



URBAN AERIAL MOBILITY IS TAKING OFF:

Why Government Agencies Should Be Planning Today for More Transportation by Air

The Sky's the Limit: Urban Aerial Mobility is Here

The Jetsons. Blade Runner. The Fifth Element. No matter your generation, the ultimate aspiration of the future was always summed up with the question, “When do I get my flying car?” Now, with recent action by the Federal Aviation Administration (FAA) and a profusion of innovations by startups and well-established aviation companies, we may have an answer sooner than we think.

Urban Air Mobility (UAM) refers to carrying passengers or cargo by air at lower altitudes within urban and suburban areas. The ultimate UAM vision is that highly automated aircraft, such as drones and **vertical takeoff and landing (VTOL)** vehicles, will cooperatively, safely, and efficiently move people and goods by air within a transportation system ([1](#), [2](#)). UAM is a subset of the Advanced Air Mobility (AAM) initiative being developed by the **National Aeronautics and Space Administration (NASA)**, the **Federal Aviation Administration (FAA)**, and industry partners ([2](#)).

UAM has potential to bring significant changes to the transportation sector through aerial vehicles moving cargo and passengers. One day soon, companies may be able to choose between moving people and cargo on roads or in the sky. Government policies will play a significant role in this, as policies have the potential to speed up or slow down the adoption of UAM.


In this white paper, we'll talk about:

- / Significant progress being made in the UAM sector through both governmental regulations and private partnerships.
- / Takeaways from two important documents published by the FAA in 2020 related to UAMs.
- / Why and how local government agencies should start planning for UAMs.

Congestion: A Catalyst for UAM

Urban areas are becoming increasingly congested. To help reduce demand congestion, governments have started writing and enacting policies such as:

- / **Parking Fines:** Delivery companies pay millions in fines every year from parking tickets ([3](#), [4](#), [5](#)).
- / **Congestion Charging:** Congestion charging requires motorists to pay to drive in congested areas during specific peak periods ([6](#), [7](#)).
- / **Curb Space Charges:** Cities are actively managing their curb space. Policies that have been discussed include charging ride hailing companies to pick up and drop off passengers, dynamically charging for parking, and allowing delivery companies to reserve spots ([8](#), [9](#), [10](#), [11](#)).

A background image showing an Amazon Prime Air delivery drone in flight over a city. The drone is a white, boxy aircraft with a large black propeller and a white Amazon Prime logo on its side. It is carrying a brown cardboard box. The city below is dense with tall buildings, and the sky is clear.

Urban congestion, and the money lost through fines and potential congestion pricing, is driving delivery and ride-hailing companies to push the UAM conversation. Companies may look towards UAM and aerial vehicles to avoid urban congestion and decrease operating costs by avoiding fines for ground transportation vehicles.

RECENT ADVANCEMENTS IN URBAN AIR MOBILITY

Between policy documents from the Federal Aviation Administration (FAA) and private partnerships, acquisitions, and certifications, 2020 was a pivotal year for urban transportation by air.

Government Regulations

In 2020, the FAA published two important documents related to UAM.

The FAA NextGen Office released **Concept of Operations for Urban Air Mobility** (ConOps 1.0) [\(2\)](#) to describe the operational environment they envision to support the expected growth of flight operations in and around urban areas. This document outlines how UAMs can operate in different environments.

Here are a few important takeaways [\(2\)](#):

- / The UAM system will be retrofitted into the existing air transportation system:
 - Unmanned Aerial Vehicles (UAVs) should first use existing infrastructure such as helicopter pads.
 - The airspace classes (whose shapes vary by location) will remain the same [\(12\)](#).
 - The regulator of the airspace will remain the same.
- / The proposed regulations for UAM and how these systems are regulated can change over time:
 - FAA retains regulatory authority for UAM and is responsible for establishing operational parameters and maintaining oversight.
 - Cooperative traffic management is conducted in compliance with a set of community-developed (local) and FAA-approved Community Based Rules (CBRs).
 - As more users adopt UAMs, operations will need to evolve through changes to the governing regulations augmented by CBRs, UAM structure, and automation. UAM operators, the FAA, and other stakeholders will share information, and the FAA will have on-demand access to identified operational information.



/ In the future, as the urban air space becomes more crowded:

- All players will need to work together to ensure smooth services are provided.
- UAMs will become highly automated ([1,2](#)).
- New infrastructure can be constructed to better support the UAM system.
- Battery technology or charging infrastructure will have to evolve to improve flight and delivery efficiency ([2, 13, 14, 15](#)).

The US Department of Transportation (USDOT), FAA, and the Office of the Secretary of Transportation (OST) also released **an amendment to Title 14 of the Code of Federal Regulations (CFR) Parts 11, 21, 43, and 107: Operation of Small Unmanned Aircraft Systems Over People**. ([16](#)) This document allows for the “operation of small unmanned aircraft systems over people” at night, under certain conditions, beginning March 16, 2021.

Important takeaways include ([16](#)):

/ UAVs typically had to be lightweight (to prevent injuries if a person get hit), had to be within the line-of-sight of the operator, and could not be operated over people or vehicles. However, waivers (through the Part 135 Certification Process, or Part 135 for short) can be granted to allow heavier vehicles over people and vehicles at night, and even

deliver goods beyond visual line of sight (BVOLS) ([17](#)).

- The FAA’s Part 135 Standard certification is the highest level of certification for a drone airline, with no limits on the size or scope of operations. With this, drones can fly: ([18](#))
 - Out of the operator’s line of sight (with appropriate approvals)
 - Over people
 - With cargo weighing more than 55 pounds
 - At night

/ UAVs will still have a remote pilot in command ([19](#)).

This rule is significant because it shows that policies are adapting to new inputs from existing pilots and increasing demands for operational flexibility.

Industry Updates

In addition to key policy documents, the UAM sector has advanced in the last several years through private partnerships, acquisitions, and certifications.

UAM Groups

There are multiple UAM groups that are engaging public and private stakeholders to incorporate all interests into formal policies.



The FAA is collaborating with the National Aeronautics and Space Administration (NASA) on their Advanced Air Mobility National Campaign ([1](#), [20](#)). NASA's portal for all tools is being used by the **AAM Ecosystem Working Groups** (AEWG) ([21](#)).

Beginning in 2017, the **Unmanned Aircraft System (UAS) Integration Pilot Program (IPP)** brought state, local, and tribal governments together with private sector entities, such as UAS operators or manufacturers, to test and evaluate the integration of civil and public drone operations into our national airspace system. This group disbanded in October 2020 and the FAA is tackling the remaining challenges of UAS integration through a new program called BVLOS-Expanding Your Operations Needing Drones (BEYOND) ([22](#)).


The BEYOND program started on October 26, 2020 to continue the partnerships with the majority of the IPP participants ([12](#), [23](#)). BEYOND is focusing on:

- / BVLOS operations that are repeatable, scalable and economically viable with specific emphasis on infrastructure inspection, public operations and small package delivery.
- / Leveraging industry operations to better analyze and quantify the social and economic benefits of UAS operations.
- / Community engagement efforts to collect, analyze, and address community concerns.

Key Players in the Industry

Private companies have also been partnering and taking steps to deploy aerial vehicles and integrate them into the transportation network. Here are a few examples:

- / In March 2016, Flirtey completed the first fully autonomous FAA-approved urban drone delivery in the US ([24](#)). In 2020, Flirtey partnered with Vault Health for drone delivery of COVID-19 test kits ([25](#)).
- / In April 2019, former US Department of Transportation Secretary Elaine Chao announced that Alphabet Inc.'s Wing Aviation, a drone startup that originated at Google X, was awarded the first air carrier certification ever given to a drone company ([26](#)).
- / In June 2019, Kitty Hawk formed a partnership with Boeing to collaborate on future efforts to advance safe urban air mobility ([27](#)).
- / In October 2019, UPS Drone Delivery was the first to receive full Part 135 certification from the Federal Aviation Administration ([28](#)).
- / In January 2020, Hyundai teamed up with Uber to develop electric air taxis (which they call Personal Air Vehicles, or PAVs), joining the global race to make small self-flying cars to ease urban congestion ([29](#), [30](#)). Hyundai says that it expects to "commercialize" its S-A1 air taxis around 2028. In 2026, however, Hyundai said it wants to take cargo into the skies locally ([31](#)).

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- / In August 2020, Amazon won FAA approval for its Prime Air drone delivery fleet ([32](#), [33](#)).
 - / In December 2020, Uber Elevate ([34](#)) announced it will be acquired by Joby Aviation ([35](#), [36](#)). The two parent companies have agreed to integrate their respective services into each other's apps, enabling seamless integration between ground and air travel for future customers. Uber Elevate has boldly staked its reputation on operating commercial urban air taxis by 2023, promising Uber Air service in Dallas, Los Angeles, and Melbourne, Australia.
 - / In February 2021, United Airlines announced an investment in vertical take-off and landing (VTOL) startup Archer and has placed a \$1 billion order for 200 VTOL aircraft ([37](#), [38](#)).

Policy Considerations

The transportation space is rapidly evolving, and cities should be planning now so they are not caught unprepared for UAM. After all, ride hailing companies (like Uber and Lyft), and e-scooter companies (like Bird and Spin) have shown that private companies can disrupt the transportation space.

At the same time, these companies have shown that they are willing to work with governments to pass meaningful and impactful legislation ([39](#)). And as recent CFR amendments have shown, governmental policies and regulations can change as experience and demands increase ([16](#), [39](#)).

Policies have the potential to speed up or slow down the adoption of UAM. As UAM continues to take up a larger share of the transportation conversation, government agencies should be thinking about:

- / How UAM fits into the future transportation network
- / How local regulations will impact UAM even if they're not intended to affect UAM
- / What the UAM Groups, such as BEYOND, are talking about and how they affect local airspace

- / Whether or not there are channels of communication already set up between the local and federal regulators
- / Where the existing infrastructure is, and where new infrastructure will go
- / What companies are already in/will come to the local area
- / Their vision for UAM: people, cargo, or both? Is it "toys for the rich" or the future of personal, mass transit and delivery? ([40](#))

Conclusion

UAMs have been developing rapidly over the last few years, and the development only accelerated in 2020 as the federal government allowed and approved UAM and unmanned aircrafts and private companies formed partnerships and took steps to integrate aerial vehicles into the transportation network.

Urban aerial mobility is here, and cities can, and should, be actively planning. We'd be glad to continue this conversation. To talk further about the advancements in urban aerial mobility detailed in this white paper, please contact Engineer Sean Laffey at slaffey@kittelson.com.

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