

## Abstract

The BovineWorks Model One (BW-1) is a nine passenger, twin-engine STOL commuter aircraft developed to meet and exceed the objectives set forth by NASA ARMD for the design of a self-piloted, small GA aircraft for commuter and cargo operations for an entry market date of 2025. Designed to tackle issues facing commercial small GA aircraft, the BW-1 looks to reduce fixed, fuel, maintenance, and operating costs at a design level. Leveraging practicality with high performance, the BW-1 features GE H-series turboprop engines, customized low-noise propeller design, modified natural laminar flow wing design for higher cruise efficiency, electric systems for lower maintenance overhaul, electric-thermal de-icing, autonomous hardware suite for self-piloting operations, and lightweight composites. The 9-seater BW-1 has a cruise speed of 240 kts, MTOW of 7461 lbs, wing loading of  $32.65 \text{ lbs/ft}^2$ , requires a short takeoff/landing field length of 725 ft and 820 ft respectively, and a power loading of  $5.95 \text{ lbs/HP}$ . With 29.1% fuel burn reduction, 66.7% takeoff distance reduction, and 50.2% landing distance reduction compared to similar existing and in-development aircraft, the BW-1 seeks to have greater fuel economy and airport accessibility than other aircraft in its class. All development of the BW-1 has been done with accordance to FAR Part 23 airworthiness standards and Part 135 commuter operations to ensure safety and ease of certification.