

Testimony for Chris Bradshaw  
President & CEO Bristow Group Inc.  
On behalf of Helicopter Association International (HAI)



FAA Reauthorization: Harnessing the Evolution of Flight to Deliver for the American People  
House Transportation & Infrastructure Committee  
Subcommittee on Aviation

March 30, 2023

Chairman Graves, Ranking Member Cohen, and Members of the Committee, thank you for having me here today. My name is Chris Bradshaw, and I am the President and CEO of Bristow Group. It is my pleasure to be here on behalf of our trade association, Helicopter Association International (HAI). As the global leader in innovative and sustainable vertical flight solutions, Bristow makes the world a safer and more productive place by delivering safe, efficient and reliable aviation solutions around the globe. I am here today to talk about our organization and the pragmatic approach we are taking as an experienced vertical lift operator entering the field of advanced air mobility – or AAM.

First, though, I would like to take a moment to talk about safety, which is Bristow's #1 core value and our highest operational priority. At Bristow, we each own safety, every day. This is evidenced by the long-running success of our Target Zero safety culture and safety-focused approach in all that we do. Safety drives our business, and it will continue to be our North Star as we expand our service offerings to existing customers and enter new markets operating the next generation in aviation technologies. New technology is revolutionary, but safety and operational excellence are evolutionary. In the case of Bristow, our safety culture and safety management system have evolved and matured over 75 years, since the founding of the Company in Alaska in 1948.

Headquartered in Houston, TX, and publicly traded on the NYSE, Bristow employs more than 3,000 people and has a presence on six continents, with customers in 17 countries. Here in the U.S., our main bases of operations are in South Louisiana, where we provide personnel transportation and search and rescue services to our commercial clients and the U.S. government throughout the Gulf of Mexico. In addition to our offshore energy services business, we provide dedicated search and rescue services to sovereign nations, including the United Kingdom, the Netherlands, the Dutch Caribbean region and elsewhere. Recently, we were proud to fly the NATO Secretary General, the Norwegian Prime Minister,

the European Commission President and the CEO of Equinor to and from an offshore platform in the North Sea. We are honored by the faith our customers place in us, and we are committed to earning that trust anew every day.

Today, I want to talk about AAM and how Bristow fits into that emerging landscape. We believe AAM will play an important part in the future of aviation. These new technologies have the potential to make certain missions more efficient, quieter, more accessible, and more sustainable. Indeed, we believe AAM represents a powerful opportunity to accelerate sustainability within our industry. We view AAM as a natural extension of Bristow's core competencies of safe, efficient and reliable vertical flight solutions, and we see multiple avenues for Bristow to participate in the emerging AAM value chain. One of those avenues will be servicing our existing customers in a broader way. As we expand our services, we will do so prudently and safely, as we always have. We think AAM will first serve the cargo and logistics needs of our customers, with personnel transport coming later. Bristow believes an incremental approach to AAM adoption (think "crawl, walk, run") is best. We also see various opportunities to expand vertical flight services into entirely new markets including regional air mobility and eventually more urban air mobility operations as well.

One size does not fit all. Bristow has strategically partnered with multiple leading AAM equipment manufacturers that are developing aircraft targeted to fulfill different mission profiles.

## Bristow's Public Strategic AAM Partners

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- Bristow has collaborations with multiple leading AAM manufacturers to provide critical safety, operational, certification, and logistics expertise to guide the launch of these new solutions.
- Bristow recognizes the benefits of a varied fleet, and we intend to diversify our fleet and service offerings by utilizing multiple AAM aircraft to build robust network capabilities and support various end markets.



At the core of these partnerships, Bristow intends to lend critical safety, operational, certification and logistics expertise to guide the launch of these new solutions. It is very exciting to be sitting next to Kyle Clark of BETA Technologies. We intend to purchase up to 50 of their eVTOL and / or eCTOL aircraft in the near future, and we look forward to providing personnel transport and logistics services utilizing these aircraft once they are certified.

With all this potential, we need the FAA's support. Bristow has a good working relationship with the FAA, and we are grateful for the great work they do day-in and day-out to oversee the safe and proper functioning of our industry. As it relates to AAM and the introduction of new technologies though, we fear the U.S. regulatory framework lags in comparison to that of other global jurisdictions. We know that the FAA's #1 priority is safety. That is our #1 priority as well. Yet, opaque processes and shifting timelines are less than ideal. Additional clarity and expediency from the FAA are required to support U.S. leadership in a competitive global marketplace. Additionally, there is a need to attract and develop the

next generation of the aviation workforce that will be required to pilot and maintain these aircraft. We are asking – with Congress’s help – that the FAA adopt the recommendations included in ICAO Document 10103 “Guidance on the Implementation of ICAO Standards and Recommended Practices for Tilt-rotors.” This document provides a logical and pragmatic approach to operating powered lift aircraft in the National Airspace and would help to address the anticipated AAM workforce shortage as the new technology enters operation. We also support the expansion of the Workforce Development Grant program that was begun in the last FAA Reauthorization. Specifically, we would like to see rotorcraft included in the eligible pool of these critically important grants.

At Bristow, we are excited to be lending our expertise as a mature and proven operator of vertical lift aircraft to drive innovation with our partners in the AAM space. We look forward to the opportunities it will bring to provide efficient and sustainable flight solutions to our customers. AAM and these next generation propulsion systems and technologies are essential to the long-term sustainable growth in the vertical flight industry.

It is my privilege to be here today, and I look forward to answering your questions. Thank you.

## Appendix



Helicopter Association International (HAI)  
Advanced Air Mobility Industry Advisory Council (AAM-IAC)  
[Roadmap of Advanced Air Mobility Operations 2023](#)  
Summary of Priorities

### INFRASTRUCTURE

#### **Near-Term**

- The existing system of airports and heliports should be leveraged to support initial operations when and where possible, while planning for and beginning to deploy new infrastructure. The industry should continue engaging with airport/heliport managers, FSDOs, ADOs, state DOTs, airport associations, ATC, local governments, metropolitan planning organizations, and others.
- Both public and private infrastructure should comprise the AAM network to enable the industry to begin initial operations quickly and to scale effectively.
- Charging stations will be required to support early operations. The industry would benefit from a better understanding of charging requirements, supporting electrical infrastructure, and any potential limitations that would affect initial AAM operations. Standards, guidance, and policies for installing AAM charging infrastructure need to be developed.

#### **Mid-Term**

- The industry will need to start developing and understanding, in concert with the power industry, the necessary grid structures to support AAM. Standards, guidance, and policies for installing AAM charging infrastructure need to be developed and planned accordingly. We recommend an in-depth, joint (including aircraft manufacturers, operators, infrastructure companies, electric utility companies, electricity regulatory bodies, and localities) study on the electricity demand for each type of vertiport, including the number of stands and electric charging stations. Additionally, methods to ensure that all types of AAM vehicles will be able to utilize any charging station, such as universal charging ports, should continue to be developed.
- The industry should communicate and engage with international manufacturers, regulators, authorities, and operators to prioritize global harmonization, where appropriate. While the United States is gearing toward AAM support and activities, other nations are equally seeking to materialize a robust AAM ecosystem.
- The industry can use digital twins of cities to support data-driven decision making related to infrastructure planning, zoning, route optimization, and asset management. These tools will be critical for cost

avoidance, identification of second-order impacts, and enhanced productivity. Further, digital twins can help policymakers and the public visualize the impact of AAM on their communities.

#### **Far-Term**

- Communication capabilities such as vehicle-to-vehicle (V2V) and vehicle-to-ground (V2G) are vital elements of AAM operations and will need substantial support and facilitation to scale for a dense AAM ecosystem.
- New infrastructure such as vertiports will require the combined efforts of industry and regulators to facilitate the entry of new markets and operations (both VFR and IFR) into the AAM ecosystem.

## **REGULATIONS AND AIRSPACE USE**

#### **Near-Term**

- Regulations must facilitate a smooth transition from existing ground infrastructure to new infrastructure or a combination of both.
- The industry should continue to build partnerships with stakeholder authorities (e.g., EASA, ICAO, FAA, NASA) and other interested parties for airspace development for AAM operations. The FAA airworthiness regulations 14 CFR Part 23, 27, and 29 can be utilized to support AAM aircraft certification activities. However, the use of eVTOL in Part 135 commercial operations requires additional clarity and adaptation due to the unique operational characteristics. The FAA's recent notice of proposed rulemaking (NPRM) to incorporate powered lift (eVTOL) aircraft into its regulatory definitions covering air carriers (Docket No. FAA-2022-1563; Notice No. 23-03) is a necessary first step, but the FAA must also define the aircrew and operating rules.
- Current regulations restrict existing infrastructure such as heliports due to the rigidity of the language. There is a considerable portion of existing infrastructure that is not covered by current regulations that could be leveraged for initial AAM operations.
- AAM operations will benefit greatly from direct routing due to power limitations. In a dense AAM ecosystem with numerous operations requiring specific routes, the industry will need to create far-term routing solutions harmonized with all AAM capabilities. Routing procedures should consider all operational areas (urban, rural, mixed) and differentiate between high-density and low-density flight areas. Integration of the airspace, rather than segregation of operations, should be the goal.

#### **Mid-Term**

- Airspace regulations for AAM operations must be flexible and performance based. As current IFR rules may not be sufficient, a hybrid set of flight rules, i.e., Digital Flight Rules (DFR), to accompany VFR and IFR operations may be more beneficial to AAM.
- AAM could initially leverage existing routing procedures, such as low-altitude helicopter routing, but this may not be adequate as operations scale. Aircraft-generated sound should be considered when developing routing, especially within populated areas such as cities, and attention will need to be placed on community equity.

#### **Far-Term**

- While legacy regulations related to reserve requirements may be adequate for some operators, energy reserve requirements must capture the scope of all operators and types of operations, whether fixed-wing, rotary-wing, or a hybrid of both. Destination intentions, weather considerations, unique airport operations, local geography, and population density will all play a role in determining energy reserve requirements (e.g., landing as a fixed wing at an airport, or as a rotary wing at a pad).
- PSUs could increasingly become a vital part of traffic management in AAM and may be the primary driver of avoiding conflict with other flight operators in the same airspace.

## **DESIGN AND CERTIFICATION**

#### **Near-Term**

- The AAM community may utilize existing maintenance training standards for initial operations until exemptions or alternate means of compliance are in place. Operators will pull from the existing CPL(A), CPL(H), or CPL(PL) communities with pilots undergoing transition training.
- Aircraft OEMs and regulators should align efforts to address the unique certification requirements of AAM aircraft designs. It would be a mistake to try to fit these aircraft into helicopter or airplane type certification standards. Aircraft performance capabilities are among the driving factors in aircraft type certification.
- Insurance coverage will be required for addressing AAM's unique risk exposures. Industry and partners should begin discussions with the insurance industry to identify risk assessment and mitigation for AAM operations.
- Maintenance requirements must be addressed to enable early entry into commercial operations. Industry OEMs should determine the required maintenance for these unique aircraft and work with regulators to develop policy for maintenance providers.

#### **Mid-Term**

- As operations scale, maintenance requirements and standards may need revamping to accommodate the AAM systems and technologies.
- As various models of AAM aircraft are introduced, considerations such as size of aircraft, type of operations, pilot training, qualifications, and certifications will influence specific insurance requirements.
- Workforce training will need to support various components of the entire AAM ecosystem, including pilots, mechanics, traffic management, and engineers. Complexities of the varied types of AAM aircraft may lead to the need for a pilot type rating for each unique aircraft design.
- Autonomy certification processes, standards, and incorporation for scaling and safety need to be developed. The pilot qualifications for remotely operated or autonomous aircraft should be reviewed; the current commercial pilot shortage will be exacerbated if we do not take the opportunity to review the appropriate skills needed for operations that will not include a pilot on board.

#### **Far-Term**

- Pilot and technician ab initio pathways need to be created to address the looming workforce shortage.
- Within a high-density AAM ecosystem, there will be a significant number of flights per day, requiring different and unique or new types of maintenance. There may be the need for on-site and off-site maintenance teams at vertiports for emergency repairs and/or extensive vehicle repairs, respectively.
- There is a need to create a new workforce pipeline for pilots, remote pilots, supervisors, mechanics, and additional ground or aircrew personnel. This pipeline should be tailored to this new technology rather than forcing workers into the existing pipelines for pilots and mechanics, where a majority of what they learn and get trained to do will not be applicable to eVTOL. Tailoring the development of the AAM workforce to AAM requirements could create a more efficient workforce pipeline.

## **AAM ENTERPRISE**

#### **Near-Term**

- Community outreach campaigns will be critical to the success of AAM. The industry must educate and influence the public, policymakers, and non-AAM industry stakeholders, as well as pursue efforts to align the various government agencies.
- For the rotorcraft industry, eVTOL aircraft will simply represent the addition of a new aircraft to their fleets, thus, current operators have the full scope of vertical lift missions, including safety and regulatory backgrounds.
- Workforce remains an issue for initial operations, and the industry will need to focus on building the workforce pipeline to support future operations. There is utility in the outreach to other rotorcraft/drone pilots and operators to raise an initial workforce for early AAM operations.
- Supporting programs can demonstrate the effectiveness of AAM, including demonstration operations and ConOps testing.
- Support programs must be developed to address member and public engagement on the full scope of support and service-related issues for AAM including fire codes (National Fire Protection Association).



**Mid-Term**

- There is a need to establish community talking points focused on the importance of AAM to the aviation industry and communities. Changes in state and municipal codes for AAM could be expected to take five years or more and will depend on the acceptance and support of communities.
- Industry must monitor community reaction to the effects of aircraft generated sound and promote the low sound profiles of AAM aircraft through demonstrations and use cases to continue to build momentum for community acceptance.

**Far-Term**

- As the AAM industry scales, community engagement must also scale, with continued education and outreach. The success of initial piloted AAM operations will provide the public confidence in both the safety and benefits as increasing levels of autonomy are incorporated and introduced.