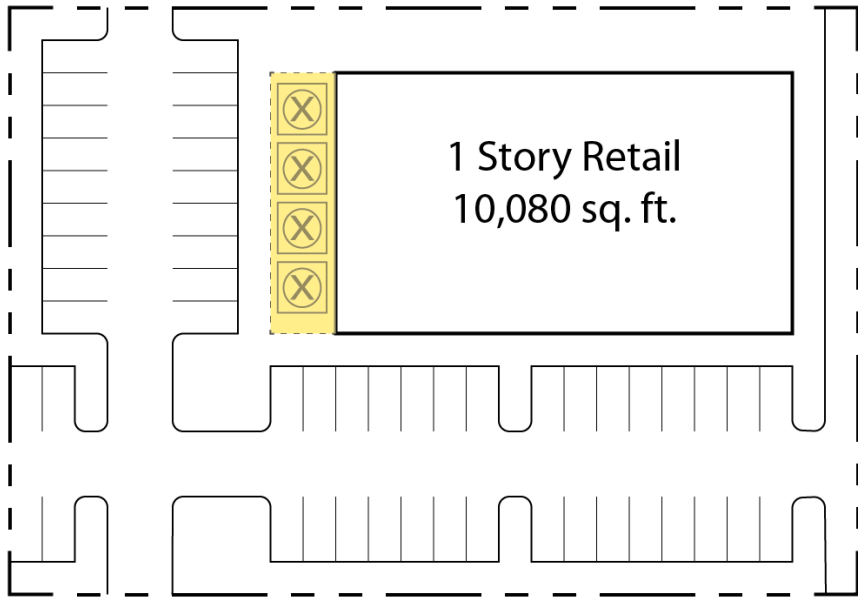
Commercial Drone Delivery Hub (Large)

An area of land, structural surface, building, or structure with one or more designated drone staging areas for use by unmanned aircraft, including but not limited to those defined under Commercial Drone Delivery Hub (Small), to distribute commercial goods by air. This includes any appurtenant areas used or intended for use for unmanned aircraft system buildings, structures, and other facilities.

Drone Staging Area

A designated area over which an unmanned aircraft completes the final phase of the approach, to a hover or a landing, and from which an unmanned aircraft initiates take-off. The drone staging area includes both the launch pads and any required safety areas, and may include areas for the outdoor storage of goods, materials, containers, trailers, or other equipment.

The proposed definition for a drone staging area is not a land use but forms part of the drone hub. The drone staging area would be subject to size and location restrictions due to the noise impacts associated with unmanned aircraft coming and going. For example, buffers to residences would be measured from the edge of the designated drone staging area. A conceptual site plan is shown in the following illustration, with the drone staging area highlighted in yellow. The “Changes Made Since August 21, 2023” section, beginning on page 6, outlines more information on these areas.



| General Site Data | Lot 1 |
|---------------------------|----------------|
| Zoning | R |
| Land Use | Retail Store |
| Lot Area | 35,100 sq. ft. |
| Building Footprint | 10,080 sq. ft. |
| Lot Coverage | 28.7% |
| Parking | |
| Parking Ratio | 1:200 |
| Required Parking | 51 |
| Provided Parking | 52 |
| Drone Staging Area | |
| Max. Permitted | 3,510 sq. ft. |
| Provided | 1,440 sq. ft. |
| Parking Reduction | None |

The existing definitions for Heliport and Helistop land uses are proposed to be amended to allow for advanced air mobility aircraft, which do not meet the typical understanding of a helicopter. This includes a variety of aircraft types in development that utilize tiltrotor or other rotary wing configurations to achieve flight.

Zoning Districts Use Tables

The drone hub uses will also be added to the use tables in Article 14 (Allowed Uses and Use Classifications). Neither of the drone hub uses is proposed to be permitted in a residential district. Each would be permitted in select nonresidential districts with some limitations. These use permissions would be detailed in Section 15.100 of Article 15 (Use-specific Regulations) of the Zoning Ordinance.

Commercial Drone Delivery Hubs (Large) are proposed only to be permitted with a specific use permit (SUP) in the Light Industrial-1 (LI-1), Light Industrial-2 (LI-2), and Commercial Employment (CE) districts. These districts permit the Warehouse/Distribution Center land use, which is expected to be complementary to operators using drones larger than 55 pounds. The SUP requirement would allow greater control over drone hubs with larger drones, which are expected to generate more noise.

Commercial Drone Delivery Hubs (Small) would not require an SUP and are proposed to be permitted by right as accessory uses to certain retail and warehousing uses in all nonresidential districts except for Neighborhood Office (O-1), as this district does not permit the identified retail or warehouse uses. The use is also proposed to be permitted by right as a primary use in LI-1, LI-2, and CE. These use permissions would be detailed in Article 15 (Use-specific Regulations).

| Use | Type | How Permitted |
|---------------------------------------|---|---|
| Commercial Drone Delivery Hub (Large) | Primary or Accessory Use | Permitted with Specific Use Permit in CE, LI-1, LI-2 |
| Commercial Drone Delivery Hub (Small) | Primary Use | Permitted by right in CE, LI-1, LI-2 |
| Commercial Drone Delivery Hub (Small) | Accessory Use to Grocery Store, Restaurant, Retail, or Warehouse uses | Permitted by right in all nonresidential districts except O-1 |

Use-Specific Standards

The bulk of the proposed amendments are new use-specific standards. The proposed standards would apply to both drone hub land uses, except for a more restrictive buffer requirement that would apply to Commercial Drone Delivery Hub (Large) only. The proposed amendments are modeled after existing standards for similar land uses.

- Drone staging area: The drone staging area must be shown on an approved site plan, is not permitted to be located on certain areas of the site, and would have limits on the total size. Screening would be required in some situations, as described below.
- Drone hubs on roofs: The proposed size limit would not apply to a drone staging area located on the roof of the primary building, which is intended to encourage the utilization of the roof. When located on a roof, some screening for roof-mounted equipment, consistent with current requirements, would be required. Any screening or structure on the roof would need to be within the allowable building height, with a single exemption for a wind sock.
- Proximity to noise-sensitive uses: A buffer would be required from the edge of the drone staging area to certain land uses, including residences, public parks, and retirement and supportive housing facilities. A 150-foot buffer is required for a Commercial Drone Delivery Hub (Small) and a 300-foot buffer is required for a Commercial Drone Delivery Hub (Large). The proposed standards include an allowance for the buffer to be reduced to 150 feet by the City Council through a review of the required SUP.

The purpose of the buffer is to mitigate nuisances to noise-sensitive land uses and is not intended to address security or privacy concerns. The city is unable to regulate where drones fly, except as permitted by [Texas Government Code Section 423.009](#).

- Parking: Finally, the parking rate for drone hubs as a primary use would be added to Article 16 of the Zoning Ordinance. The proposed parking rate is as follows: One space per 1,000 square feet of warehouse space plus one space per 300 square feet of other uses. Should a drone hub have no building, the parking rate would be one space per 300 square feet of the drone staging area. The proposed parking rates are intended to allow the use to be easily added to existing properties or replaced with other uses without significant impacts to the parking needs. To allow flexibility for small sites, parking is not required for accessory drone hubs, and the Commission may decrease the amount of required parking for a site by up to 10% with approval of a site plan.

CHANGES MADE SINCE AUGUST 21, 2023

The following changes have been made since August 21, 2023:

Drone Staging Area

The take-off and landing area has been renamed the “drone staging area,” and the definition has been revised to clarify that the area includes both the launch pads and safety areas. An area for materials storage may also be included. Operators requested this clarification due to similarities to other industry terms with more specific meanings, such as “touchdown and liftoff area.” The definitions for both commercial drone delivery hub uses have been updated accordingly.

The definition intends to capture the broad range of possible operations and infrastructure, which could be ground-mounted, on top of a building or structure, or suspended from a structure. The designated drone staging area is intended to be flexible enough to accommodate changes to operations without requiring additional city review, such as adding, removing, or relocating launch pads within the area defined on the site plan. Expanding the designated area would require updating the site plan.

Open Storage Screening Requirements

The Commission felt that screening requirements may increase noise-related nuisance due to reduced air flow and reflection of sound, pose a navigational hazard to aircraft, and create a barrier to entry for commercial drone delivery operators. Staff has discussed the topic of screening and fencing internally and with several stakeholders to determine appropriate standards to balance the safe operation of aircraft, the enforceability of regulations, and upholding the public's vision of the community.

To address this, the requirement to screen open storage-like uses at grade has been revised to include an exemption for a single special vehicle and a single shipping container. This would allow for pilot projects and small-scale operations to begin with minimal changes to a site while retaining the screening requirements for larger operations. Screening the areas used for storage is intended to prevent storage from becoming a visual nuisance, contain storage within a defined and approved area, and assist staff in the field if a complaint is received.



The proposed exemptions are both specific and modest and respond to the Commission's desire to remove barriers to entry for new operators. The above image shows a drone staging area in Frisco, which includes landing pads, one trailer-mounted generator, and one shipping container for drone storage. Screening would not be required under the proposed standards. The area has been fenced by the operator for public and crew safety.

Alternatively, the Commission may choose to waive the screening requirements for open storage-like uses and substitute one of the following options:

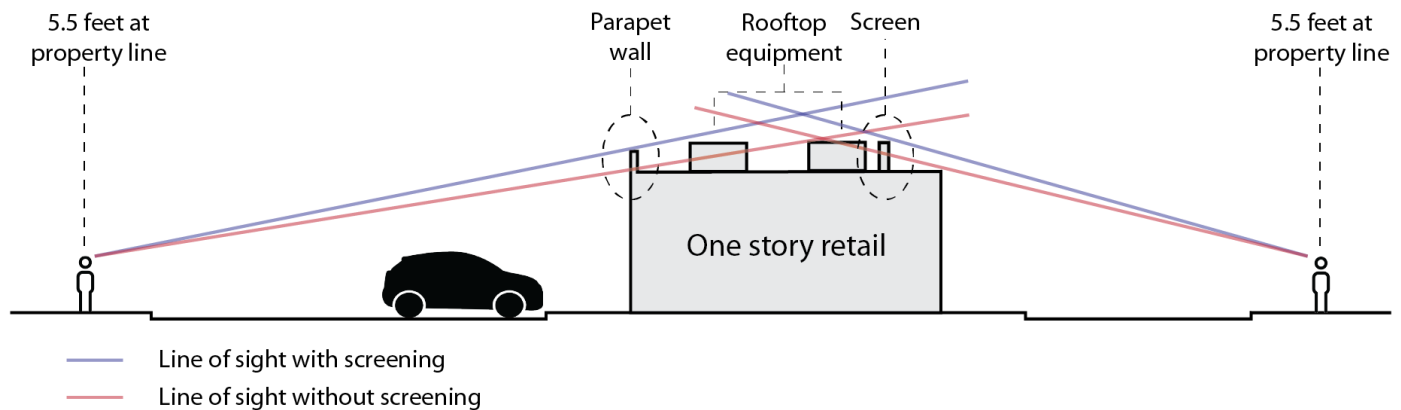
1. Open storage associated with a drone delivery hub and located in the designated drone staging area is exempt from the screening requirements, however must be enclosed with a secure, metal fence. Fencing the area is intended to contain storage within a defined and approved area and to assist staff in the field if a complaint is received.
2. Open storage associated with a drone delivery hub and located in the designated drone storage area is exempt from the screening requirements. Fencing is not required.

Complete removal of the screening requirement is not recommended without also reviewing the current screening requirements for open storage, in general, to ensure consistency and fairness across the city. Having varying screening standards for uses that appear the same is likely to cause enforcement issues over time, where a recycling trailer, for example, is required to be screened, but a trailer for drone deliveries is not required to be screened, even when at the same site. See the following photos for examples of unscreened open storage that has been pursued as a violation by the Property Standards division of Neighborhood Services as a zoning violation.



Rooftop Screening Requirements

The requirement to screen a drone staging area on the roof of a building has been updated to clarify that screening is only required for rooftop equipment, excluding landing pads. Screening is currently required when rooftop equipment is visible from a height of 5.5 feet along the property lines. Most commercial buildings are constructed with a parapet wall, making screening necessary only for equipment placed near the roof's edge or for tall equipment. See below for an illustration and examples of typical screening.



Left: Mini storage building with a parapet wall.



Right: Office building with rooftop screening.

It would be most appropriate to have consistent standards for any rooftop equipment or storage related to this new use, to preserve the community's aesthetic standards. Building code requirements would continue to apply and may require the installation of a parapet wall or safety railing, even if no visual screening is required. Safety railings are typically a minimum of 3.5 feet in height. Any building additions or structures would be subject to the height regulations of the zoning district.

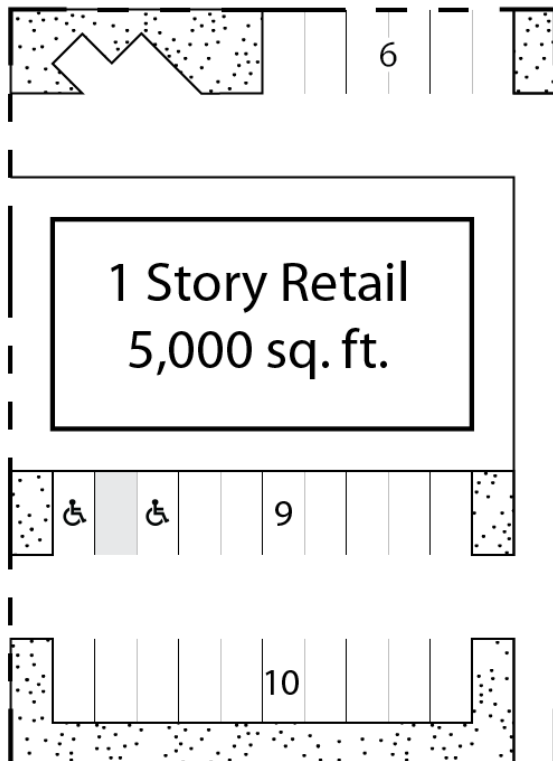
Allowances for Small Commercial Properties

Staff looked at small commercial pad sites in Plano, which typically contain restaurant or single-tenant retail uses. Pad sites are generally more than 20,000 square feet in lot area, which would have afforded a 1,000-square-foot drone operations area using the previously recommended 5% limitation. The Commission noted that restricting the drone operations area based on the size of the property may make a commercial drone delivery hub infeasible on these small sites. Additionally, site planning could be constrained by the required buffer from noise-sensitive land uses and the cumulative requirements for parking, fire lanes, landscaping, and other development requirements.

To address this:

- The maximum size of a drone operations area for an accessory commercial drone delivery hub (small) has been increased to 10% of the lot area or 1,000 square feet, whichever is greater. 10% of the lot area correlates with the typical interpretation of an accessory building or use. The 1,000-square-foot figure will provide a functional drone operations area for the smallest commercial properties, but does not absolve the owner from meeting other ordinance requirements, such as parking or landscaping.
- Several nonresidential land uses have been removed from the list of noise-sensitive uses. Religious facilities, schools, and day care centers have been removed as the noise sensitivity is largely limited to indoor activities, which are less impacted by outside noise. The revised list includes only dwellings, retirement and supportive housing uses, and public parks.
- An option to reduce the minimum required parking has been added. With the approval of a site plan, the Commission would have the discretion to reduce the parking requirement for the property as a whole by up to 10%. This is consistent with other parking reductions available in the Zoning Ordinance.

As noted, site planning must consider required parking, access aisles and fire lanes, landscaping, and other development requirements. These pose challenges for small properties even before considering a drone operations area for a commercial drone delivery hub. A conceptual site plan is provided in the following graphic, which shows the minimum parking, landscaping, and circulation requirements for a 5,000-square-foot retail building. In this example, a 600-square-foot drone staging area could be accommodated only by reducing the required parking by three spaces. Significant parking reductions are not recommended without a complete review of the parking requirements for all uses, which is anticipated to be part of the upcoming comprehensive review of the Zoning Ordinance.



| General Site Data | Lot 1 |
|----------------------------------|----------------|
| Zoning | R, Retail |
| Land Use | Retail Store |
| Lot Area | 23,400 sq. ft. |
| Building Footprint | 5,000 |
| Lot Coverage | 21.4% |
| Parking | |
| Parking Ratio | 1:200 |
| Required Parking | 25 |
| Provided Parking | 25 |
| Accessible Parking Required | 2 |
| Accessible Parking Provided | 2 |
| Landscape Area | |
| Landscape Edge Area | 120 sq. ft. |
| Required Interior Landscape Area | 200 sq. ft. |
| <i>Total Landscape Area</i> | 320 sq. ft. |
| Drone Staging Area | |
| Max. Permitted | 2,340 sq. ft. |
| Max. Parking Reduction (10%) | 3 spaces |
| Possible Drone Staging Area | 600 sq. ft. |

Commercial Antenna Requirements

Staff has added a statement to clarify that antennas for a commercial drone delivery hub are subject to the requirements for commercial antennas and antenna support structures found in Sec. 15.200. This was one of the questions posed in a letter received for the August 21, 2023, public hearing.

Parking and Loading Requirements

Staff has added a subsection addressing parking and loading requirements for commercial drone delivery hubs. These proposed standards clarify when parking and loading spaces are required and align with the existing requirements for retail, commercial, and industrial uses.

STAFF PRELIMINARY REPORT - CONFORMANCE TO THE COMPREHENSIVE PLAN

The proposed request has been reviewed for conformance with the Comprehensive Plan. Major factors included in the analysis are provided below.

Guiding Principles – The set of [Guiding Principles to the Comprehensive Plan](#) establishes overarching themes that apply to all policies and actions and express values for Plano Today, Plano 2050, and Plano Together. Since the principles do not stand alone but are used in concert with one another and carry across the Plan as a whole, each principle must be judged through a lens that incorporates all other principles to be fully and accurately understood. As such, the Commission is encouraged to review the full list of Guiding Principles and judge zoning requests through the lens of all principles.

[Land Use Policy](#) – *Plano will support a system of organized land use to provide housing and employment choices aligned with the market, where new and redevelopment areas respect the viability and quality of life for existing neighborhoods, businesses, and institutions.*

The proposed amendments introduce new land uses and update existing land uses in response to changing market demands. The amendments include standards to protect residential neighborhoods from negative impacts associated with aircraft noise. This request is in conformance with this policy.

[Land Use Action 1 \(LU1\)](#) – *Review and evaluate the Zoning Ordinance and make appropriate amendments based on guidance from the Comprehensive Plan.*

The proposed amendments introduce new land uses and update existing land uses in response to changing market demands. The amendments include standards to protect residential neighborhoods from negative impacts associated with aircraft noise. This request is in conformance with this action statement.

[Land Use Action 4 \(LU4\)](#) – *Create regulations that incentivize the redevelopment and revitalization of underperforming retail and multifamily development.*

The proposed amendments would allow a new method to deliver products to customers. While the amendments would not directly result in material changes or improvements to retail centers, the additional revenue stream could support existing businesses and make others more viable. This request is in conformance with this action statement.

[Regional Transportation Policy](#) – *Plano will evaluate regional transportation initiatives with consideration of the impacts on existing residential and business development and emphasis on expanding transportation options, traffic demand management, and other traffic efficiency strategies to improve regional mobility.*

The proposed amendments would allow commercial goods to be delivered to customers by aerial drone, eliminating some vehicle trips from city roadways. Amendments to the heliport and helistop uses are intended to allow aerial taxis and advanced air mobility aircraft as this form of transportation is developed and implemented. This request is in conformance with this policy. In addition, this request is in conformance with the North Central Texas Council of Governments' [Metropolitan Transportation Plan](#) aviation policies.

STAFF PRELIMINARY REPORT - RECOMMENDATION

SUMMARY:

The purpose of this request is to add new land use definitions and regulations for commercial drone delivery services, consistent with the procedures for considering new and unlisted land uses in Section 14.400 of the Zoning Ordinance. Amendments to the Heliport and Helistop land use definitions are also requested to allow service by advanced mobility aircraft. These amendments are in conformance with the Comprehensive Plan and position the city ahead of these emerging technologies. For these reasons, staff recommends approval, as noted in the following recommendation section.

RECOMMENDATION:

Recommended for approval as follows (additions are indicated in underlined text; deletions are indicated in ~~strikethrough~~ text).

1. **Amend Section 8.200 (Terms Defined) of Article 8 (Definitions), such amended and new definitions to read as follows:**

Commercial Drone Delivery Hub (Large)

An area of land, structural surface, building, or structure with one or more designated drone staging areas for use by unmanned aircraft, including but not limited to those defined under Commercial Drone Delivery Hub (Small), to distribute commercial goods by air. This includes any appurtenant areas used or intended for use for unmanned aircraft system buildings, structures, and other facilities.

Commercial Drone Delivery Hub (Small)

An area of land, structural surface, building, or structure with one or more designated drone staging areas for use by small unmanned aircraft systems (sUAS) under 55 pounds total take-off weight or as defined in Section 44801 of Title 49, United States Code, as amended, whichever is the lesser, to distribute commercial goods by air. This includes any appurtenant areas used or intended for use for unmanned aircraft system buildings, structures, and other facilities.

Drone Staging Area

A designated area over which an unmanned aircraft completes the final phase of the approach, to a hover or a landing, and from which an unmanned aircraft initiates take-off. The drone staging area includes both the launch pads and any required safety areas, and may include areas for the outdoor storage of goods, materials, containers, trailers, or other equipment. (See Sec. 15.100.3)

Heliport

An area of land or water or a structural surface which is used, or intended for use, for the landing and taking off of ~~helicopters~~ rotary wing and tiltrotor passenger aircraft, and any appurtenant areas which are used, or intended for use, for heliport buildings and other heliport facilities. (See Sec. 15.600)

Helistop

The same as a heliport, except that no refueling, maintenance, repairs, or storage of ~~helicopters~~ aircraft is permitted. (See Sec. 15.600)

4. Amend Section 14.300 (Use Table Notes) of Article 14 (Allowed Uses and Use Classifications), such note to read as follows:

| Number | End Note |
|--------|---------------------------------------|
| 3 | {Reserved} See Sec. 15.100 |

5. Amend Section 15.100 (~~{Reserved}~~) of Article 15 (Use-specific Regulations), such section to read in its entirety as follows:

Sec. 15.100 ~~{Reserved}~~ Commercial Drone Delivery Hubs

These regulations apply to both commercial drone delivery hub (large) and commercial drone delivery hub (small) uses, except where individually referenced.

.1 Commercial Drone Delivery Hubs (Large)

A commercial drone delivery hub (large) may be allowed, if and where granted a specific use permit, in the CE, LI-1, and LI-2 districts if the requirements of this section are met.

.2 Commercial Drone Delivery Hubs (Small)

A. A commercial drone delivery hub (small) is allowed as a primary use in the CE, LI-1, and LI-2 districts when the requirements of this section are met.

B. A commercial drone delivery hub (small) is allowed as an accessory use to a permitted food/grocery store, restaurant/cafe/teria, retail store, shopping center, superstore, or warehouse/distribution center use in any district when the requirements of this section are met.

C. When a detached accessory building is occupied or intended to be occupied for an accessory commercial drone delivery hub (small), the floor area is limited to a maximum of 10% of the total floor area of the building containing the primary use.

.3 Drone Staging Areas

A. The drone staging area must be designated on an approved site plan.

B. The drone staging area must not be placed:

i. Within any required building setbacks;

ii. Within any required landscape edge;

iii. Within fire lanes, easements, maneuvering aisles, customer pick-up lanes, or required loading zones and parking spaces; or

iv. So as to obstruct visibility or interfere with pedestrian or vehicle circulation.

C. As an accessory use, the drone staging area is limited to 10% of the total lot area or 1,000 square feet, whichever is greater. A drone staging area located inside of or on the roof of the building containing the primary use is not subject to this limitation.

D. When located at grade, any goods, materials, containers, trailers, or other equipment associated with the commercial drone delivery hub and located in the designated

drone staging area must be screened according to the requirements for open storage in Sec. 19.200 and Sec. 20.100, except:

- i. Screening is not required for up to one special vehicle up to 22 feet in length and one shipping container; and
- ii. Screening is not required for landing pads.

E. When a drone staging area is located on top of a building:

- i. Any roof-mounted mechanical equipment, excluding landing pads, is subject to the mechanical screening requirements in Sec. 20.300; and
- ii. Any additional structure, parapet wall, screening, safety railing, or other appurtenance associated with the commercial drone delivery hub is subject to the maximum height requirement of the district, except a single mast up to 10 feet in height for a windsock may exceed the maximum height requirement.

F. Antennas and antenna support structures are subject to the requirements in Sec. 15.200.

G. Proximity to Noise-Sensitive Uses

- i. The drone staging area for a commercial drone delivery hub (small) shall not be located within 150 feet of any property upon which a dwelling, retirement and supportive housing facility, or public park is located.
- ii. The drone staging area for a commercial drone delivery hub (large) shall not be located within 300 feet of any property upon which a dwelling, retirement and supportive housing facility, or public park is located. The 300-foot buffer requirement may be reduced to 150 feet if City Council finds that issuance of the specific use permit would not be detrimental or injurious to the public health, safety, or general welfare of the neighborhood.
- iii. The measurement of the required buffer is to be made in a straight horizontal line from the edge of the drone staging area to the closest property line of a property containing a dwelling, retirement and supportive housing facility use, or public park.

.4 Parking and Loading

A. Parking is not required for an accessory commercial drone delivery hub use.

B. Loading spaces shall be provided for a commercial drone delivery hub as per the requirements in Sec. 16.1400 for retail, commercial, and industrial uses. Loading spaces are not required for an accessory commercial drone delivery hub use.

C. The Planning & Zoning Commission may decrease the amount of required parking for a site by up to 10% to accommodate the drone staging area for a commercial drone delivery hub with approval of a site plan. The parking reduction is revoked if the commercial drone delivery hub use is removed.

6. Amend Section 16.700 (Off-Street Parking Schedule) of Article 16 (Parking and Loading), such portion of the section to read as follows:

Parking Space Schedule for Nonresidential Uses in all Districts

| Zoning Districts or Uses | Minimum Required Off-Street Parking or Spaces for Nonresidential Uses |
|---|---|
| <u>Commercial Drone Delivery Hub (Large) or Commercial Drone Delivery Hub (Small)</u> | <u>One space per 1,000 square feet of floor area for storage or warehousing, plus one space per 300 square feet of floor area for office, customer service, or other areas. A minimum of one parking space per 300 square feet of the designated drone staging area is required for commercial drone delivery hubs with no buildings.</u> |

Zoning Case 2023-014 Draft Standards

Additions are indicated in underlined text; deletions are indicated in ~~strike~~through text.

Additions and deletions to the standards presented on August 21, 2023 are indicated in red text.

1. Amend Section 8.200 (Terms Defined) of Article 8 (Definitions), such amended and new definitions to read as follows:

Commercial Drone Delivery Hub (Large)

An area of land, structural surface, building, or structure with one or more designated ~~take-off and landing~~drone staging areas for use by unmanned aircraft, including but not limited to those defined under Commercial Drone Delivery Hub (Small), to distribute commercial goods by air. This includes any appurtenant areas used or intended for use for unmanned aircraft system buildings, structures, and other facilities.

Commercial Drone Delivery Hub (Small)

An area of land, structural surface, building, or structure with one or more designated ~~take-off and landing~~drone staging areas for use by small unmanned aircraft systems (sUAS) under 55 pounds total take-off weight or as defined in Section 44801 of Title 49, United States Code, as amended, whichever is the lesser, to distribute commercial goods by air. This includes any appurtenant areas used or intended for use for unmanned aircraft system buildings, structures, and other facilities.

Drone Staging Area

A designated area over which an unmanned aircraft completes the final phase of the approach, to a hover or a landing, and from which an unmanned aircraft initiates take-off. The drone staging area includes both the launch pads and any required safety areas, and may include areas for the outdoor storage of goods, materials, containers, trailers, or other equipment. (See Sec. 15.100.3)

Heliport

An area of land or water or a structural surface which is used, or intended for use, for the landing and taking off of ~~helicopters~~ rotary wing and tiltrotor passenger aircraft, and any appurtenant areas which are used, or intended for use, for heliport buildings and other heliport facilities. (See Sec. 15.600)

Helistop

The same as a heliport, except that no refueling, maintenance, repairs, or storage of ~~helicopters~~ aircraft is permitted. (See Sec. 15.600)

Take-off and Landing Area

A designated load bearing area over which an unmanned aircraft completes the final phase of the approach, to a hover or a landing, and from which an unmanned aircraft initiates take-off.

[Remainder of page intentionally blank]

4. Amend Section 14.300 (Use Table Notes) of Article 14 (Allowed Uses and Use Classifications), such note to read as follows:

| Number | End Note |
|--------|----------------------------|
| 3 | [Reserved] See Sec. 15.100 |

5. Amend Section 15.100 ([Reserved]) of Article 15 (Use-specific Regulations), such section to read as follows:

Sec. 15.100 ~~[Reserved]~~ Commercial Drone Delivery Hubs

These regulations apply to both commercial drone delivery hub (large) and commercial drone delivery hub (small) uses, except where individually referenced.

.1 Commercial Drone Delivery Hubs (Large)

A commercial drone delivery hub (large) may be allowed, if and where granted a specific use permit, in the CE, LI-1, and LI-2 districts if the requirements of this section are met.

.2 Commercial Drone Delivery Hubs (Small)

A. A commercial drone delivery hub (small) is allowed as a primary use in the CE, LI-1, and LI-2 districts when the requirements of this section are met.

B. A commercial drone delivery hub (small) is allowed as an accessory use to a permitted food/grocery store, restaurant/cafeteria, retail store, shopping center, superstore, or warehouse/distribution center use in any district when the requirements of this section are met.

C. When a detached accessory building is occupied or intended to be occupied for an accessory commercial drone delivery hub (small), the floor area is limited to a maximum of 10% of the total floor area of the building containing the primary use.

.3 ~~Take-off and Landing~~ Drone Staging Areas

~~These regulations apply to the take-off and landing areas for both commercial drone delivery hub (large) and commercial drone delivery hub (small) uses, except where individually referenced.~~

A. The ~~take-off and landing~~ drone staging area must be designated on an approved site plan.

B. The ~~drone staging take-off and landing~~ area must not be placed:

i. Within any required building setbacks;

ii. Within any required landscape edge;

iii. Within fire lanes, easements, maneuvering aisles, customer pick-up lanes, or required loading zones and parking spaces; or

iv. So as to obstruct visibility or interfere with pedestrian or vehicle circulation.

C. As an accessory use, the ~~drone staging take-off and landing~~ area is limited to ~~510%~~ of the total lot area or 1,000 square feet, whichever is greater. ~~—except that a A drone staging take-off and landing~~ area located inside of or on the roof of the building

containing the primary use is not subject to this limitation. may exceed 5% of the total lot area.

D. When located at grade, any goods, materials, containers, trailers, or other equipment associated with the commercial drone delivery hub and located in the designated drone staging area must be screened according to the requirements for open storage in Sec. 19.200 and Sec. 20.100, except:

i. Screening is not required for up to one special vehicle up to 22 feet in length and one shipping container; and

ii. ~~Landing pads are exempt from this screening requirement.~~ Screening is not required for landing pads.

E. When a drone staging area is located on top of a building, the take-off and landing area must be screened from view at a point 5.5 feet above the property line with a parapet wall, mansard roof, or alternative architectural feature.:

i. Any roof-mounted equipment, excluding landing pads, is subject to the mechanical screening requirements in Sec. 20.300; and

ii. Any additional structure, parapet wall, screening, safety railing, or other appurtenance associated with the commercial drone delivery hub is subject to the maximum height requirement of the district, except for a single mast up to 10 feet in height for a windsock, which may exceed the maximum height requirement.

F. Antennas and antenna support structures are subject to the requirements in Sec. 15.200.

G. Proximity to Noise-Sensitive Uses:

i. The take-off and landing drone staging area for a commercial drone delivery hub (small) shall not be located within 150 feet of any ~~day care center, religious facility, property upon which a dwelling, retirement and supportive housing facility, or public park is located~~ retirement and supportive housing facility, school, or public park, or within 150 feet of any property upon which a dwelling is located.

ii. The take-off and landing drone staging area for a commercial drone delivery hub (large) shall not be located within 300 feet of any ~~day care center, religious facility, property upon which a dwelling, retirement and supportive housing facility, or public park is located~~ retirement and supportive housing facility, school, or public park, or within 300 feet of any property upon which a dwelling is located. The 300-foot buffer requirement may be reduced to 150 feet if City Council finds that issuance of the specific use permit would not be detrimental or injurious to the public health, safety, or general welfare of the neighborhood.

iii. The measurement of the required buffer is to be made in a straight horizontal line from the edge of the take-off and landing drone staging area to the closest property line of a property containing a dwelling, retirement and supportive housing facility use, or public park, or to the building face of a day care center, religious facility, public and parochial school, or private school use.

.4 Parking and Loading

A. Parking is not required for an accessory commercial drone delivery hub use.

- B. Loading spaces shall be provided for a commercial drone delivery hub as per the requirements in Sec. 16.1400 for retail, commercial, and industrial uses. Loading spaces are not required for an accessory commercial drone delivery hub use.
- C. The Planning & Zoning Commission may decrease the amount of required parking for a site by up to 10% to accommodate the drone staging area for a commercial drone delivery hub with approval of a site plan. The parking reduction is revoked if the commercial drone delivery hub use is removed.

6. Amend Section 16.700 (Off-Street Parking Schedule) of Article 16 (Parking and Loading), such portion of section to read as follows:

Parking Space Schedule for Nonresidential Uses in all Districts

| Zoning Districts or Uses | Minimum Required Off-Street Parking or Spaces for Nonresidential Uses |
|---|--|
| <u>Commercial Drone Delivery Hub (Large) or Commercial Drone Delivery Hub (Small)</u> | <u>One space per 1,000 square feet of floor area for storage or warehousing, plus one space per 300 square feet of floor area for office, customer service, or other areas. A minimum of one parking space per 300 square feet of the designated take-off and landingdrone staging area is required for commercial drone delivery hubs with no buildings.</u> |