



POSITION STATEMENT

UAS Beyond-Visual-Line-of-Sight (BVLOS) Operations

Vertical Aviation International (VAI) is the trade association for the global civil vertical aviation industry, representing more than 1,000 aviation businesses and 15,000 aviation professionals in 75 nations. VAI is dedicated to fueling the growth of the vertical aviation industry through connection, education, advocacy, and safety so that communities around the world are strengthened by the power of vertical flight.

VAI is unique among aviation associations in that our members reflect all sectors of the vertical aviation industry, including operators of unmanned aircraft systems (UAS), next-generation vertical-takeoff-and-landing (VTOL) aircraft (often called AAM aircraft), and helicopters, as well as the full range of companies that support and supply the industry, including manufacturers and education and training, maintenance, and other service providers.

VAI represents member operators who are already utilizing UAS in their fleets. Once beyond-visual-line-of-sight (BVLOS) operations are fully integrated into the airspace, we expect that operators will be able to build and scale their UAS operations significantly, including an expansion of hybrid fleets with both manned and unmanned aircraft. Backed by decades of experience in operating a wide range of vertical aviation aircraft in low-altitude and confined-space areas, VAI and our members recognize our responsibility to lead the successful integration of manned and unmanned aviation.

A. Safe Integration of BVLOS Operations into the NAS

For more than 75 years, VAI has been an industry-leading voice for the promotion and integration of new technologies and processes—always with a clear focus on safety. The US National Airspace System (NAS) is the busiest and most complex in the world, and maintaining its safety is and always will be our highest obligation.

VAI fully supports the integration of UAS into the NAS, to include BVLOS operations, consistent with established performance-based standards. VAI will continue to lead efforts to engage and connect at all levels of industry and government to ensure that all our members' operations can achieve their full potential.

VAI and our members are aligned in the core principle that integration of UAS into the NAS must be done with full consideration for the safety of all airspace users. BVLOS operations by UAS present substantial future benefits as well as challenges that the aviation community will need to resolve cooperatively.

B. Low-Altitude Airspace Considerations

VAI members operate at or below 500 ft. above ground level (AGL), using a variety of aircraft, including UAS, VTOLs, and helicopters. This is the same airspace proposed for UAS BVLOS operations. Due to the complexity of the airspace, proximity to people and property on the ground, and the diverse missions each aircraft could be conducting, special attention should be paid to the unique needs of all operators in this space.

VAI fully supports a safe, intentional, and well-orchestrated integration of UAS into this airspace and recognizes the additional benefits to and positive impact on society that BVLOS operations will deliver.

In 2021, the FAA chartered the UAS BVLOS Aviation Rulemaking Committee, tasking it with creating the regulatory requirements to normalize safe, scalable, economically viable, and environmentally advantageous BVLOS operations for UAS. VAI recognizes the ARC membership tackled a wide scope of complex issues, as reflected in its 381-page final report, published in March 2022.

However, several recommendations contained in the [BVLOS ARC Final Report](#) were based on inaccurate interpretations of the flight environment, including the volume of and types of air traffic, that exists in the airspace at or below 500 ft. AGL.

Below are some important facts to consider when addressing BVLOS operations at and below 500 ft. AGL.

1. **The airspace at and below 500 ft. AGL is an active and dynamic ecosystem of aviation operations, with unique needs and considerations.** Annually, tens of thousands of aviation sorties occur in this airspace, controlled or otherwise, that support operations critical to society, including firefighting, airborne law enforcement, search and rescue, and the examples listed below.
 - a. According to the Air Medical Operators Association, in 2023 air ambulances in the United States performed nearly 130,000 flights that required off-site landings, where the aircraft lands and takes off from nonaviation facilities such as highways, fields, or parking lots.
 - b. Another sector of the helicopter industry, utility patrol and construction, supports the US electrical grid. According to figures compiled by the US Department of Energy, this includes installing, inspecting, and maintaining 642,000 miles of high-voltage transmission lines and roughly 6.3 million miles of local distribution lines—the vast majority of which are less than 200 ft. in height.
 - c. Aerial application is another sector where tens of thousands of flights over millions of acres of cropland are conducted at 500 ft. AGL or below.

2. **Due to the operational capabilities of helicopters, minimum altitudes for helicopter operations are not restricted in the same way as fixed-wing or other aviation operations.**
 - a. The FAA rules for minimum safe altitude requirements are different for helicopters than for other aircraft. Per [14 CFR 91.119](#), helicopter operations below 500 ft. AGL are permitted so long as the operation is conducted without hazard to person or property and is compliant with any FAA-prescribed local routes or altitudes.
 - b. The FAA rules for basic VFR weather minimums are different for helicopters than for other aircraft. Per [14 CFR 91.155](#), helicopters may operate in flight visibilities down to one-half mile if clear of clouds. This is particularly pertinent to discussions of degraded weather conditions in lower altitude operations.

C. Recommendations for Achieving Safe BVLOS UAS Operations

To achieve safe BVLOS integration, VAI recommends the following foundational tenets.

1. **VAI strongly recommends that no changes be made to the right-of-way rules contained in [14 CFR 91.113](#).**
 - a. Right-of-way is not possible without detection. Detection capability, whether from human eyes or technology, is the foundational element that enables the right-of-way rules contained in 14 CFR 91.113 to be effective—as they have consistently proven to be over decades of use.
 - b. The right-of-way hierarchy contained in 14 CFR 91.113 is based on maneuverability elements and/or restrictions in ability to maneuver, not on an ability to sense/detect/see. A shift in focus from an aircraft's ability to maneuver to its ability to sense/detect/see would not appropriately consider that aircraft's unique capabilities of movement, therefore reducing safety for aircraft with less maneuverability.
 - c. Right-of-way assignment is not, and never should be, a mitigation for an unmanned system's designed inability to detect other aircraft in the airspace.
2. **VAI recommends the establishment by the FAA of performance-based standards for BVLOS detect-and-avoid requirements.**
 - a. Through its rulemaking process, the agency should establish performance-based standards that enable the safe conduct of BVLOS operations with full consideration of all NAS operators.
 - b. These performance-based standards should include a focus on detect-and-avoid technology and capabilities, traffic management functionality, and general deconfliction methods.
 - c. Standards should consider both BVLOS operations in visual meteorological conditions and operations that may be conducted in instrument meteorological conditions, accounting for any limitations of detect-and-avoid technologies in degraded weather conditions.

3. **VAI recommends maximum conspicuity—visual, electronic, or otherwise—for all aircraft.**
 - a. VAI recognizes the challenges associated with visually detecting aircraft as small as some UAS, particularly at low altitudes. As such, VAI believes it appropriate for UAS operators to maximize the conspicuity of their platforms.
 - b. VAI recognizes the challenges associated with some UAS detecting manned aircraft that may be, or may not be, electronically conspicuous. As such, VAI believes it appropriate for manned aircraft operators to maximize the conspicuity of their platforms where reasonable and possible.
 - c. VAI supports technical solutions to fill these gaps wherever possible.

4. **VAI does not support the concept of “shielded areas” or “shielded operations” as delineated in the [BVLOS ARC Final Report](#).**
 - a. The concept, as proposed in the report, of providing UAS with blanket right-of-way privileges when within 100 ft. of “critical infrastructure” or around “obstacles” is a dangerous recommendation that would put current manned operations at risk.
 - b. Per [14 CFR 91.119](#), helicopters are permitted to operate at lower altitudes, including within 100 ft. of an obstacle, and tens of thousands of manned sorties occur annually within 100 ft. of the infrastructure and obstacles described in the report.

5. **VAI recommends the creation of shielded operations where UAS are *physically* shielded and/or separated from other airspace users.**
 - a. VAI supports providing credit in terms of reduced detect-and-avoid requirements to those operators conducting flights in areas that are physically shielded (under bridges, within cooling towers, etc.) from other airspace users.

D. Conclusion

VAI members already safely operate UAS to conduct critical missions. We recognize that all our members will benefit from future BVLOS operations and believe these can be accomplished in an effective manner, driven by safety first and foremost.

VAI will continue to advocate for the development and implementation of performance-based requirements and standards for BVLOS operations that are harmonized to protect the safety and efficiency of all NAS operators.