

SPIRE GLOBAL, INC.

5,000,000 Shares of Class A Common Stock

This prospectus relates to the resale by the selling stockholders identified in this prospectus of up to 5,000,000 shares of our Class A common stock, par value \$0.0001 per share, including 4,843,750 shares of our Class A common stock that are currently outstanding and 156,250 shares of Class A common stock that are issuable upon the exercise of pre-funded warrants with an exercise price of \$0.0001 per share.

We are registering the offer and sale of these shares to satisfy certain registration rights we have granted. The selling stockholders may sell the shares described in this prospectus in a number of different ways and at varying prices. We will not receive any of the proceeds from such sales. The selling stockholders will pay any underwriting discounts and commissions and expenses incurred by them in disposing of these shares. We will bear all other costs, fees and expenses incurred in effecting the registration of these shares, as described in more detail in the section titled "Use of Proceeds" appearing elsewhere in this prospectus. We provide more information about how the selling stockholders may sell their shares in the section titled "Plan of Distribution" appearing elsewhere in this prospectus.

The selling stockholders may sell any, all or none of the shares of Class A common stock and we do not know when or in what amount the selling stockholders may sell their shares hereunder following the effective date of this registration statement.

Our Class A common stock is traded on the New York Stock Exchange ("NYSE") under the symbol "SPIR." On April 24, 2025, the last quoted sale price for our Class A common stock as reported on NYSE was \$9.62 per share.

We are an "emerging growth company," as defined under the federal securities laws, and, as such, may elect to comply with certain reduced public company reporting requirements for future filings.

Investing in our securities involves a high degree of risk. Before buying any securities, you should carefully read the discussion of the risks of investing in our securities in the section titled "Risk Factors" beginning on page 6 of this prospectus.

You should rely only on the information contained in this prospectus or any prospectus supplement or amendment hereto. We have not authorized anyone to provide you with different information.

NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THESE SECURITIES OR DETERMINED IF THIS PROSPECTUS IS TRUTHFUL OR COMPLETE. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

The date of this prospectus is May 8, 2025

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Neither we nor the selling stockholders have authorized anyone to provide any information other than that contained or incorporated by reference in this prospectus, any applicable prospectus supplement or in any free writing prospectus prepared by or on behalf of us or to which we have referred you. Neither we nor the selling stockholders take responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. Neither we nor the selling stockholders are making an offer of these securities in any jurisdiction where the offer is not permitted. You should not assume that the information contained in or incorporated by reference in this prospectus, any applicable prospectus supplement or in any free writing prospectus is accurate as of any date other than their respective dates.

Except as otherwise indicated by the context, references in this prospectus to “we,” “us,” “our” and the “Company” are to the consolidated business of Spire Global, Inc.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains forward-looking statements within the meaning of the federal securities laws, which statements involve substantial risks and uncertainties. Forward-looking statements generally relate to future events or our future financial or operating performance. In some cases, you can identify forward-looking statements because they contain words such as “may,” “will,” “should,” “expect,” “plan,” “anticipate,” “could,” “would,” “intend,” “target,” “project,” “contemplate,” “believe,” “estimate,” “predict,” “potential,” “seek” or “continue” or the negative of these words or other similar terms or expressions that concern our expectations, strategy, plans or intentions. Forward-looking statements contained in this prospectus include, but are not limited to, statements about:

- our ability to meet our financial covenants in the future;
- the sufficiency of our working capital in the future;
- changes in our growth, strategy, future operations, financial position, estimated revenues and losses, projected costs, prospects, and plans;
- our ability to remedy identified material weaknesses;
- failure to complete the transactions contemplated by the Share Purchase Agreement, dated November 13, 2024, by and between the Company and Kpler Holding SA (the “Transactions”), would have a material adverse effect on us;
- uncertainties associated with the Transactions may result in our losing management and other key personnel, which could adversely affect our business and operations;
- there is no assurance that we will be able to realize the anticipated benefits from the Transactions;
- the ability to develop new offerings, services, solutions and features and bring them to market in a timely manner and make enhancements to our business;
- the quality and effectiveness of and advancements in our technology and our ability to accurately and effectively use data and engage in predictive analytics;
- overall level of customer demand for our products and services;
- expectations and timing related to product launches;
- expectations of achieving and maintaining profitability;
- projections of total addressable markets, market opportunity, and market share;
- our ability to acquire data sets, software, equipment, satellite components, and regulatory approvals from third parties;
- our expectations concerning relationships with third parties;
- our ability to acquire or develop products or technologies we believe could complement or expand our platform or to expand our products and services internationally;
- our ability to obtain and protect patents, trademarks, licenses and other intellectual property rights;
- our ability to utilize potential net operating loss carryforwards;
- developments and projections relating to our competitors and industries, such as the projected growth in demand for space-based data;
- our ability to acquire new customers and partners or obtain renewals, upgrades, or expansions from our existing customers;
- our ability to compete with existing and new competitors in existing and new markets and offerings;
- our ability to retain or recruit officers, key employees or directors;
- the planned repayment of our debt obligations;
- our future capital requirements and sources and uses of cash;
- our ability to obtain funding for our operations;
- our business, expansion plans, and opportunities;
- our expectations regarding regulatory approvals and authorizations;
- the expectations regarding the effects of existing and developing laws and regulations, including with respect to regulations around satellites, intellectual property law, and privacy and data protection; and

•global and domestic economic conditions, including currency exchange rate fluctuations, inflation, rising interest rates and geopolitical uncertainty and instability, and their impact on demand and pricing for our offerings in affected markets.

We caution you that the foregoing list may not contain all of the forward-looking statements made or incorporated by reference in this prospectus.

You should not rely upon forward-looking statements as predictions of future events. We have based the forward-looking statements contained or incorporated by reference in this prospectus on our current expectations and projections about future events and trends that we believe may affect our business, financial condition, results of operations, and prospects. The outcome of the events described in these forward-looking statements is subject to risks, uncertainties, and other factors, including those described in the section titled “Risk Factors” and elsewhere in this prospectus and our most recent Annual Report on Form 10-K, as well as any amendments thereto reflected in subsequent filings with the Securities and Exchange Commission (the “SEC”), and any other documents we file with the SEC from time to time. Moreover, we operate in a very competitive and rapidly changing environment. New risks and uncertainties emerge from time to time and it is not possible for us to predict all risks and uncertainties that could have an impact on the forward-looking statements contained or incorporated by reference in this prospectus. We cannot assure you that the results, events, and circumstances reflected in the forward-looking statements will be achieved or occur, and actual results, events, or circumstances could differ materially from those described in the forward-looking statements.

Neither we, the selling stockholders nor any other person assumes responsibility for the accuracy and completeness of any of these forward-looking statements. Moreover, the forward-looking statements made or incorporated by reference in this prospectus relate only to expectations as of the date on which the statements are made. We undertake no obligation to update any forward-looking statements made or incorporated by reference in this prospectus to reflect events or circumstances after the date such statements are made or to reflect new information or the occurrence of unanticipated events, except as required by law. We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make.

In addition, statements that “we believe” and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information available to us as of the date such statements are made, and while we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain, and investors are cautioned not to unduly rely upon these statements.

PROSPECTUS SUMMARY

This summary highlights selected information contained in greater detail elsewhere in this prospectus. This summary may not contain all of the information that you should consider before investing in our Class A common stock. You should carefully read the entire prospectus, any prospectus supplement or any free writing prospectus, and the information incorporated by reference herein and therein before making an investment decision.

Our Company

We are a global provider of space-based data, analytics and space services, offering unique datasets and powerful insights about Earth so that organizations can make decisions with confidence in a rapidly changing world. We build, own, and operate a fully deployed satellite constellation. We believe it is one of the world's largest "listening" constellations, observing the Earth in real time using radio frequency technology.

The data acquired by our multipurpose satellites provide global weather intelligence, ship and plane movements, and spoofing and jamming detection to better predict how their patterns impact economies, global security, business operations and the environment. We also offer space-as-a-service solutions that empower customers to leverage our established infrastructure to put their business in space. We provide customers these solutions through an application programming interface infrastructure.

We also offer research and development services ("R&D Services") to third parties, for the advancement of contracted satellite technologies. In addition to providing R&D Services, we grant the counterparty a license to the developed intellectual property.

Corporate Information

We were incorporated in May 2020 as a Delaware corporation and a special purpose acquisition company under the name NavSight Holdings, Inc. ("NavSight"). On September 9, 2020, NavSight completed its initial public offering. On August 16, 2021 (the "Closing Date"), Spire Global Subsidiary, Inc. (formerly known as Spire Global, Inc.) ("Old Spire") closed its previously announced merger with NavSight, pursuant to the terms of the Business Combination Agreement, dated as of February 28, 2021, by and among Old Spire, NavSight, NavSight Merger Sub, Inc., a wholly owned subsidiary of NavSight, and Peter Platzer, Theresa Condor, Jeroen Cappaert, and Joel Spark (the "Business Combination Agreement"). In connection with the Business Combination Agreement, NavSight changed its name to Spire Global, Inc.

Our principal executive office is located at 8000 Towers Crescent Drive, Suite 1100, Vienna, Virginia 22182, and our telephone number is (202) 301-5127. Information contained on our website or connected thereto does not constitute part of, and is not incorporated by reference into, this prospectus or the registration statement of which it forms a part.

Emerging Growth Company

We are an "emerging growth company," as defined in Section 2(a) of the U.S. Securities Act of 1933, as amended (the "Securities Act"), as modified by the Jumpstart Our Business Act of 2012 (the "JOBS Act"), and may take advantage of certain exemptions from various reporting requirements that are applicable to other public companies that are not emerging growth companies, including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements, and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved.

Further, Section 102(b)(1) of the JOBS Act exempts emerging growth companies from being required to comply with new or revised financial accounting standards until private companies (that is, those that have not had a Securities Act registration statement declared effective or do not have a class of securities registered under the Securities Exchange Act of 1934, as amended (the "Exchange Act")) are required to comply with the new or revised financial accounting standards. The JOBS Act provides that a company can elect to opt out of the extended transition period and comply with the requirements that apply to non-emerging growth companies but any such election to opt out is irrevocable. We have elected not to opt out of such extended transition period, which means that when a standard is issued or revised and it has different application dates for public or private companies, we can adopt the new or revised standard at the time private companies adopt the new or revised standard. This may make comparison of our financial statements with certain other public companies difficult or impossible because of the potential differences in accounting standards used.

We will remain an emerging growth company until the earlier of: (i) the last day of the fiscal year (a) following the fifth anniversary of the closing of our initial public offering, (b) in which we have total annual gross revenue of at least \$1.235 billion or (c) in which we are deemed to be a large accelerated filer, which means the market value of our common equity that is held by non-affiliates exceeds \$700 million as of the end of the prior fiscal year's second fiscal quarter; and (ii) the date on which we have issued more than \$1.0 billion in non-convertible debt securities during the prior three-year period. References herein to "emerging growth company" shall have the meaning associated with it in the JOBS Act.

Smaller Reporting Company

We are a "smaller reporting company" as defined in Item 10(f)(1) of Regulation S-K. Smaller reporting companies may take advantage of certain reduced disclosure obligations, including, among other things, providing only two years of audited financial statements. We will remain a smaller reporting company until the last day of the fiscal year in which (i) the market value of our common stock held by non-affiliates exceeds \$250 million as of the prior June 30, or (ii) our annual revenues exceeded \$100 million during such completed fiscal year and the market value of our common stock held by non-affiliates exceeds \$700 million as of the prior June 30.

THE OFFERING

Issuer	Spire Global, Inc.
Shares of Class A common stock offered by selling stockholders	5,000,000 shares
Terms of the offering	The selling stockholders determine when and how they will dispose of the shares of Class A common stock registered under this prospectus for resale.
Use of Proceeds	All net proceeds from the sale of the shares of Class A common stock covered by this prospectus will go to the selling stockholders. We will receive none of the proceeds from the sale of the shares of Class A common stock covered by this prospectus by the selling stockholders. See "Use of Proceeds."
Risk Factors	See the section titled "Risk Factors" and other information included or incorporated by reference in this prospectus for a discussion of factors that you should consider carefully before deciding to invest in our Class A common stock.
Market for Class A common stock	Our Class A common stock is traded on the NYSE under the symbol "SPIR"

RISK FACTORS

Investment in any shares of Class A common stock offered pursuant to this prospectus and any applicable prospectus supplement involves risks. Before deciding whether to acquire any such shares, you should consider carefully the risks and uncertainties described under the heading “Risk Factors” in our most recent Annual Report on Form 10-K and any amendments thereto, as well as any risks and uncertainties described in subsequent filings with the SEC, together with other information contained or incorporated by reference in this prospectus and any applicable prospectus supplement. The risks described in these documents are not the only ones we face. There may be other unknown or unpredictable economic, business, competitive, regulatory or other factors, or factors that we currently deem immaterial, that could have material adverse effects on our future results. Past financial performance may not be a reliable indicator of future performance, and historical trends should not be used to anticipate results or trends in future periods. If any of the risks we face actually occur, our business, financial condition, results of operations or cash flow could be seriously harmed. This could cause the trading price of our Class A common stock to decline, resulting in a loss of all or part of your investment. Please also read carefully the section above titled “Special Note Regarding Forward-Looking Statements.”

USE OF PROCEEDS

All of the shares of Class A common stock offered by the selling stockholders pursuant to this prospectus will be sold by the selling stockholders for their accounts. We will not receive any of the proceeds from these sales. The selling stockholders will pay any underwriting discounts and commissions and expenses incurred by it for brokerage, accounting, tax or legal services or any other expenses incurred by it in disposing of the shares. We will bear all other costs, fees and expenses incurred in effecting the registration of the shares covered by this prospectus, including, without limitation, all registration and filing fees, NYSE listing fees and fees of our counsel and our independent registered public accountants.

SELLING STOCKHOLDERS

The shares of Class A common stock being offered by the selling stockholders are those previously issued to the selling stockholders, and those issuable to the applicable selling stockholder upon exercise of the pre-funded warrants.

On March 12, 2025, we entered into a securities purchase agreement (the “2025 Purchase Agreement”) with the purchasers named therein, for the private placement (the “2025 Private Placement”) of (i) 4,843,750 shares of our Class A common stock at a purchase price of \$8.00 per share, and (ii) pre-funded warrants to purchase 156,250 shares of Class A common stock, at a purchase price of \$7.9999 per pre-funded warrant. The pre-funded warrants have an exercise price of \$0.0001 per share of Class A common stock, are exercisable immediately, and will terminate when exercised in full. The aggregate gross proceeds for the 2025 Private Placement were \$40.0 million, before deducting offering expenses, and the 2025 Private Placement closed on March 14, 2025.

We are registering the shares of Class A common stock in order to permit the selling stockholders to offer the shares for resale from time to time. Except for the ownership of the shares of Class A common stock and the pre-funded warrants, the selling stockholders have not had any material relationship with us within the past three years.

The table below lists the selling stockholders and other information regarding the beneficial ownership of the shares of Class A common stock by each of the selling stockholders. The second column lists the number of shares of Class A common stock beneficially owned by each selling stockholder, based on its ownership of the shares of Class A common stock and pre-funded warrants, as of March 18, 2025, assuming exercise of the pre-funded warrants held by the applicable selling stockholder on that date, without regard to any limitations on exercises.

The third column lists the shares of Class A common stock being offered by this prospectus by the selling stockholders.

In accordance with the terms of a registration rights agreement with the selling stockholders, this prospectus generally covers the resale of the sum of (i) the number of shares of Class A common stock issued to the selling stockholders in the 2025 Private Placement described above and (ii) the number of shares of Class A common stock issuable upon exercise of the pre-funded warrants, determined as if the outstanding pre-funded warrants were exercised in full as of the trading day immediately preceding the date this registration statement was initially filed with the SEC, each as of the trading day immediately preceding the applicable date of determination and all subject to adjustment as provided in the registration rights agreement. The fourth column assumes the sale of all of the shares offered by the selling stockholders pursuant to this prospectus.

The selling stockholders may sell all, some or none of their shares in this offering. See “Plan of Distribution.”

Name of Selling Stockholder	Number of Shares of Class A Common Stock Owned Prior to Offering	Maximum Number of Shares of Class A Common Stock to be Sold Pursuant to this Prospectus	Number of Shares of Class A Common Stock Owned After Offering
Manatuck Hill Navigator Master Fund, LP ⁽¹⁾	66,400	66,400	—
Manatuck Hill Scout Fund, LP ⁽¹⁾	125,800	125,800	—
Manatuck Hill Mariner Master Fund, LP ⁽¹⁾	120,300	120,300	—
James H. Zavoral	6,250	6,250	—
GROW Small Cap Equity Long Short L.P. ⁽²⁾	62,500	62,500	—
MWS T21 Family LLC ⁽³⁾	250,000	250,000	—
Alice W. Lytton Family LLC ⁽⁴⁾	250,000	250,000	—
Lytton-Kambara Foundation ⁽⁵⁾	625,000	625,000	—
Alyeska Master Fund, LP ⁽⁶⁾	1,250,000	1,250,000	—
Alto Opportunity Master Fund, SPC - Segregated Master Portfolio B ⁽⁷⁾	137,500	137,500	—
Michael M. Kellen Descendants 2012 GST Trust ⁽⁸⁾	75,000	75,000	—
325 Capital LLC ⁽⁹⁾	1,875,000	1,875,000	—
Herald Investment Trust Plc ⁽¹⁰⁾	386,250	156,250	230,000

(1)Thomas Scalia is the General Partner of Manatuck Hill Navigator Master Fund, LP, Manatuck Hill Scout Fund, LP, and Manatuck Hill Mariner Master Fund, LP. The business address of these funds is c/o Manatuck Hill Partners, LLC, 1465 Post Rd East, Westport, CT 06880.

(2)Carl Wiese is the Manager of GROW Small Cap Equity Long Short L.P. The business address of GROW Small Cap Equity Long Short L.P. is 4275 Executive Square, Suite 335, La Jolla, CA 92037.

(3)Michael W. Sonnenfeldt is the Executive Manager of MWS T21 Family LLC. The business address of MWS T21 Family LLC is 1995 Broadway, 17th Floor, New York, NY 10023.

(4)Laurence Lytton is the Managing Partner of Alice W. Lytton Family LLC. The business address of Alice W. Lytton Family LLC is 467 Central Park West, New York, NY 10025.

(5)Laurence Lytton is the President of the Lytton-Kambara Foundation. The business address of Lytton-Kambara Foundation is 467 Central Park West, New York, NY 10025.

(6)Alyeska Investment Group, L.P., the investment manager of Alyeska Master Fund, L.P., has voting and investment control of the shares held by the Alyeska Master Fund, L.P. Anand Parekh is the Chief Executive Officer of Alyeska Investment Group, L.P. and may be deemed to be the beneficial owner of such shares. Mr. Parekh, however, disclaims any beneficial ownership of the shares held by the selling stockholder. The registered address of Alyeska Master Fund, L.P. is at c/o Maples Corporate Services Limited, P.O. Box 309, Ugland House, South Church Street George Town, Grand Cayman, KY1-1104, Cayman Islands. Alyeska Investment Group, L.P. is located at 77 W. Wacker, Suite 700, Chicago IL 60601.

(7)The business address of the selling stockholder is c/o Ayrton Capital LLC, 55 Post Rd West, 2nd Floor, Westport, CT 06880. Ayrton Capital LLC, the investment manager to Alto Opportunity Master Fund, SPC – Segregated Master Portfolio B, has discretionary authority to vote and dispose of the shares held by Alto Opportunity Master Fund, SPC – Segregated Master Portfolio B and may be deemed to be the beneficial owner of these shares. Waqas Khatri, in his capacity as Managing Member of Ayrton Capital LLC, may also be deemed to have investment discretion and voting power over the shares held by Alto Opportunity Master Fund, SPC – Segregated Master Portfolio B. Ayrton Capital LLC and Mr. Khatri each disclaim any beneficial ownership of these shares.

(8)Denise Kellen is the Trustee of the Michael M. Kellen Descendants 2012 GST Trust. The business address of the Michael M. Kellen Descendants 2012 GST Trust is c/o Bleichroeder, 1345 Ave of Americas, 47th Floor, New York, NY 10105-4700.

(9)Anil Shrivastava is the Managing Partner of 325 Capital LLC, which serves as the investment manager to 325 Capital Master Fund LP and to separately managed accounts Gothic Corp 649429, Gothic ERP 649947, Gothic HSP 649359 and Gothic JBD 650324. The business address of 325 Capital LLC is 757 Third Avenue, 20th Floor, New York, NY 10017.

(10)Peter Jenkin is the Investment Manager of Herald Investment Management Limited, which serves as the investment manager to Herald Investment Trust Plc. The business address of Herald Investment Trust Plc is 10-11 Charterhouse Square, London, EC1 M 6EE, United Kingdom.

PLAN OF DISTRIBUTION

Each selling stockholder of the securities and any of their pledgees, assignees and successors-in-interest may, from time to time, sell any or all of their securities covered hereby on the NYSE or any other stock exchange, market or trading facility on which the securities are traded or in private transactions. These sales may be at fixed or negotiated prices. A selling stockholder may use any one or more of the following methods when selling securities:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the securities as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- settlement of short sales;
- in transactions through broker-dealers that agree with the selling stockholders to sell a specified number of such securities at a stipulated price per security;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- a combination of any such methods of sale; or
- any other method permitted pursuant to applicable law.

The selling stockholders may also sell securities under Rule 144 or any other exemption from registration under the Securities Act, if available, rather than under this prospectus.

Broker-dealers engaged by the selling stockholders may arrange for other brokers-dealers to participate in sales. Broker-dealers may receive commissions or discounts from the selling stockholders (or, if any broker-dealer acts as agent for the purchaser of securities, from the purchaser) in amounts to be negotiated, but, except as set forth in a supplement to this prospectus, in the case of an agency transaction not in excess of a customary brokerage commission in compliance with FINRA Rule 2121; and in the case of a principal transaction a markup or markdown in compliance with FINRA Rule 2121.

In connection with the sale of the securities or interests therein, the selling stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the securities in the course of hedging the positions they assume. The selling stockholders may also sell securities short and deliver these securities to close out their short positions, or loan or pledge the securities to broker-dealers that in turn may sell these securities. The selling stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or create one or more derivative securities which require the delivery to such broker-dealer or other financial institution of securities offered by this prospectus, which securities such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The selling stockholders and any broker-dealers or agents that are involved in selling the securities may be deemed to be “underwriters” within the meaning of the Securities Act in connection with such sales. In such event, any commissions received by such broker-dealers or agents and any profit on the resale of the securities purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act. Each selling stockholder has informed the Company that it does not have any written or oral agreement or understanding, directly or indirectly, with any person to distribute the securities.

The Company is required to pay certain fees and expenses incurred by the Company incident to the registration of the securities. The Company has agreed to indemnify the selling stockholders against certain losses, claims, damages and liabilities, including liabilities under the Securities Act.

We agreed to keep this prospectus effective until the earlier of (i) the date on which the securities may be resold by the selling stockholders without registration and without regard to any volume or manner-of-sale limitations by reason of Rule 144, without the requirement for the Company to be in compliance with the current public information under Rule 144 under the Securities Act or any other rule of similar effect or (ii) all of the securities have been sold pursuant to this prospectus or Rule 144 under the Securities Act or any other rule of similar effect. The resale securities will be sold only through registered or licensed brokers or dealers if required under applicable state securities laws. In addition, in certain states, the resale securities covered hereby may not be sold unless they have been registered or qualified for sale in the applicable state or an exemption from the registration or qualification requirement is available and is complied with.

Under applicable rules and regulations under the Exchange Act, any person engaged in the distribution of the resale securities may not simultaneously engage in market making activities with respect to the Class A common stock for the applicable restricted period, as defined in Regulation M, prior to the commencement of the distribution. In addition, the selling stockholders will be subject to applicable provisions of the Exchange Act and the rules and regulations thereunder, including Regulation M, which may limit the timing of purchases and sales of the Class A common stock by the selling stockholders or any other person. We will make copies of this prospectus available to the selling stockholders and have informed them of the need to deliver a copy of this prospectus to each purchaser at or prior to the time of the sale (including by compliance with Rule 172 under the Securities Act)

DESCRIPTION OF SECURITIES TO BE REGISTERED

The following summary description of our capital stock is based on the provisions of our restated certificate of incorporation, as amended (our “certificate of incorporation”), our amended and restated bylaws (our “bylaws”), the applicable provisions of the Delaware General Corporation Law (the “DGCL”) and the agreements described below. This information may not be complete in all respects and is qualified entirely by reference to the provisions of our certificate of incorporation, our bylaws, the DGCL and such agreements. For information on how to obtain copies of our certificate of incorporation, our bylaws and such agreements, which are exhibits to the registration statement of which this prospectus forms a part, see the section titled “Where You Can Find More Information.”

General

Our authorized capital stock consists of 1,115,000,000 shares, \$0.0001 par value per share, of which:

- 1,000,000,000 shares are designated as Class A common stock;
- 15,000,000 shares are designated as Class B common stock; and
- 100,000,000 shares are designated as preferred stock.

Common Stock

Our certificate of incorporation authorizes two classes of common stock: Class A common stock and Class B common stock. The rights of the holders of our Class A common stock and our Class B common stock are identical, except with respect to voting and certain economic rights. Some of the terms of these classes of our common stock are discussed in greater detail below.

Dividend Rights

Subject to the prior rights of holders of all classes and series of stock at the time outstanding having prior rights as to dividends, the holders of our Class A common stock are entitled to receive dividends on a pro rata basis out of any assets legally available as may be declared from time to time by our board of directors. Dividends may not be declared or paid on our Class B common stock.

Right to Receive Liquidation Distributions

If we become subject to a liquidation, dissolution, or winding up, the assets legally available for distribution to our stockholders would be distributable on an equal priority, pro rata basis to the holders of our common stock unless different treatment is approved by the majority of the holders of our Class A common stock and our Class B common stock, each voting separately as a class, subject to the rights of any holders of any series of our preferred stock then outstanding. Our Class B common stock is entitled to receive a maximum of \$0.0001 per share upon a liquidation, dissolution, or winding up.

Voting Rights

Holders of our Class A common stock are entitled to one vote for each share held as of the record date for the determination of the stockholders entitled to vote on such matters and holders of our Class B common stock are entitled to nine votes for each share held at the record date for the determination of the stockholders entitled to vote on such matters, except as otherwise required by law. The holders of our Class A common stock and our Class B common stock vote together as a single class, unless otherwise expressly provided in our certificate of incorporation or required by law.

Under our certificate of incorporation, approval of the holders of at least two-thirds of the outstanding shares of our Class B common stock, voting as a separate class, is required to:

- directly or indirectly, whether by amendment, or through merger, recapitalization, consolidation or otherwise, amend or repeal, or adopt any provision of our certificate of incorporation inconsistent with, or otherwise alter, any provision of our certificate of incorporation relating to the voting or other rights, powers, preferences, privileges or restrictions of our Class B common stock;
- reclassify any outstanding shares of our Class A common stock into shares having the right to have more than one vote for each share thereof; or
- issue any shares of our Class B common stock.

In addition, Delaware law could require either holders of our Class A common stock or of our Class B common stock to vote separately as a single class in the following circumstances:

- if we were to seek to amend our certificate of incorporation in a manner that alters or changes the powers, preferences, or special rights of a class of stock in a manner that affected its holders adversely; and
- if we were to seek to amend our certificate of incorporation to increase or decrease the par value of a class of stock, then that class would be required to vote separately to approve the proposed amendment.

Subject to any rights of the holders of any series of our preferred stock to elect directors under specified circumstances, the number of directors that constitutes our board of directors will be fixed solely by resolution of our board of directors. Our certificate of incorporation and bylaws have established a classified board of directors that is divided into three classes with staggered three-year terms. Only the directors in one class will be subject to election by a plurality of the votes cast at each annual meeting of our stockholders, with the directors in the other classes continuing for the remainder of their respective three-year terms. There is no cumulative voting with respect to the election of directors.

Conversion and Transferability

Shares of our Class A common stock and our Class B common stock are not convertible into any other shares of our capital stock. Each share of our Class B common stock will automatically and without further action on the part of us or the holders of our Class B common stock be transferred to us for no consideration upon (i) the affirmative written election of such holder, (ii) the date fixed by our board of directors that is no less than 61 days and no more than 180 days following the first time after 11:59 p.m. Eastern Time on the Closing Date of our merger with NavSight, that both (a) such Founder (as such term is defined in our certificate of incorporation) is no longer providing services to us as an officer, employee, or consultant and (b) such Founder is no longer one of our directors, (iii) the date fixed by our board of directors that is no less than 61 days and no more than 180 days following the date that such Founder's employment with us is terminated for Cause for Termination (as such term is defined in our certificate of incorporation), or (iv) upon the death or disability of such Founder. In addition, upon the sale, assignment, transfer, or other disposition of shares of Class A common stock held by the Founders pursuant to transfers not permitted by our certificate of incorporation, an equivalent number of shares of Class B common stock held by such Founder will be automatically and without further action on the part of us or such Founder be transferred to us for no consideration.

Notwithstanding the foregoing, all outstanding shares of our Class B common stock will automatically and without further action on the part of us or the holders of Class B common stock be transferred to us for no consideration on (i) the date specified by the holders of two-thirds of the then outstanding shares of our Class B common stock, voting as a separate class, or in the affirmative written election executed by the holders of two-thirds of the then outstanding shares of our Class B common stock, or (ii) the date fixed by our board of directors that is no less than 61 days and no more than 180 days following the date that the number of outstanding shares of our Class B common stock held by the Founders represents less than 10% of the aggregate number of shares of our Class B common stock held collectively by the Founders as of 11:59 p.m. Eastern Time on the Closing Date.

Other Matters

All outstanding shares of our common stock are fully paid and nonassessable. Our common stock is not entitled to preemptive rights and is not subject to redemption or sinking fund provisions.

Preferred Stock

Our board of directors is authorized, subject to any limitations prescribed by law, to provide for the issuance of preferred stock in series, to establish from time to time the number of shares to be included in each such series, and by filing a certificate pursuant to the

applicable law of the State of Delaware (“Preferred Stock Designation”) to fix the designation, powers, preferences and rights of the shares of each series and any qualifications, limitations or restrictions thereof. Our board of directors is empowered to increase or decrease the number of shares of any series of preferred stock, but not below the number of shares of that series then outstanding, without any further vote or action by our stockholders, unless required by the Preferred Stock Designation, irrespective of the provisions of the DGCL. Our board of directors is able to authorize the issuance of preferred stock with voting or conversion rights that could adversely affect the voting power or other rights of the holders of our common stock. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions and other corporate purposes, could, among other things, have the effect of delaying, deferring or preventing a change in control of the Company and might adversely affect the market price of our Class A common stock and the voting and other rights of the holders of our common stock.

Anti-Takeover Provisions

Certain provisions of Delaware law, our certificate of incorporation, and our bylaws, which are summarized below, may have the effect of delaying, deferring, or discouraging another person from acquiring control of us. They are also designed, in part, to encourage persons seeking to acquire control of us to negotiate first with our board of directors.

Section 203 of the DGCL

We are governed by the provisions of Section 203 of the DGCL. In general, Section 203 of the DGCL prohibits a public Delaware corporation from engaging in a “business combination” with an “interested stockholder” for a period of three years after the date of the transaction in which the person became an interested stockholder, unless:

- either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder was approved by the board of directors prior to the time that the stockholder became an interested stockholder;
- upon consummation of the transaction which resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding shares owned by directors who are also officers of the corporation and shares owned by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or
- at or subsequent to the time the stockholder became an interested stockholder, the business combination was approved by the board of directors and authorized at an annual or special meeting of the stockholders, and not by written consent, by the affirmative vote of at least two-thirds of the outstanding voting stock which is not owned by the interested stockholder.

In general, Section 203 defines a “business combination” to include mergers, asset sales, and other transactions resulting in financial benefit to a stockholder and an “interested stockholder” as a person who, together with affiliates and associates, owns, or, within the prior three years, did own, 15% or more of the corporation’s outstanding voting stock. These provisions may have the effect of delaying, deferring, or preventing changes in control of us.

Certificate of Incorporation and Bylaws Provisions

Our certificate of incorporation and bylaws include a number of provisions that could deter hostile takeovers or delay or prevent changes in control of our board of directors or management team, including the following:

Dual Class Stock

As described above, our Class B common stock has nine votes per share, while our Class A common stock, which is the only class of our capital stock that is publicly traded, has one vote per share. As a result of this dual class structure, the Founders have an aggregate of ten votes per share of Class A common stock, which will provide the Founders significant influence over matters requiring stockholder approval, including the election of directors and significant corporate transactions, such as a merger, consolidation, sale of all or substantially all of our assets, or other major corporate transaction.

Board of Directors Vacancies

Our certificate of incorporation and bylaws authorize only a majority of the remaining members of our board of directors, although less than a quorum, to fill vacant directorships, including newly created seats. In addition, subject to the rights of holders of any series of preferred stock to elect directors under specific circumstances, the number of directors constituting our board of directors will be permitted to be set only by a resolution of our board of directors. These provisions would prevent a stockholder from increasing the size

of our board of directors and then gaining control of our board of directors by filling the resulting vacancies with its own nominees. This will make it more difficult to change the composition of our board of directors and will promote continuity of management.

Classified Board

Our board of directors is divided into three classes with staggered three-year terms. Only one class of directors will be elected at each annual meeting of our stockholders, with the other classes continuing for the remainder of their respective three-year terms. Any increase or decrease in the number of directors will be distributed among the three classes so that, as nearly as possible, each class will consist of one-third of the directors. This system of electing and removing directors may tend to discourage a third-party from making a tender offer or otherwise attempting to obtain control of us, because it generally makes it more difficult for stockholders to replace a majority of the directors.

Stockholder Action; Special Meeting of Stockholders

Our certificate of incorporation and bylaws provide that our stockholders may not take action by written consent but may only take action at a duly called annual or special meeting of the stockholders. As a result, a holder controlling a majority of the voting power of our capital stock would not be able to amend our bylaws, amend our certificate of incorporation or remove directors without holding a meeting of our stockholders called in accordance with our bylaws. Our bylaws further provide that special meetings of our stockholders may be called only by a majority of our board of directors, the chairperson of our board of directors, our Chief Executive Officer or our President, thus prohibiting stockholder action to call a special meeting. These provisions might delay the ability of our stockholders to force consideration of a proposal or for stockholders controlling a majority of our capital stock to take any action, including the removal of directors.

Advance Notice Requirements for Stockholder Proposals and Director Nominations

Our bylaws provide advance notice procedures for stockholders seeking to bring business before the annual meeting of stockholders or to nominate candidates for election as directors at the annual meeting of stockholders. Our bylaws also specify certain requirements regarding the form and content of a stockholder's notice. These provisions might preclude our stockholders from bringing matters before the annual meeting of stockholders or from making nominations for directors at the annual meeting of stockholders if the proper procedures are not followed. These provisions may also discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the acquirer's own slate of directors or otherwise attempting to obtain control of us.

No Cumulative Voting

The DGCL provides that stockholders are not entitled to cumulate votes in the election of directors unless a corporation's certificate of incorporation provides otherwise. Our certificate of incorporation does not provide for cumulative voting.

Amendment of Certificate of Incorporation and Bylaws Provisions

Any amendment of our certificate of incorporation that requires stockholder approval pursuant to the DGCL requires the affirmative vote of the holders of at least a majority of the voting power of our then outstanding capital stock entitled to vote generally in the election of directors, voting together as a single class. Our bylaws provide that the affirmative vote of the holders of at least a majority of the total voting power of our then outstanding capital stock, voting together as a single class, is required for stockholders to alter, amend or repeal, or adopt any provision of our bylaws.

Issuance of Undesignated Preferred Stock

Our certificate of incorporation provides that our board of directors has the authority, without further action by our stockholders, to issue up to 100,000,000 shares of undesignated preferred stock with rights and preferences, including voting rights, designated from time to time by our board of directors. The existence of authorized but unissued shares of preferred stock would enable our board of directors to render more difficult or to discourage an attempt to obtain control of us by means of a tender offer, proxy contest, or other means.

Exclusive Forum

Our bylaws provide that, unless otherwise consented to by us in writing, the Court of Chancery of the State of Delaware (or, if the Court of Chancery does not have jurisdiction, the federal district court for the District of Delaware) shall, to the fullest extent permitted by law, be the sole and exclusive forum for (i) any derivative action or proceeding brought on our behalf; (ii) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers, or other employees to us or our stockholders; (iii) any action arising pursuant to any provision of the DGCL or our certificate of incorporation or bylaws; or (iv) any action asserting a claim governed by the internal affairs doctrine, in all cases subject to the court having jurisdiction over indispensable parties named as defendants. Our bylaws further provide that, unless otherwise consented to by us in writing, the federal district courts of the United States are the sole and exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act, against any person in connection with any offering of our securities, including, without limitation and for the avoidance of doubt, any auditor, underwriter, expert, control person, or other defendant. Any person or entity purchasing or otherwise acquiring any interest in our securities shall be deemed to have notice of and consented to this provision. Nothing in this provision will apply to any action brought to enforce a duty or liability created by the Exchange Act. Stockholders cannot waive compliance (or consent to non-compliance) with the federal securities laws and the rules and regulations thereunder. These provisions may have the effect of discouraging lawsuits against us or our directors and officers.

Dissenters' Rights of Appraisal and Payment

Under the DGCL, with certain exceptions, our stockholders have appraisal rights in connection with a merger or consolidation of us. Pursuant to the DGCL, stockholders who properly request and perfect appraisal rights in connection with such merger or consolidation will have the right to receive payment of the fair value of their shares as determined by the Delaware Court of Chancery.

Registration Rights

The Investor Rights Agreement, dated as of February 28, 2021, by and between us, Six4 Holdings, LLC, Gilman Louie, Henry Crumpton, Jack Pearlstein, Robert Coleman, William Crowell, Peter Platzer, Theresa Condor, William Porteous and Stephen Messer provides that we are required to register for resale, pursuant to Rule 415 under the Securities Act, certain shares of Class A common stock and other equity securities that are held by the parties thereto from time to time, subject to the restrictions on transfer therein.

Pursuant to the Registration Rights Agreement, dated as of March 12, 2025, by and between us and the purchasers named therein, we agreed to file, on or before April 30, 2025, a registration statement with the SEC for purposes of registering for resale 4,843,750 shares of our Class A common stock and the shares underlying pre-funded warrants to purchase 156,250 shares of our Class A common stock, which shares of Class A common stock and pre-funded warrants were issued and sold in a private placement that closed on March 14, 2025. We also agreed to have such registration statement declared effective no later than June 30, 2025, and to keep the registration statement effective until the date that all registrable securities covered by the registration statement (i) have been sold, thereunder or pursuant to Rule 144, or (ii) may be sold without volume or manner-of-sale restrictions pursuant to Rule 144 and without the requirement for us to be in compliance with the current public information requirement under Rule 144.

Transfer Agent

The transfer agent for our common stock is Equiniti Trust Company, LLC.

Listing

Our Class A common stock is listed on the NYSE under the symbol "SPIR."

LEGAL MATTERS

Faegre Drinker Biddle & Reath LLP has passed upon the validity of the shares of our Class A common stock offered by this prospectus.

EXPERTS

The financial statements incorporated in this prospectus by reference to the Annual Report on Form 10-K/A of Spire Global, Inc. for the year ended December 31, 2024, have been so incorporated in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, proxy and information statements and other information with the SEC. These filings, including the registration statement of which this prospectus forms a part and the exhibits and schedules thereto, are available to the public in electronic form at the website maintained by the SEC at www.sec.gov.

Information about us, including copies of our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and proxy and information statements filed with the SEC, is also available at our website at www.spire.com. However, the information on our website is not a part of, or incorporated by reference in, this prospectus.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to “incorporate by reference” the information we file with them, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is an important part of this prospectus, and information that we file later with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below and all documents we file pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act on or after the date of the initial filing of the registration statement of which this prospectus is a part and prior to effectiveness of the registration statement, and on or after the date of this prospectus and prior to the termination of the offering under this prospectus (other than, in each case, documents or information deemed to have been furnished and not filed, including any information that we disclose under Items 2.02 or 7.01 of any Current Report on Form 8-K, in accordance with SEC rules):

- (i) our Annual Report on Form 10-K/A for the year ended December 31, 2023, as filed with the SEC on [March 3, 2025](#), and our Annual Report on Form 10-K for the year ended December 31, 2024, as filed with the SEC on [March 31, 2025](#), as amended by our Annual Report on Form 10-K/A filed with the SEC on [April 4, 2025](#);
- (ii) our Quarterly Report on Form 10-Q/A for the quarter ended March 31, 2024, filed with the SEC on [March 3, 2025](#), our Quarterly Reports on Form 10-Q for the quarter ended June 30, 2024, filed with the SEC on [March 3, 2025](#), and for the quarter ended September 30, 2024, filed with the SEC on [March 3, 2025](#);
- (iii) our definitive proxy statement on Schedule 14A, as filed with the SEC on [April 22, 2025](#);
- (iv) our Current Reports on Form 8-K filed with the SEC on [February 7, 2025](#), [February 11, 2025](#), [February 19, 2025](#), [March 5, 2025](#), [March 13, 2025](#), [March 17, 2025](#), [March 24, 2025](#), [April 4, 2025](#), [April 7, 2025](#) and [April 25, 2025](#); and
- (v) the description of our Class A common stock contained in the registration statement on [Form 8-A12B](#) filed with the SEC on September 8, 2020, together with any amendment or report that we may file for the purpose of updating this description.

We will provide to any person, including any beneficial owner, to whom a prospectus is delivered, at no cost, upon written or oral request, a copy of any or all of the reports or documents that have been incorporated by reference in the prospectus contained in the registration statement but not delivered with the prospectus. You should direct requests for documents to:

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Attn: Alison Engel, Chief Financial Officer
Telephone: (202) 301-5127

