Joby Aviation:
(Don’t) Prepare for Takeoff

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Overview

Ticker: JOBY

Stock Price:

$14.54

- Designer and operator of electric vertical take-off and landing (eVTOL) aircraft
- Plans to manufacture and operate aircraft in an aerial ride sharing network for urban trips of 5 to 150 miles
- Founded by JoeBen Bevirt in 2009
- Went public through SPAC

Certification Challenges

- Completed or substantially completed 3 of 5 FAA type-certification stages; "more than halfway" through stage 4
  - Stages 4 and 5 (testing, analysis, verification) are where programs most often slow down
- Type-certificate application dates back to 2018 — 8 years without certification should temper "imminence" narratives
- FAA special-class airworthiness criteria for Joby's powered-lift finalized in early 2024
- Initial certification expected for VFR only; IFR capability is a later amendment
  - Limits flights in poor weather, directly reducing utilization and dispatch reliability
- Pilot certification and operations rules for powered-lift only finalized in late 2024
- "Rules for eVTOL certification and operations are still being finalized and could change in ways that extend timelines." — Joby Form 10-K, 2024

Battery & Technology Constraints

- eVTOL batteries face unusually stringent requirements vs. EV batteries: high specific energy AND power AND fast charging AND long cycle life AND safety
- Vertical take-off and landing requires immense power output; rapid recharge needed for efficient turnaround
- Physically impossible to optimize lithium-ion cells for all three axes simultaneously
- Battery cycle life likely in the low thousands at best, not the claimed 10,000 cycles
  - Higher battery replacement costs would undermine unit economics
- Joby acknowledges it has not validated aircraft performance over the expected lifetime
- Battery degradation risk is a structural bear case — confirmed by peer-reviewed academic literature

Manufacturing & Scaling Issues

- Joby describes Dayton facility as capable of supporting 500 aircraft/year "over time"
- But near-term ramp target is only ~4 aircraft/month by 2027 (~48/year) — an order of magnitude gap
- Learning curves and fleet density needed for aggressive pricing require far higher scale
- Production cost target of $1.3M per unit ignores the experience of seasoned airplane manufacturers
  - Competitors projecting unit costs 3x greater
- Joby is developing and certifying unique component parts rather than sourcing already-certified parts — increases complexity
- Production certification is a distinct gate with its own quality and process control burden, required after type certification

Questionable Financial Viability

- Used $356.7M of cash in operations in first 9 months of 2025; guided $500-540M full-year burn
- Still pre-eVTOL-revenue; current revenue (~$22.6M in Q3 2025) comes from Blade acquisition and military contracts
  - This is conventional passenger ops and contract services, not "air taxi economics"
- Raised ~$500M in Oct 2025 equity offering; ~$1.16B in Jan 2026 (equity + convertible notes)
  - Explicit use of proceeds: certification, manufacturing, and commercial preparation
- Financing behavior inconsistent with "capital sufficiency" narrative — signals multi-year high-burn regime
- Convertible notes embed future dilution risk and add refinancing constraints later in the decade
- Share count was ~874M at Sep 30, 2025 before the latest equity issuances — significant dilution

Unrealistic TAM & Economics

- Air taxi model requires high utilization and dense vertiport networks; neither exists at launch
- FAA expects initial operations (2025-2028) to primarily use existing airports and heliports
  - "Dense, ubiquitous downtown network" premise is unlikely at launch-scale
- Weather constraints further reduce utilization; Joby itself warns of weather-driven impacts
- Fuel and maintenance savings are negligible and don't account for battery and aircraft costs, making eVTOL flights more expensive than comparable helicopter flights
- Noise perception and community responses remain unsettled — may constrain siting and operating hours
- Joby's plan to sell aircraft to other operators appears to be an economic retreat from the "fully vertically integrated" narrative

Joby is the industry leader in eVTOL

“The situation is suggestive of Samuel Johnson’s horse: ‘A horse that can count to ten is a remarkable horse - not a remarkable mathematician.’ Likewise, a textile company that allocates capital brilliantly within its industry is a remarkable textile company - but not a remarkable business.” – Warren Buffet

Competitive Landscape

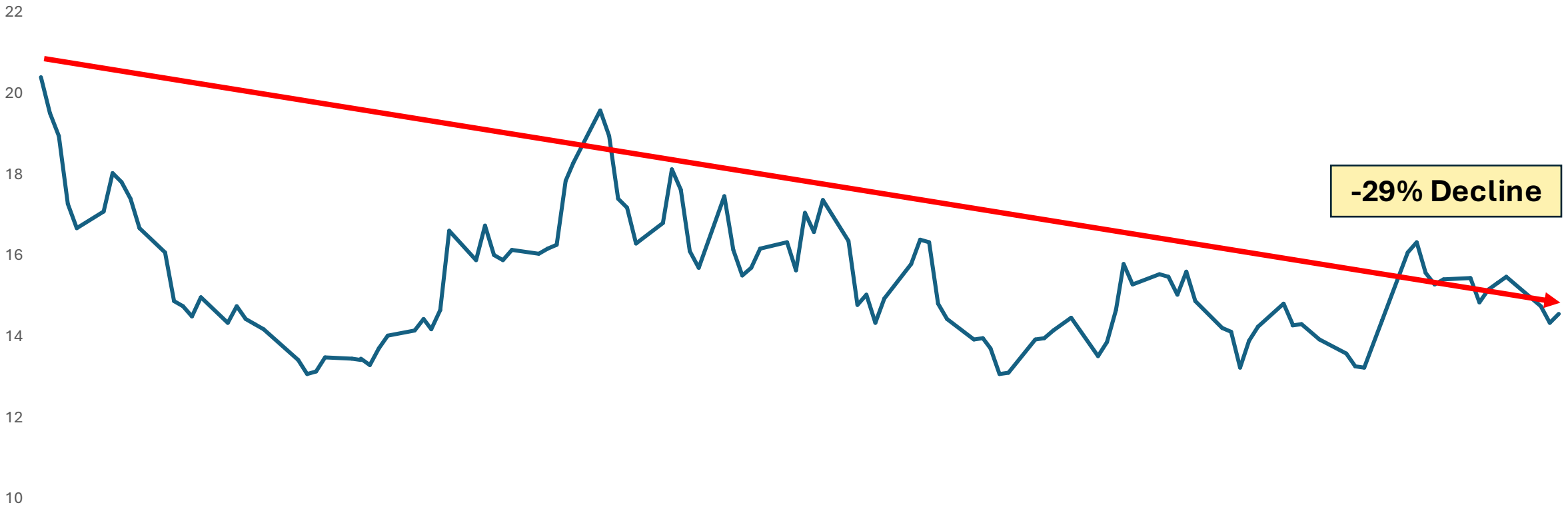
- Joby is the leader but being the best in a bad industry is not very helpful
- Archer Aviation: preparing for TIA testing in 4th and final certification phase
- Eve Air Mobility: backed by Embraer, pursuing certifications with Brazil's ANAC, FAA, and EASA
- Vertical Aerospace: targets VX4 certification in 2028; explicitly disclosed ~$700M additional capital needed
- The eVTOL space mirrors early autonomous vehicles: many competitors, years of hype, uncertain timelines

Silly Valuation

- Trades at over 14x P/B
  - No intangibles that justify this valuation
- Market capitalization over $10 billion

The Market Is Starting To See The Problems

- The stock has fallen almost 30% from its August 2025 high while the Russell 2000 has risen over 22% over the same period



Challenges to the Short Position

There are two requirements for this short to fail in the near term

1. A flood of easy money (lower interest rates, QE, fiscal stimulus, etc.)
    1. The Fed is unlikely to turn on the money printer since inflation is running well above their inflation target. The labor market is cooling but not enough for them to panic
2. Investor appetite for AI turns into irrational exuberance
    1. An AI bubble is being discussed in the news every day. As long as people are worried, it will not be irrational

As neither of these conditions are likely to happen, there doesn't appear to be meaningful downside to this position.

Summary

- x Type certification application dates to 2018 with the hardest stages still incomplete; VFR-only at launch limits operational viability
- x Battery physics make Joby's claimed 100-mile range and 10,000-cycle life unrealistic under real-world conditions and reserve requirements
- x Manufacturing ramp of ~4 aircraft/month by 2027 is an order of magnitude below stated long-run capacity; unit costs are likely far above guidance
- x ~$500M+ annual cash burn with no near-term path to eVTOL revenue; repeated capital raises dilute shareholders
- x Infrastructure for dense vertiport networks does not exist and will take years to develop
- x Market cap of ~$7-8 billion for a pre-eVTOL-revenue company with a bleak risk-adjusted path to profitability