

11,111,116 Shares



Common Stock

This prospectus supplement updates and supplements the prospectus dated December 19, 2025, as supplemented or amended from time to time (the “Prospectus”), which forms a part of our Registration Statement on Form S-1 (Registration No. 333-291599). This prospectus supplement is being filed to update and supplement the information in the Prospectus with information relating to certain recent developments.

The Prospectus relates to the offer and sale from time to time by the selling securityholders named in the Prospectus (the “Selling Securityholders”) of up to 11,111,116 shares of Common Stock, par value \$0.0001 per share (the “Common Stock”) of Firefly Aerospace Inc. (“Firefly Aerospace”) that were received by such Selling Securityholders as consideration in connection with Firefly Aerospace’s acquisition of SciTec Innovations, LLC, a Delaware limited liability company.

This prospectus supplement should be read in conjunction with the Prospectus. This prospectus supplement updates and supplements the information in the Prospectus. If there is any inconsistency between the information in the Prospectus and this prospectus supplement, you should rely on the information in this prospectus supplement.

Our Common Stock is listed on the Nasdaq Global Market under the symbol “FLY”. On May 22, 2026, the closing price of our Common Stock was \$49.50 per share.

Investing in our Common Stock involves risks. See “Risk Factors” beginning on page 9 of the Prospectus, and under similar headings in any further amendments or supplements to the Prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if the Prospectus or this prospectus supplement is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus supplement is May 26, 2026.

The Prospectus is amended and supplemented to insert the following paragraph immediately prior to the section entitled “Prospectus Summary—Risk Factors Summary”:

Recent Developments

On May 26, 2026, we announced a \$75 million award from NASA’s Jet Propulsion Laboratory to deliver four drones to the Moon’s south pole in support of NASA’s MoonFall mission, which is targeted to launch no earlier than 2028. MoonFall is part of the first phase of NASA’s Moon Base, a long-term lunar exploration and infrastructure initiative designed to enable sustained human presence and expanded scientific and commercial activity at the lunar south pole. The MoonFall subcontract builds on our growing portfolio of spacecraft missions, including three additional missions to the Moon through NASA’s Commercial Lunar Payload Services initiative.