



Ready for Takeoff: Introducing Powered-Lift in the Next Era of Civil Aviation Innovation

By Amanda Geary

From the Wright Brothers's groundbreaking flight with the Kitty Hawk Flyer to the post-World War I expansion of piston-powered aircraft for passenger operations, aviation innovation soared in the early half of the 20th century. Now, the advent of powered-lift brings a new era of aviation advancement. Communities around the world can soon expect to see these hybrid airplane-helicopter aircraft, some mirroring the design of the common car, buzzing overhead.

The Federal Aviation Administration (FAA or Agency) defines *powered-lift* as heavier-than-air aircraft capable of vertical takeoff and landing. These aircraft typically transition between operating as a rotorcraft, with flight on the rotors, and operating as an airplane, with flight on the wing, during different phases of operation. While the military has long used powered-lift as part of its fleet, no civilian powered-lift are currently type-certificated for commercial operations.

Before these revolutionary new aircraft enter our National Airspace System (NAS) for civilian passenger operations, the FAA must implement regulations to dictate who can fly these aircraft and the operational and safety rules that will govern this next phase of aviation modernization. Indeed, the current regulatory framework is insufficient to accommodate civilian powered-lift operations in the NAS. While the powered-lift category was first added to the *Code of Federal Regulations* title 14 (14 C.F.R.) in 1997, the FAA never implemented corresponding operating rules or airworthiness standards to fully integrate these aircraft into the civilian sector. Simply stated, the operational design and engine characteristics of these aircraft were not contemplated when the FAA drafted many of the current regulations.¹

On June 14, 2023, the FAA took a consequential step toward making civilian powered-lift operations a regulatory reality. The Agency published its

long-awaited notice of proposed rulemaking (NPRM) detailing the proposed airman qualifications, operating rules, and certification requirements for the initial groups of powered-lift pilots.² The NPRM's publication comes as part of the FAA's multifaceted rulemaking approach to integrate powered-lift into the regulatory framework, complementing both the Agency's Modernization of Special Airworthiness Certification (MOSAIC) proposed rulemaking³ and its final rule incorporating powered-lift into the definition of *air carrier operations*.⁴ The NPRM also supports the Department of Transportation's (DOT) broader initiative to integrate advanced air mobility (AAM) into the civilian sector.⁵

The FAA's recent suite of rulemaking activity and corresponding public awareness efforts follow years of shifting approaches on the best proposed method to certificate these aircraft for commercial use in the NAS.⁶ Only one week after the NPRM was published, DOT's Office of Inspector General (OIG) released a report detailing these challenges, and others, that hinder the FAA's progress in preparing for civilian powered-lift operations. The report found that "ineffective coordination and communication, as well as the lack of timely decision-making and established policies" continue to harm the FAA's progress.⁷ In other words, the FAA, like many administrative agencies, has struggled to keep pace with burgeoning technological advancement.

In response to the OIG's findings, the FAA promised to accelerate publication of the final rule proposed in the NPRM and fast-track other rulemakings that aim to fully integrate powered-lift civil operations into the NAS.⁸ The Agency's response, however, largely ignores the administrative barriers that slow any regulatory agency's ability to effectively promulgate timely rules and fails to provide a plan to remedy the institutional problems that necessitated the FAA's reliance on a fast-track posture to begin with. Instead, the FAA's response foreshadows continued stress on an overburdened staff-level workforce that lacks the upper-level leadership support to effectively deliver on the Agency's promises.

Nevertheless, understanding the FAA's proposal is key to assessing the likely outcome of the final rule and other rules that are expected to enhance

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integration of emerging technology. For example, uncrewed aircraft systems, or drones, have long been used in military operations, but their integration into the NAS for commercial operations has been slow relative to other countries, despite the technological readiness of both manufacturers and the necessary equipment. As the Agency begins to deliver on its promises to integrate AAM operations into the NAS, the NPRM is illustrative of one likely approach that we can expect to see for other emerging technologies that are long overdue to change the FAA's helicopter- and airplane-centric regulatory framework.

Special Federal Aviation Regulation Framework

The NPRM proposes a Special Federal Aviation Regulation (SFAR) that will remain in effect for 10 years after the final rule's publication. An SFAR permits the FAA to make assumptions about technology that can later be rectified if contrary operational data is collected and allows the FAA to modify the rules over the SFAR's life span. As a result, an SFAR enables the FAA to adapt its regulations as the industry develops, allowing critical flexibility when drafting rules related to emerging technology. It serves as a noncommittal mechanism to achieve regulatory integration without first fully knowing how the operations will work.

During the SFAR's 10-year term, the FAA would collect operational data to inform future adoption of permanent regulations.⁹ The FAA's use of an SFAR, as opposed to more traditional regulatory frameworks, is consistent with its approach to enable other operations that were initially supported by limited data. For example, the FAA utilized an SFAR in 1975 when it permitted instrument helicopter operations pending the further collection of operational data.¹⁰ Thus, while the SFAR method is relatively unique, it is not unprecedented.

The SFAR would be housed in a new subchapter L, "Other Special Federal Aviation Regulations," and consist of 14 C.F.R. part 194, SFAR No. 120. In addition to this new subchapter, the NPRM also proposes permanent amendments to several existing regulatory parts, including Parts 61, 91, 135, 141, and 142.¹¹

Type Certification and Noise Standards

In the spring of 2022, the FAA declared it would certify powered-lift as special class aircraft under 14 C.F.R. § 21.17(b), a drastic change from its prior representations that powered-lift would be certificated and operate under more traditional airplane rules.¹² The NPRM confirms this change in direction and notes that when a Part 91 or Part 135 operational rule cross-references an airworthiness standard found in other parts, the FAA will review the requirements and determine whether that standard, or a new one, should apply.

The FAA employed a similar rationale for noise

powered-lift type certification application to determine whether existing noise certification standards should apply, or whether a new rule of particular applicability should be promulgated.¹³ Although not discussed in the NPRM, noise pollution and its expected impact on communities that live underneath low-altitude powered-lift flight paths could serve as a significant barrier to public acceptance of civilian powered-lift operations. In practice, the NPRM leaves the question of noise pollution for resolution during public comment on the individual powered-lift type certification applications, and the broader implications for consideration under DOT's AAM initiative.

Qualification of Powered-Lift Flight Simulation Training Devices

In noting the absence of qualification performance standards for powered-lift flight simulation training devices (FSTDs), the NPRM proposes to use existing FSTD qualification standards for airplanes and helicopters. If the existing FSTD qualification standards are insufficient, a Part 119, 141, or 142 certificate holder that seeks qualification for a powered-lift FSTD may propose standards that illustrate an equivalent level of safety. Upon receipt of a new qualification standard, the FAA would publish the proposed standard for public notice and comment.

The NPRM notes that a small number of FSTD qualification projects are currently in progress, for which the FAA had previously indicated deviation authority under 14 C.F.R. § 60.15(c)(5) would be used as the basis for approval. As necessary, the FAA proposes to collaborate with the appropriate stakeholders to ensure an efficient transition to the new framework proposed in the NPRM. It is unclear how many FSTD stakeholders have already relied on the FAA's earlier position with respect to the use of deviation authority, and the costs such stakeholders might incur if the basis for approval were to change.¹⁴

Certification of Powered-Lift Pilots

The NPRM proposes that pilots hold a powered-lift-specific type rating to serve as pilot-in-command (PIC). This requirement would also apply to military pilots who wish to operate powered-lift civil aircraft and currently hold a commercial pilot certificate with a powered-lift category or instrument-powered-lift

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rating. To facilitate the type-rating requirement, each flight standardization board—generally consisting of pilot candidates that convene when the FAA requires a type certificate for an aircraft—would evaluate the powered-lift operation on a case-by-case basis to determine the special training requirements necessary to certificate the PIC. However, the type-rating requirement would not apply to operations with powered-lift issued a special airworthiness certificate. Instead, pilots operating those aircraft would continue to be governed by familiar operating limitations, including the prohibition on operating over densely populated areas and restrictions on the purpose of the operation.¹⁵

To serve as second-in-command (SIC) under Part 91 operations, except for fractional ownership operations conducted under Subpart K of Part 91, the NPRM proposes that pilots meet the existing requirements under 14 C.F.R. § 61.55. This includes the existing type-rating requirement for SICs operating powered-lift in international airspace.¹⁶

To enable pilots to accomplish their practical test in a full flight simulator (FFS) and earn their type rating, the NPRM would amend existing § 61.64. Under the FAA's proposed amendments, supervised operating experience (SOE) would be required for all powered-lift type-rating applicants that complete their practical test in an FFS and have less than 500 hours of flight time in the specific powered-lift for which the rating is sought. These applicants would be required to complete 25 hours of SOE under the observation of a PIC who holds the appropriate ratings without limitation. To ensure a qualified PIC can observe the pilot conducting SOE, "the FAA expects [] manufacturers to develop a version of the aircraft to contain fully functioning dual controls."¹⁷

The NPRM proposes alternate aeronautical experience and logging requirements for obtaining a powered-lift category rating and instrument-powered-lift rating for those pilots who hold at least a commercial pilot certificate with an airplane category and single- or multiengine class rating, or a rotorcraft category and helicopter class rating. Only those pilots who meet these rating and certificate standards and hold an instrument-airplane or instrument-helicopter rating corresponding to a category rating at the commercial pilot certificate level would be eligible to utilize the FAA's proposed alternate pathways.

The FAA's alternate aeronautical experience and logging requirements for obtaining a powered-lift category rating and instrument-powered-lift rating would also depend on whether the individual is a test pilot or an instructor pilot, part of the initial cadre of instructors, or a pilot receiving training under an approved training program. However, the proposed distance reduction for satisfying the cross-country experience needed for a commercial pilot certificate,

instrument-powered-lift rating, and private pilot certificate would apply equally to all pilots. In addition, Part 141 pilot schools would be able to utilize the proposed alternate cross-country distances.¹⁸

The NPRM proposes an alternate means for instructor pilots and management officials within a manufacturer's organization to provide logbook and training record endorsements required under Part 61, despite not meeting the strict definition of *authorized instructor* to conform with existing regulatory requirements.¹⁹ In part, these instructor pilots and management officials would be able to provide required logbook and training record endorsements necessary for commercial pilot certificates with a powered-lift category rating, an instrument-powered-lift rating, a powered-lift type rating, or a flight instructor certificate with a powered-lift rating for specific applicants, including test pilots and authorized check pilots, instructors, or training center evaluators.

In a series of clarifying and miscellaneous amendments, the NPRM also proposes solo flight time requirements for applicants seeking a private pilot certificate with a powered-lift category rating, as well as an allowance for pilots to credit SIC time accrued under an SIC Professional Development Program (PDP) toward an airline transport pilot (ATP) certificate with a powered-lift category rating. Pilots who rely on flight time logged under an SIC PDP would be required to have a limitation on their ATP certificate indicating that they do not meet the PIC aeronautical experience requirements currently identified as an International Civil Aviation Organization (ICAO) recommended practice—assuming the recommended practice becomes an international standard before publication of the final rule.²⁰

The NPRM's discussion of the pilot certification proposal is creative and comprehensive, addressing potential regulatory roadblocks affecting powered-lift pilots ranging from the private pilot to the ATP certificate level. These unique multifaceted approaches to crafting alternate aeronautical experience and logging requirements demonstrate ingenuity in fashioning solutions for the expected difficulties that powered-lift pilots will face when navigating the current regulatory structure. The proposal conveys consideration of the complex interplay between the existing requirements and the pitfalls expected to arise, proving that the Agency is committed to fully integrating civilian powered-lift into the NAS and making the regulatory framework accessible to accommodate these operations.

Training in Part 135, 141, and 142 Programs

The NPRM also details the temporary provisions proposed to allow Part 135, 141, and 142 training programs to provide curricula for powered-lift ratings. The proposal includes a temporary pathway for Part

135 operators to implement curricula that would allow certain pilots to accomplish the aeronautical experience and training requirements necessary to add an instrument-powered-lift rating, a powered-lift category rating, and a type rating on their commercial pilot certificate. The proposal would permit a Part 135 operator to provide certain Part 61 training for basic certification. Only those pilots who hold at least a commercial pilot certificate with certain airplane or helicopter ratings and are employed by a Part 119 certificate holder would be eligible to participate in the Part 135 airman certification training curriculum for powered-lift ratings.²¹

The FAA did not propose any additional relief for Part 141 pilot schools, instead noting that these schools will likely have to obtain the necessary training for powered-lift ratings from the manufacturer, using the SFAR's proposed alternate experience requirements. Similarly, the FAA notes in the NPRM's preamble its expectation that Part 142 training centers would establish their initial cadre of instructors using those pilots who satisfy their training pursuant to the proposed alternate requirements.²²

The NPRM also proposes waiver authority for pilot examiners, and a corresponding allowance for Part 141 pilot schools, to permit a pilot applicant to forgo a task required by the Airman Certification Standards (ACS) and related training activities that cannot be performed in the tested powered-lift when conducting a practical test. However, a pilot cannot serve as SIC in a powered-lift that is capable of performing the tasks that were waived during the practical test unless certain requirements are met.

The NPRM further proposes in certain cases to waive the requirement that type rating applicants be required to hold or concurrently obtain an instrument-powered-lift-rating when taking their practical test. For those pilots that forgo the instrument rating requirement, they may be granted a powered-lift type rating for a set period with a visual flight rules (VFR)-only limitation. Private pilots, however, would be allowed to maintain a VFR-only limitation indefinitely, if their type rating is for certain non-turbojet-powered small powered-lift.²³

Operations Conducted Under Part 135

For certificate holders conducting commuter operations under Part 135 with two pilots required by the powered-lift type certification, the FAA proposes an alternate means of compliance with § 135.3(b). For those operations, certificate holders would need to comply with the Advanced Qualification Program in Subpart Y of Part 121. In addition, the FAA proposes that these PICs receive certain training on leadership and command. The NPRM likewise would apply several other provisions in Part 135 to powered-lift operations under that part, including the standards

in § 135.4(a)(3) and the requirement that powered-lift PICs serving in certain on-demand and commuter operations hold an ATP certificate with a powered-lift category rating and a type rating for the powered-lift flown, not limited to VFR. The FAA's restriction on the use of VFR-only type ratings would also apply to aircraft fractional ownership operations conducted under Subpart K of Part 91.²⁴

Operational Rules for Powered-lift

Under the FAA's proposal, specific Part 91 and Part 135 operating rules would apply to powered-lift operations. Throughout the NPRM preamble, the FAA notes that its "overall approach" was to err on the side of being conservative.²⁵ In this regard, the FAA declares that insufficient operational data is available to validate a less conservative approach for powered-lift operations. As an example, airplane fuel-reserve requirements prescribed under § 91.167 would apply to powered-lift operations, instead of the less-restrictive fuel-reserve requirements allowed for rotorcraft operations.²⁶

The NPRM would, however, allow for the less-restrictive rotorcraft rules to apply in cases where the FAA has already validated the operational capacity of powered-lift akin to that of rotorcraft. For example, powered-lift would be able to satisfy the requirements of § 91.509(a), mandating life preservers and certain lifesaving equipment for use in a water emergency, through compliance with the helicopter-specific definition of *extended over-water operations*. In reaching this conclusion, the FAA notes that powered-lift, like helicopters, will be able to land on offshore heliport structures in the event of an emergency.²⁷

Powered-lift operators would also be permitted to use the copter procedures permitted under § 97.3, for those powered-lift that have a standard airworthiness certificate for IFR operations and meet system design and stability requirements equivalent to certain helicopters. Similarly, certain helicopter requirements of Part 136 would apply to enable the operation of commercial air tours in powered-lift.²⁸

Air Traffic Operations

In one of its final substantive discussions, the NPRM notes that Air Traffic Order 7110.65 will need to be modified to include standards and procedures for

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powered-lift operations. In the meantime, the standards and procedures applicable to powered-lift by virtue of their classification as aircraft will continue to apply.²⁹

The FAA's limited discussion on the plan to integrate powered-lift into air traffic operations comes only one week before the OIG released a report detailing the challenges with air traffic operations. The report found that controllers at many facilities were working mandatory overtime and six-day workweeks

to cover staffing shortages. In part, the report detailed that internal FAA disagreement hindered its ability to maintain adequate staff.³⁰

On July 18, 2023, the FAA published its Advanced Air Mobility Implementation Plan (Plan) detailing, in part, the expected integration of powered-lift into air traffic management. In the short term, the Plan anticipates that AAM operations will operate with a pilot on board under VFR in visual meteorological conditions. As a result, the FAA expects AAM aircraft, including powered-lift, will be managed under existing air traffic control procedures and protocols designed for

fixed-wing and rotorcraft operations. The Plan details a general approach to accommodate airspace route design and usage, and control traffic management for an increase in VFR operations. In the long term, the Plan proposes the possible use of supplemental directives, special air traffic rules, and updates to local air traffic facilities.³¹

Conclusion

Overall, the FAA's efforts to date to integrate powered-lift operations into the NAS are an impressive feat. While one can lament the long-awaited arrival of the NPRM, the OIG's recent report details the institutional disagreement that hindered the timely publication of the Agency's proposal. The NPRM's publication only one year after the final decision on the direction for certificating powered-lift was declared should be viewed as a momentous achievement for the Agency's ability to draft innovative and timely regulations—a feat perhaps even more impressive when viewed in context of the challenges the Agency has faced.

There is, of course, more work to be done. The FAA recognizes this in more than a dozen passages throughout the preamble to the NPRM, citing the need for additional data and public comment to better understand the operational capability of powered-lift

operations to implement its proposal. As the rulemaking team considers the more than 80 public comments from industry groups, pilots, and manufacturers filed in response to the NPRM and readies a final rule for publication, it also will have to simultaneously deliver on corresponding guidance documents and promised updates.

The road ahead is seemingly more daunting, with the Agency committing to fast-track publication of the final rule. Without a doubt, this commitment will be felt most pressingly at the staff level, while upper-level leadership demands expedited rulemakings in a system with institutional barriers that force it to move slowly.

For now, however, powered-lift manufacturers and their suppliers should take some solace in witnessing the FAA's long-awaited promises begin to come to fruition. In the absence of institutional disagreements, the FAA has begun to illustrate that it can manage the integration of emerging technology in our airspace system through implementation of creative solutions to manage risk and promote innovation. The FAA should assess the path it took to achieve this milestone, and the regulated community should acknowledge the NPRM's ingenuity while simultaneously maintaining its calls for Agency accountability to ensure the FAA's next major achievement for emerging technology is not overshadowed by its institutional shortcomings.

In all, the NPRM is cause for cautious optimism.

Endnotes

1. *See* Pilot, Flight Instructor, Ground Instructor, and Pilot School Certification Rules, 62 Fed. Reg. 16,220 (Apr. 4, 1997).
2. Integration of Powered-Lift: Pilot Certification and Operations; Miscellaneous Amendments Related to Rotorcraft and Airplanes, 88 Fed. Reg. 38,946, 38,947 (June 14, 2023) [hereinafter Integration of Powered-Lift].
3. Modernization of Special Airworthiness Certification, 88 Fed. Reg. 47,650 (July 24, 2023).
4. Update to Air Carrier Definitions, 88 Fed. Reg. 48,702 (July 26, 2023).
5. Integration of Powered-Lift, 88 Fed. Reg. at 38,947.
6. U.S. DEP'T OF TRANSP., OFFICE OF INSPECT. GEN., AV2023037, REGULATORY GAPS AND LACK OF CONSENSUS HINDERED FAA'S PROGRESS IN CERTIFYING ADVANCED AIR MOBILITY AIRCRAFT, AND CHALLENGES REMAIN 5 (June 21, 2023).
7. *Id.* at 5–6.
8. *Id.* at 28–29.
9. Integration of Powered-Lift, 88 Fed. Reg. at 38,950–51.
10. FAA Study of Limited IFR Operations in Rotorcraft, 40 Fed. Reg. 2420 (Jan. 13, 1975).
11. Integration of Powered-Lift, 88 Fed. Reg. at 38,950–51.
12. *See, e.g.,* Mike Hirschberg, *The FAA Makes a U-Turn on Its Approach to Powered-Lift, as the eVTOL Industry Tries to Hang On*, VERTICAL MAG. (June 23, 2022),

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example. Focused on disruption within the industry, especially in NASA's backyard, we learned a lot from the packed program. Next up is December's Aviation and Space Finance Conference in New York, and the 2024 Washington Update Conference on February 24 in Washington, DC.

I want to thank Marc Warren for his tireless work as Chair over the last two years to keep our Forum "the bestever" and leading us out of the pandemic into a robust recovery. We are also blessed with the continued involvement of past Chairs. I have big shoes to fill in taking over this role but know that I have help from them and everyone who volunteers. Of course, nothing is accomplished at the Forum without Dawn Holiday, our Forum Director, she is the true heartbeat

of the Forum. Our continuous thank you to her and the ABA team.

Our incredible industry continues to evolve and amaze. When I was 16 years old living in the Midwest, I wanted to be an aviation lawyer because I saw how aviation connected the world. Forty years later, I still am excited to be an aviation lawyer and now we are connecting the universe. Last night I stood on my rooftop in Orange County to watch the launch of a new LEO satellite that supports aerospace it was so cool! The sky is NOT the limit for the ABA Air & Space Forum, and I am really excited to partner with you all over the next two years as we go to infinity and beyond.

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<https://verticalmag.com/opinions/the-faa-makes-a-u-turn-on-its-approach-to-powered-lift-as-the-evtol-industry-tries-to-hang-on>.

13. Integration of Powered-Lift, 88 Fed. Reg. at 38,953–54.

14. *Id.* at 38,954–55.

15. *Id.* at 38,955–58.

16. *Id.* at 38,958–60.

17. *Id.* at 38,960–65.

18. *Id.* at 38,965–87.

19. *Id.* at 38,989–90.

20. *Id.* at 39,004–07.

21. *Id.* at 38,990–94.

22. *Id.* at 38,994–97.

23. *Id.* at 38,997–39,004.

24. *Id.* at 39,008–21.

25. *Id.* at 39,029.

26. *Id.* at 39,024–30.

27. *Id.* at 39,033–34.

28. *Id.* at 39,040–65.

29. *Id.* at 39,066.

30. U.S. DEP'T OF TRANSP., OFF. OF INSPECTOR GEN., AV2023035, FAA FACES CONTROLLER STAFFING CHALLENGES AS AIR TRAFFIC OPERATIONS RETURN TO PRE-PANDEMIC LEVELS AT CRITICAL FACILITIES 8 (June 21, 2023).

31. FED. AVIATION ADMIN., ADVANCED AIR MOBILITY (AAM) IMPLEMENTATION PLAN 20–24 (July 18, 2023).

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