PAS

QUICKNOTES

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Urban Air Mobility

Urban air mobility (UAM) is an emerging system of transportation comprising aerial vehicles, either crewed or automated, with the capability to maneuver in and across cityscapes. The innovative value of UAM is its ability to make use of the largely untapped low-altitude air space above urban landscapes. UAM technologies have applications in both passenger and freight transportation. This *PAS QuickNotes* will explore the opportunities and challenges of using UAM for passenger transportation.

Policy and planning efforts need to keep up with technological advances to avoid unforeseen disruptions. While it is nearly impossible to prevent future disruptions altogether, communities can still prepare in advance. Local officials and planners will need to understand the disruptive potential of UAM, anticipate the implications of deployment, and enact policies in a timely manner. Planners should also prepare to leverage the transformative potential of UAM to address mobility needs and resolve the past failures of transportation systems.

Preparing communities for urban air mobility technologies will require foresight and expertise. Image by NASA/Lillian Gipson.

BACKGROUND

Mobility-as-a-Service (MaaS), transportation network companies (TNCs), and autonomous vehicles (AVs) are some of the innovations that have ushered in the era of "new mobility." Pilot projects deploying ground-based AVs, as well as uncrewed ground and aerial vehicles for deliveries, have accelerated in recent years. Transportation and technology industry professionals have touted the increased safety, efficiency, and sustainability of these technologies. Due to the ongoing demand for reduced congestion, it is clear why communities might want to incorporate new technologies for passenger transportation.

The World Economic Forum has already begun to set the scene for UAM, outlining seven principles to guide future policy frameworks: safety, sustainability, equity of access, low noise, multimodal connectivity, local workforce development, and purpose-driven data sharing. It will be the job of local governments, policy makers, and planners to uphold or build upon these principles going forward.

EMBRACE A PEOPLE-CENTRIC, TECHNOLOGY-FORWARD MINDSET

When private companies control the deployment of new technologies, disparities in access are inevitable. As a worst-case scenario, if unregulated and unplanned for, UAM could simply become a luxury flying taxi service. Local officials and planners should have a basic understanding of emerging technologies to minimize failed deployments and maximize public benefits. For example, encouraging a shared mobility model over private ownership gives UAM a better chance of serving the general public.

Staying up-to-date on emerging technologies with applications in urban areas can inform quality long-range planning and smart investments. But local governments should not expect that every technology will be suitable for their communities. The goal should be to test the viability of technologies in order to improve quality of life for residents. When gauging public interest in testing emerging technologies, planners should strive to provide transparency throughout the process, exhibit genuine curiosity, and make room for frustration and wariness.

Generally, paying close attention to historically undervalued perspectives should remain at the forefront of planning work. Design thinking is a fruitful tool for technology-forward community engagement, especially when combined with inclusive planning approaches. Feedback loops can allow for local governments and private companies to adjust and improve the delivery of mobility services based on user experience and community feedback, thus making community members feel more involved in the process of experimenting with new technologies.

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PREPARE FOR LOCAL USES AND IMPACTS

UAM creates additional opportunities for passenger mobility and could increase the capacity, efficiency, and scope of an urban transportation system. Industry and academic experts predict reduced travel time, more direct routes, and less roadway congestion as specific benefits. One obvious application of UAM is for medical and emergency services. Local governments could also use UAM to support mobility-limited populations and as a tool to overcome past infrastructure decisions that contribute to the economic or racial segregation of cities.

Local zoning codes will need to be adapted for UAM. Assuming a shared mobility model, one potential change to the built environment could be a reduced demand for on-street parking over time. Reduced roadway traffic, possibly in combination with ground-based AVs, could lead to improvements in the public realm. This will require planners to rethink how they design city streets for multiple uses, such as active transportation. Shared UAM companies will also need places to store vehicles during periods of low demand, as well as designated pick-up and drop-off zones. Additionally, the introduction of UAM might affect building design due to a need for rooftop landing pads.

Aside from general safety and affordability concerns for passengers, the negative externalities of UAM include noise, pollution, and congested skies. Other indirect negative impacts might include the undermining of local and regional transit systems or an increase in sprawl. Just as planners need to ensure an equitable distribution of benefits, they will also need to ensure any negative aspects are not disproportionately felt.

APPLY EXISTING KNOWLEDGE, ADOPT NEW PROCESSES

In the past, adopting new vehicle technologies without considering the ramifications of their use led to major disruptions in urban design and disparities in urban mobility. To avoid repeating past mistakes, planners need to prepare ahead of time. This involves learning how planners can use emerging technologies to promote key planning principles—such as equity and sustainability—in local transportation systems.

Local governments should explore how existing city processes, policies, and programs will need to be adapted for UAM. Transportation planning could benefit from more agile processes, such as using scenario planning to explore how emerging vehicle technologies can fill gaps in the local transportation system. Considering new technologies when envisioning plausible alternative futures can allow for more robust, equitable, and future-proofed scenario planning. It is also critical that local officials know how to successfully design and execute pilot projects to test new technologies.

The regular suite of planning tools can address the different aspects of UAM. For example, to reduce visual clutter in the skies, planners can regulate vehicles by mapping fly and no-fly zones in regional plans. Local transportation plans can identify urban flight corridors, define performance metrics, and align UAM with emergency response. Land-use plans will need to consider changes to local land use and building design without negatively affecting housing and density goals.

CONCLUSION

Gaining a basic understanding of emerging technologies can help communities prepare for the future and mitigate unexpected disruptions. But UAM alone cannot solve current transportation issues, and the promises of shiny new vehicles should not overshadow the immediate needs of residents. Planners must balance interest in emerging technologies with solution-oriented investments in ground transportation systems while addressing immediate improvements in infrastructure.

While existing modes of transportation can solve many of today's mobility concerns, the accelerated pace of development in the transportation sector is all but impossible to limit. Leveraging the value of innovative vehicle technologies like UAM will require foresight and expertise. By remaining dedicated to community needs, local governments, planners, and policy makers can identify opportunities to prepare for the future and transform transportation systems for the public good.

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FURTHER READING

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