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## Vertiports: Policy implications

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### Introduction

In April 2017, the transportation network company (TNC) Uber held a conference called Elevate Summit where it revealed a plan for on-demand urban air transportation. Uber's plan was already in an advanced state of development, had included a number of industry and government stakeholders in its preparation, and proposed two pilot projects, one in Dubai, United Arab Emirates, and one in the Dallas, Texas area. One critical ingredient of these plans is a distributed network of vertiports. This brief examines whether there may be policy implications from the use of vertiports.

### What is a Vertiport?

According to HeliExperts International, "Heliports/Vertiports are designated helicopter and tiltrotor landing and takeoff areas. They range from simple unprepared open fields and parking lots to locations that support scheduled air services, complete with hangars, fuel and aircraft maintenance capabilities. Over 90% of current facilities are of the simple single-aircraft variety with no fuel or services" (1).

HeliExperts goes on to differentiate between heliports, vertiports, and stops: "A heliport/helistop is designed for helicopter takeoffs and landings. A heliport has support facilities such as fuel, hangaring and attendants. A helistop is an area that can be multi-use, such as a parking lot, athletic field, rest area along highways, and golf course. It has no support facilities such as fuel, hangaring or attendants. When not in use as a helistop, the area can be used for other purposes. A Vertiport/Vertistop is designed for use by tiltrotors as well as helicopters. A vertiport has support facilities such as fuel, hangaring and attendants. A vertistop is an area that can be multi-use, such as a parking lot, athletic field, rest area along the highway, and golf course. It has no support facilities such as fuel, hangaring or attendants" (1).ac

Examples of such facilities in Texas include the Dallas CBD Vertiport (<https://skyvector.com/airport/49T/Dallas-Cbd-Vertiport-Heliport>), Garland DFW Heloplex (<https://skyvector.com/airport/T57/Garland-Dfw-Heloplex-Heliport>), and Desoto Heliport (<https://skyvector.com/airport/73T/Desoto-Heliport>).

Uber defines vertiports as hubs with multiple pads for aircraft that can take off and land vertically (Vertical Take-Off and Landing, or VTOL) as well as charging facilities for electric-powered VTOLs. Uber refers to such a facility designed for a single aircraft as a vertistop (2).

The Federal Aviation Administration (FAA) defined VTOL-airport related terms in their now-canceled Advisory Circular 150/5390-3, Vertiport Design, issued May 31, 1991. That document defined vertiport as "an identifiable ground or elevated area, including any buildings or facilities thereon, used for the takeoff and landing of tiltrotor aircraft and rotorcraft," vertistop as "a

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vertiport intended solely for takeoff and landing of tiltrotor aircraft and rotorcraft to drop off or pick up passengers or cargo,” and vertical flight aircraft as “aircraft capable of vertical or near-vertical takeoffs and landings” (3). Vertical-lift aircraft include rotorcraft (helicopters, for example); tiltrotor aircraft whose engines and propellers/rotors rotate (such as the Bell Boeing V-22 Osprey); tilt-wing aircraft whose entire wing rotates (an example being the Canadair CL-84); and fan-in-wing aircraft (e.g. the XV-24A Lightning Strike) (3).

HeliExperts notes that the FAA does not limit tiltrotors to vertiports. If a tiltrotor desires to land at a heliport or helistop of sufficient size and capacity and has the owner’s permission, a tiltrotor in helicopter mode is no different than a conventional helicopter in the same size and weight (4).

## **Associated Issues**

Uber’s white paper accompanying the Elevate conference calls for an expansion of vertiport sites. Uber identifies the lack of available vertiport locations as “the greatest operational barrier to deploying a VTOL fleet in cities” (2). Further, Uber offers “...cities simply don’t have the necessary takeoff and landing sites for the vehicles to operate at fleet scale. A small number of cities already have multiple heliports and might have enough capacity to offer a limited initial VTOL service, provided these are in the right locations, readily accessible from street level, and have space available to add charging stations. But if VTOLs are going to achieve close to their full potential, infrastructure will need to be added” (2).

Issues generally associated with heliports and vertiports include noise, lighting, fuel handling, emissions, hours of operation, and safety. Between January 1965 and May 2010 there were 172 reported heliport and heliport-related accidents in the United States (5). While the effect on property values may be a concern, HeliExperts suggest “Historical studies as well as real estate appraisal guidelines indicate that property values are not affected due to the proximity of a heliport/helistop. One of the highest per capita income areas in the country, Somerset County, New Jersey, has a large number of private and corporate heliports within some of the finest and costliest estates in the county” (1). However, this observation does not address public-access vertiports in a TNC or urban mobility context, where the effect on land values may be different.

Other concerns include site selection, intermodality, and community acceptance (6).

Uber’s implementation assumes multipassenger vehicles with multiple fans powered by electricity. These vehicles do not exist in revenue service today, so information about their integration into urban transportation settings is speculative at this point. Balac, Vetrella, and Axhausen found that current demand and network design models are inadequate for understanding the effects of “urban commercial manned and unmanned aerial vehicles and their interaction with already existing transportation modes” (7).

### *Governance – Federal*

Two key FAA Advisory Circulars (AC) are of interest here. AC 150/5390-3, Vertiport Design, was issued May 31, 1991, and subsequently canceled on July 28, 2010 (8). AC 150/5390-2C,

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Heliport Design, was issued April 24, 2012 and is the existing regulation controlling vertiports. Its application is mandatory to facilities receiving federal grants but otherwise permissive. In 2001, the FAA had written “to the extent that they choose to do so, the design of private heliports is regulated, NOT by the FAA but by the 50 states” (9). However, the adoption of FAA or similar standards by entities such as the National Fire Protection Association (10) have the effect of increasing the likelihood that the FAA standards will eventually be implemented by heliports not receiving federal grants (11).

Heliports, helistops, and vertiports are presently included in the definition of airports in FAA regulations regarding required notice to the FAA when a facility owner intends to construct, alter, activate, or deactivate a facility (12).

### *Governance – State and Local*

A number of states have passed laws addressing heliports. These include Alabama, California, Connecticut, Florida, Illinois, Indiana, Kentucky, Maine, Michigan, New Hampshire, New Jersey, Oklahoma, Pennsylvania, Tennessee, and Wyoming. Texas law only addresses heliports in the context of powers of special districts (13). The word “vertiport” does not appear in current Texas law (14).

Kentucky law reserves zoning and land use regulation around public use heliports to the state aviation commission, along with regulation of navigable air space (15). Illinois law allows heliports to operate without a state license but authorizes cities over 500,000 population to regulate them (16). California Public Utilities Code §21662.5 prohibits a helicopter from landing or departing within 1,000 ft. of a public or private K-12 school unless the location is a permitted, permanent heliport (17).

State and local governance of vertiports is primarily found in land use regulation and fire codes, according to HeliExperts, who found “Many municipalities have specific references to Heliports/Helistops in their land-use regulations. Many authorities have included and permitted these landing areas as accessory uses of a primary land use. Yet others require a Conditional Use Permit to operate a heliport, which is a permitting process similar to receiving a building permit. There are some zoning codes which restrict or even prohibit such facilities” (1).

Current regulations regarding heliports exist in a number of cities, including Chicago, New York, Newark, Los Angeles and Seattle. Municipal regulations range “from very minimal to the very stringent” (11).

Non-governmental entities that promulgate codes and standards could also affect vertiports. Examples include the International Building Code and the International Fire Code, published by the International Code Council. If the facilities are to be available for emergency medical use, they may also be subject to the certification criteria of the Commission on Accreditation of Medical Transport Systems and the National Accreditation Alliance of Medical Transport Applications (11).

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## Conclusion

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Vertiports and vertistops – facilities for vertical landing and takeoff of aircraft – may become prevalent as TNCs or other operators seek to increase the availability of VTOL services. Federal regulation of these facilities is limited and state regulations vary widely. Codes and local ordinances may contain requirements affecting vertiports, particularly regarding land use and fire prevention.

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## Author

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Steven Polunsky

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