

As filed with the United States Securities and Exchange Commission on May 19, 2026

Registration No. 333-

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM S-8
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

TERRESTRIAL ENERGY INC.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

98-1785406

(I.R.S. Employer
Identification No.)

**2730 W. Tyvola Road, Suite 10,
Charlotte, NC**

(Address of Principal Executive Offices)

28217

(Zip Code)

**Terrestrial Energy Inc. Second Amended and Restated 2024 Stock Option Plan
Terrestrial Energy Inc. 2025 Equity Incentive Plan
Individual Restricted Stock Award Agreement**

(Full title of the plan)

**Steven Millsap
General Counsel, Secretary and Chief Compliance Officer
2730 W. Tyvola Road, Suite 10,
Charlotte, NC 28217**

(Name and address of agent for service)

(646) 687-8212

(Telephone number, including area code, of agent for service)

Copies to:

**Sean M. Jones
Coleman Wombwell
K&L Gates LLP
300 South Tryon Street
Suite 1000
Charlotte, NC 28202
(704) 331-7400**

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	<input type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input checked="" type="checkbox"/>	Smaller reporting company	<input checked="" type="checkbox"/>
		Emerging growth company	<input checked="" type="checkbox"/>

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

EXPLANATORY NOTE

Terrestrial Energy Inc. (the “Company” or the “Registrant”) has filed with the Securities and Exchange Commission (the “Commission”) this registration statement on Form S-8 (this “Registration Statement”) to register under the Securities Act of 1933, as amended (the “Securities Act”), the resale of (i) 10,550,601 shares of common stock, par value \$0.0001 per share (the “common stock”), underlying options that were issued under the Terrestrial Energy Inc. Second Amended and Restated 2024 Stock Option Plan (the “2024 Plan”) assumed by the Company pursuant to that certain Business Combination Agreement, dated as of March 26, 2025 (the “Business Combination Agreement”); (ii) 209,633 shares of common stock underlying equity awards granted under the Terrestrial Energy Inc. 2025 Equity Incentive Plan (the “2025 Plan”); and (iii) 1,023,161 shares of common stock underlying restricted stock units issued to the Company’s Chief Executive Officer under an individual restricted stock unit award agreement (the “RSU Agreement” and together with the 2024 Plan and the 2025 Plan, the “Plans”). The shares registered for resale hereunder are referred to as the “Shares”.

This registration statement contains a “reoffer prospectus” prepared in accordance with Part I of Form S-3 (in accordance with Instruction C of the General Instructions to Form S-8). This reoffer prospectus may be used for reoffers and resales on a continuous or delayed basis of some or all of the Shares that constitute “restricted securities” and/or “control securities” within the meaning of the Securities Act of 1933, as amended (the “Securities Act”), and Instruction C of the General Instructions to Form S-8, by certain stockholders that are current directors and officers of the Registrant (the “Selling Stockholders”) for their own accounts.

Certain of the Selling Stockholders may be ineligible to sell their Shares prior to the expiration of the lock-up agreements that they have entered into in connection with the transactions contemplated by the Business Combination Agreement as described in the section titled “Plan of Distribution – Lock-Up Agreements” in the reoffer prospectus included below. Subject to such lock-up agreements, the Selling Stockholders may sell any, all, or none of the Shares, and we do not know when or in what amount the Selling Stockholders may sell their Shares, if they were to sell any, hereunder following the effective date of this registration statement. As and to the extent specified in General Instruction C of Form S-8, the amount of securities to be reoffered or resold under the reoffer prospectus by each Selling Stockholder and any other person with whom he, she or it is acting in concert for the purpose of selling the Registrant’s securities, may not exceed, during any three-month period, the amount specified in Rule 144(e) under the Securities Act.

REOFFER PROSPECTUS



TERRESTRIAL ENERGY INC.

11,783,395 SHARES OF COMMON STOCK

This prospectus relates to 11,783,395 shares common stock, par value \$0.0001 per share, (the “Shares”), of Terrestrial Energy Inc., a Delaware corporation (“us,” “we,” “Terrestrial Energy,” or the “Company”), that may be offered from time to time by certain stockholders that are our current directors and officers (the “Selling Stockholders”) for their own accounts. We will not receive any of the proceeds from the sale of Shares by the Selling Stockholders made hereunder. The Shares were or will be acquired by the Selling Stockholders pursuant to the Terrestrial Energy Inc. Second Amended and Restated 2024 Stock Option Plan (the “2024 Plan”), the Terrestrial Energy Inc. 2025 Equity Incentive Plan (the “2025 Plan”), or an individual restricted stock unit award agreement.

The Selling Stockholders may sell the securities described in this prospectus in a number of different ways and at varying prices, including sales in the open market, sales in negotiated transactions and sales by a combination of these methods. Certain of the Selling Stockholders may be eligible to sell their Shares prior to the expiration of the lock-up agreements that they have entered into in connection with the transactions contemplated by the Business Combination Agreement, pursuant to release provisions in such lock-up agreements as described in the section titled “Lock-Up Agreements” in our registration statement on Form S-4, initially filed with the Securities and Exchange Commission on July 17, 2025 and as amended from time to time thereafter (File No. 333-288735). Subject to such lock-up agreements, the Selling Stockholders may sell any, all, or none of the Shares, and we do not know when or in what amount the Selling Stockholders may sell their Shares, if they were to sell any, hereunder following the effective date of this registration statement. The price at which any of the Shares may be sold, and the commissions, if any, paid in connection with any such sale, are unknown and may vary from transaction to transaction. The Shares may be sold at the market price of our common stock at the time of a sale, at prices relating to the market price over a period of time, or at prices negotiated with the buyers of shares. The Shares may be sold through underwriters or dealers which the Selling Stockholders may select. If underwriters or dealers are used to sell the Shares, we will name them and describe their compensation in a prospectus supplement. We provide more information about how the Selling Stockholders may sell their Shares in the section titled “Plan of Distribution.” The Selling Stockholders will bear all sales commissions and similar expenses. Any other expenses incurred by us in connection with the registration and offering that are not borne by the Selling Stockholders will be borne by us.

Our common stock is listed on the Nasdaq Stock Market LLC (“Nasdaq”) under the symbol “IMSR.” On May 15, 2026, the last reported sale price of our common stock, was \$7.30 per share.

As and to the amount specified in General Instruction C of Form S-8, the amount of securities to be offered or resold under this reoffer prospectus by each Selling Stockholder or other person with whom he, she or it is acting in concert for the purpose of selling our securities, may not exceed, during any three-month period, the amount specified in Rule 144(e) under the Securities Act.

We are an “emerging growth company” and a “smaller reporting company” under the federal securities laws and will be subject to reduced disclosure and public reporting requirements. See “*The Company - Implications of Being an Emerging Growth Company and a Smaller Reporting Company.*”

Investing in shares of our securities involves risks that are described in the “Risk Factors” section beginning on page 9 of this prospectus.

Neither the U.S. Securities and Exchange Commission nor any state securities commission has approved or disapproved of the securities to be issued under this prospectus 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 19, 2026.

TABLE OF CONTENTS

	<u>Page</u>
THE COMPANY	5
RISK FACTORS	9
CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS	9
USE OF PROCEEDS	10
SELLING STOCKHOLDERS	10
PLAN OF DISTRIBUTION	13
LEGAL MATTERS	15
EXPERTS	15
INFORMATION INCORPORATED BY REFERENCE	15
WHERE YOU CAN FIND MORE INFORMATION	16

Neither we nor any of the Selling Stockholders has authorized anyone to provide you with any information or to make any representations other than those contained in this prospectus or in any accompanying prospectus supplement we have prepared. Neither we nor any of the Selling Stockholders takes any responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. The information contained in this prospectus is accurate only as of the date of this prospectus, regardless of the time of delivery of this prospectus or of any sale of our common stock. Our business, financial condition, results of operations, and future growth prospects may have changed since that date.

THE COMPANY

Overview

Terrestrial Energy Inc. is an advanced nuclear technology company developing the Integral Molten Salt Reactor nuclear plant, which uses the Company's proprietary design of Generation IV reactor technology. The IMSR Plant is designed to offer large improvements in affordability and utility of nuclear plants and by extension the cost competitiveness of nuclear energy supply when compared to plants built using Light Water Reactor technology as well as other Generation IV technology.

The IMSR Plant uses molten salt reactor technology, which is characterized by its distinctive use of a molten salt eutectic that acts as both nuclear fuel and reactor coolant. This approach enables stable, high-temperature reactor operation, which supports high-efficiency electricity generation using steam turbines as well as direct use as a supply of thermal energy for industrial plant operators seeking clean energy alternatives to fossil fuel combustion in industrial processes.

The Company estimates that the operational advantages accruing from reactor technology and plant design choices place the IMSR Plant competitively in a large and growing serviceable addressable market valued at \$1.4 trillion today in Organization for Economic Co-operation and Development (OECD) countries. This market includes both clean, firm, and high-temperature thermal energy, and grid-based electric power supply, across a wide range of industrial and grid applications.

The Company believes that its choice of long-proven molten salt reactor technology for the IMSR Plant, designed within a pragmatic and market-focused innovative process that includes the use of standard nuclear fuel, delivers a market-competitive product in a compelling time frame. The IMSR Plant is scheduled for first commercial operation by the mid-2030s, and fleet operation commencing in the late 2030s.

The Company believes that timing of IMSR Plant development is aligned with changes in market demand for nuclear energy and nuclear reactor innovation. These are driven by major industrial innovations in other industrial sectors, by national energy supply insecurity, elevated by the Ukrainian War, by national energy policy objectives particularly in the US, and by a broad realization that net-zero is not feasible without a massive expansion in nuclear energy supply as evidenced by declarations at COP28 in Dubai.

Corporate History

HCM II Acquisition Corp. ("HCM II") was a special purpose acquisition company incorporated on April 4, 2024, as a Cayman Islands exempted corporation for the purpose of effecting a merger, share exchange, asset acquisition, stock purchase, reorganization, or similar business combination with one or more businesses. On October 23, 2025, HCM II domesticated as a Delaware corporation and changed its name to "Terrestrial Energy Inc." On October 28, 2025, pursuant to the Business Combination Agreement, dated as of March 26, 2025, as amended, the Company completed the Business Combination with Terrestrial Energy Development Inc. ("TEDI"), a Delaware corporation, with TEDI surviving as a wholly owned subsidiary of the Company. Following the Business Combination, the Company became a holding company whose operations are conducted through TEDI and whose primary asset is its equity interest in TEDI. For accounting and financial reporting purposes, the Business Combination was accounted for as a reverse recapitalization, with TEDI treated as the accounting acquirer and HCM II treated as the accounting acquiree.

Risk Factors

Our business is subject to numerous risks and uncertainties of which you should be aware before making a decision to invest in our common stock. These risks, among others, include the following:

- Our limited commercial operating history makes it difficult to evaluate our prospects, the risks and challenges we may encounter and our total potential addressable market.
- Any delays in the development and construction of our IMSR plants and the manufacturing of their key components may adversely impact our business and financial condition.

- If we fail to manage our growth effectively, we may be unable to execute our business plan, and our business, results of operations, and financial condition could be harmed.
- Any failure to effectively update the design, construction, and operations of our planned IMSR Plants to ensure cost competitiveness could reduce the marketability of our designs and has the potential to impact deployment schedules.
- Successful commercialization of new, or further enhancements to existing, alternative low-carbon energy generation technologies may adversely affect the market demand for our IMSR Plants.
- If demand for our IMSR Plants fails to develop sufficiently, our business and operations could suffer, and we would be unable to achieve or maintain profitability.
- Our IMSR Plant design may not attract customers as quickly as we expect, or at all.
- Customers may rescind or back out of non-binding agreements due to various reasons, which could adversely affect our revenue streams, project timelines, and overall financial performance.
- Our cost estimates are sensitive to broader economic factors, and our ability to control or manage our costs may be limited.
- Competition from existing or new competitors or technologies domestically and internationally could cause us to experience one or more of downward pressures on prices, lower customer demand for our products and services, reduced margins, the inability to take advantage of new business opportunities and the loss of market share.
- Changes in the availability and cost of electricity, natural gas, oil and other forms of energy are subject to volatile market conditions that could adversely affect our business prospects, financial condition, results of operations and cash flows.
- The potential disruption of uranium supply chains makes long-range planning uncertain.
- The cost of electricity and heat generated from nuclear sources may not be cost competitive with other electricity generation sources and/or heat generated from other sources in some markets, which could materially and adversely affect our business prospects, financial condition, results of operations and cash flow.
- Our illustrative unit economics are subject to significant risks, assumptions, estimates, and uncertainties. As a result, our actual revenues, timing for achieving business milestones, expenses, capital expenditures, profitability and cash flows may differ materially from our expectations.
- The IMSR plants may not operate as planned.
- We and our customers operate in a politically sensitive environment, and the public perception of nuclear energy and radioactive materials could materially and adversely affect us, our customers, and the markets in which we operate.
- Incidents involving nuclear energy facilities, including accidents, terrorist acts or other high-profile events involving radioactive materials, could materially and adversely affect the public perception of the safety of nuclear energy and adversely affect our business.
- The direct and indirect impact on us and our customers from severe weather and other effects of climate change and the economic impacts of the transition to low-emissions energy, could adversely affect our financial condition, operating results, and cash flows.
- The occurrence of adverse events, cancellations of significant projects, delays in project timelines, adjustments in cost structures, and other negative developments announced by competitors could have an impact on our operations, financial performance, and future prospects.
- The IMSR Plant involves toxic, hazardous and/or radioactive materials and could result in liability without regard to fault or negligence.
- Unsatisfactory safety performance or security incidents at our customers' facilities — or any nuclear facility around the world — could have a material adverse effect on our business, financial condition and results of operations.
- We are subject to information technology and cyber security threats which could have adverse effects, including regulatory effects, on our business and results of operations.
- We and our third-party vendors may not be able to obtain sufficient materials or supplied components to meet our manufacturing and operating needs, or obtain such materials on favorable terms or at expected costs.
- Our failure to successfully recruit and retain experienced and qualified personnel could have a material adverse effect on our business.
- Our ability to protect our patents and other intellectual property rights may be challenged and is not guaranteed.

- We currently enjoy only limited geographical protection with respect to certain issued patents and trademarks and may not be able to protect our intellectual property rights throughout the world.
- We may need to defend ourselves against intellectual property infringement claims, which may be time-consuming and could cause us to incur substantial fees and costs.
- We may not identify relevant third-party patents or may incorrectly interpret the relevance, scope or expiration of a third-party patent, which might adversely affect our ability to develop and market our IMSR Plants.
- We may be subject to claims of ownership and other rights to our patents and other intellectual property by third parties.
- Customization and hybridization of the Thermal and Electric Facility may require additional research and development and/or reliance on external service providers.
- Some of our management team have limited experience in operating a public company.
- Compliance with the reporting obligations under the United States securities laws and Section 404 of Sarbanes-Oxley requires expenditures of capital and other resources and may divert management's attention. If we fail to comply with these reporting obligations or to maintain adequate internal controls our operations, and investors' confidence in us, could be materially and adversely affected.
- Risks related to compliance with law, government regulation and litigation.
- Risks related to our capital resources and our ability to continue as a going concern, and risks related to tax laws and regulations.
- Risks related to the volatility of our common stock, and provisions in our certificate of incorporation and bylaws.
- Risks as an emerging growth company.

Our principal executive office is located at 2730 W. Tyvola Road, Suite 100, Charlotte, NC 28217. Our telephone number is (646) 687-8212. Our website address is <https://www.terrestrialenergy.com/>. Information contained on our website is not a part of this prospectus, and the inclusion of our website address in this prospectus is an inactive textual reference only.

This prospectus contains references to trademarks and service marks belonging to other entities. Solely for convenience, trademarks and trade names referred to in this prospectus may appear without the ® or ™ symbols, but such references are not intended to indicate, in any way, that the applicable licensor will not assert, to the fullest extent under applicable law, its rights to these trademarks and trade names. We do not intend our use or display of other companies' trade names, trademarks, or service marks to imply a relationship with, or endorsement or sponsorship of it by, any other companies.

Implications of Being an Emerging Growth Company and a Smaller Reporting Company

We are an "emerging growth company," as defined in Section 2(a) of the Securities Act, as modified by the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. As such, we are eligible to 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 non-binding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved. If some investors find our securities less attractive as a result, there may be a less active trading market for our securities and the prices of our securities may be more volatile.

In addition, Section 107 of the JOBS Act also provides that an emerging growth company can take advantage of the extended transition period provided in Section 7(a)(2)(B) of the Securities Act for complying with new or revised accounting standards. In other words, an emerging growth company can delay the adoption of certain accounting standards until those standards would otherwise apply to private companies.

We will remain an emerging growth company until the earlier of (1) the last day of the fiscal year (a) following the fifth anniversary of the closing of our IPO, (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 stock that is held by non-affiliates exceeds \$700 million as of the prior June 30, and (2) 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 will have the meaning associated with it in the JOBS Act.

We have elected to take advantage of certain of the reduced disclosure obligations in this prospectus and may elect to take advantage of other reduced reporting requirements in our future filings with the SEC. As a result, the information that we provide to holders of our common stock may be different than what you might receive from other public reporting companies in which you hold equity interests.

We have elected to avail ourselves of the provision of the JOBS Act that permits emerging growth companies to take advantage of an extended transition period to comply with new or revised accounting standards applicable to public companies. As a result, we will not be subject to new or revised accounting standards at the same time as other public companies that are not emerging growth companies.

We are also a “smaller reporting company” as defined in the Exchange Act. We may continue to be a smaller reporting company even after we are no longer an emerging growth company. We may take advantage of certain of the scaled disclosures available to smaller reporting companies until the fiscal year following the determination that our voting and non-voting common stock held by non-affiliates is \$250 million or more measured on the last business day of our second fiscal quarter, or our annual revenues are less than \$100 million during the most recently completed fiscal year and our voting and non-voting common stock held by non-affiliates is \$700 million or more measured on the last business day of our second fiscal quarter.

RISK FACTORS

An investment in shares of our common stock is highly speculative and involves a high degree of risk. We face a variety of risks that may affect our operations or financial results and many of those risks are driven by factors that we cannot control or predict. Before investing in our common stock, you should carefully consider the risks set forth under the caption “Risk Factors” in our Annual Report on Form 10-K for year ended December 31, 2025, filed on [March 30, 2026](#), which are incorporated by reference herein, and subsequent reports filed with the SEC, together with the financial and other information contained or incorporated by reference in this prospectus. If any of these risks occur, our business, financial condition and operating results may be materially adversely affected. In that event, the trading price of our securities could decline, and you could lose all or part of your investment. The risks and uncertainties described above are not the only ones we face. Additional risks and uncertainties that we are unaware of, or that we currently believe are not material, may also become important factors that adversely affect our business or results of operations.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference herein contain certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the “Securities Act”), and Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”). Forward-looking statements relate to future events or future performance and include, without limitation, statements concerning our business strategy, future revenues, market growth, capital requirements, product introductions, expansion plans and the adequacy of our funding. Other statements contained in this prospectus and the documents incorporated by reference herein that are not historical facts are also forward-looking statements. We have tried, wherever possible, to identify forward-looking statements by terminology such as “may,” “will,” “could,” “should,” “expects,” “anticipates,” “intends,” “plans,” “believes,” “seeks,” “estimates,” “continue,” “might,” “possible,” “potential,” “predict,” “project,” “goal,” “would,” “commit,” and other stylistic variants denoting forward-looking statements.

Forward-looking statements contained in this prospectus include, but are not limited to, statements about the development of the Company’s technology, the Company’s expansion plans and opportunities, and the development of the nuclear and energy markets.

We caution investors that any forward-looking statements presented in this prospectus and the documents incorporated by reference herein, or that we may make orally or in writing from time to time, are based on information currently available, as well as our beliefs and assumptions. The actual outcome related to forward-looking statements will be affected by known and unknown risks, trends, uncertainties, and factors that are beyond our control or ability to predict. Although we believe that our assumptions are reasonable, they are not guarantees of future performance, and some will inevitably prove to be incorrect. As a result, our actual future results can be expected to differ from our expectations, and those differences may be material. Accordingly, investors should use caution in relying on forward-looking statements, which are based only on known results and trends at the time they are made, to anticipate future results or trends.

The forward-looking statements contained in this prospectus and the documents incorporated by reference herein are based on current expectations and beliefs concerning future developments and their potential effects on us. There can be no assurance that future developments affecting us will be those that we have anticipated. These forward-looking statements involve a number of risks, uncertainties (some of which are beyond our control), or other assumptions that may cause actual results or performance to be materially different from those expressed or implied by these forward-looking statements.

This prospectus and the documents incorporated by reference herein and all subsequent written and oral forward-looking statements attributable to us or any person acting on our behalf are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. We do not undertake any obligation to release publicly any revisions to our forward-looking statements to reflect events or circumstances after the date of this prospectus, except as may be required by law.

USE OF PROCEEDS

We will not receive any of the proceeds from the sale of the Shares. All proceeds from the sale of the Shares will be for the account of the Selling Stockholders, as described below. See the sections titled “Selling Stockholders” and “Plan of Distribution” described below.

SELLING STOCKHOLDERS

The following table sets forth information regarding beneficial ownership of our common stock as of May 12, 2026, as adjusted to reflect the Shares that may be sold from time to time pursuant to this prospectus, for all Selling Stockholders, consisting of the individuals shown as having shares listed in the column entitled “Common Stock Being Offered.” The Shares offered by the Selling Stockholders hereunder consist of an aggregate of 11,783,395 Shares acquired or to be acquired by certain of our current directors and officers upon the exercise of stock options and settlement of restricted stock units (“RSUs”) granted under the Plans.

Beneficial ownership is determined in accordance with the rules of the SEC and generally includes voting or investment power with respect to securities. In accordance with SEC rules, shares of our common stock that may be acquired upon exercise of stock options or warrants that are exercisable or that become exercisable within 60 days of May 12, 2026, or issuable upon settlement of RSUs that vest within 60 days of May 12, 2026, are deemed beneficially owned by the holders of such options, warrants and RSUs and are deemed outstanding for the purpose of computing the percentage of ownership of such person, but are not treated as outstanding for the purpose of computing the percentage of ownership of any other person.

The information below is based on an aggregate of 82,718,567 shares of common stock outstanding as of May 12, 2026. Unless otherwise indicated, the business address of each of the following entities or individuals is 2730 W. Tyvola Road, Suite 100, Charlotte, NC 28217. To the best of our knowledge, except as otherwise indicated, each of the persons named in the table has sole voting and investment power with respect to the shares of our common stock beneficially owned by such person, except to the extent such power may be shared with a spouse. To our knowledge, (i) none of the shares of common stock listed below are held under a voting trust or similar agreement, except as noted, and (ii) there is no arrangement, including any pledge by any person of securities of the Company, the operation of which may at a subsequent date result in a change in control of the Company.

Selling Stockholder	Common Stock Beneficially Owned Prior to the Offering		Common Stock Being Offered ⁽¹⁾	Common Stock Beneficially Owned After the Offering ⁽²⁾	
	Shares	Percentage	Shares	Shares	Percentage
Simon Irish	8,806,181 ⁽³⁾	10.2 %	6,550,055	8,315,209	9.7 %
William Smith	1,595,894 ⁽⁴⁾	1.9 %	1,762,790	—	*
David LeBlanc	8,386,017 ⁽⁵⁾	8.9 %	178,250	8,240,555	9.1 %
Brian Thrasher	52,168 ⁽⁶⁾	*	264,613	—	*
Steven Millsap	44,703 ⁽⁷⁾	*	184,026	—	*
Frederick Buckman	312,168 ⁽⁸⁾	*	276,097	88,653	*
David Hill	655,487 ⁽⁹⁾	*	585,078	74,349	*
William Johnson	134,109 ⁽¹⁰⁾	*	141,003	—	*
Robert Jones	22,396 ⁽¹¹⁾	*	73,948	—	*
Hugh MacDiarmid	2,166,904 ⁽¹²⁾	2.6 %	1,376,726	797,072	1.0 %
Shawn Matthews	7,119,230 ⁽¹³⁾	8.2 %	4,925	7,119,230	8.2 %
Charles Pardee	409,084 ⁽¹⁴⁾	*	385,884	29,109	*

* Less than one percent

(1) The number of shares of common stock offered for resale in this offering reflect all shares of common stock acquired or issuable to a person pursuant to applicable awards and grants, including options and restricted stock units, previously made irrespective of whether such grants are vested or exercisable within 60 days of May 12, 2026.

- (2) Assumes that all of the Shares held by each Selling Stockholder and being offered under this prospectus are sold, and that no Selling Stockholder will acquire additional shares of common stock before the completion of this offering.
- (3) Mr. Irish serves as the Company's Chief Executive Officer and a member of the Board of Directors. Consists of (i) 2,295,934 shares of common stock held directly by Mr. Irish, 2,818,520 shares of common stock held indirectly by SWH Capital LLC ("SWH") and 52,255 shares of common stock held indirectly by Equity Trust Company Custodian FBO Simon Irish, IRA (the "Simon Irish IRA"); (ii) 490,972 shares of common stock issuable upon the exercise of options; (iii) 44,703 shares of common stock issuable upon the exercise of warrants assumed by the Company pursuant to the Business Combination Agreement (the "Legacy Terrestrial Warrants"); (iv) 89,406 shares of common stock issuable upon the exercise of Legacy Terrestrial Warrants that are held by the Simon Irish IRA and (v) 3,014,391 shares of common stock (including shares of common stock issuable upon the exchange of Exchangeable Shares) held by Mr. LeBlanc and subject to the voting agreement between Mr. Irish and Mr. LeBlanc (the "Voting Agreement"). The Voting Agreement provides that to the extent Mr. LeBlanc would otherwise be entitled to cast more votes on any matter submitted to Company stockholders than Mr. Irish, Mr. LeBlanc has granted Mr. Irish the power to direct the voting of certain such excess shares. Mr. Irish maintains sole voting and investment power over the securities held by SWH and the Simon Irish IRA and thus may be deemed to beneficially own such securities. The amount reported does not include an additional 4,810,035 shares of common stock underlying stock options held by Mr. Irish that have vested but are not exercisable within 60 days of May 12, 2026.
- (4) Mr. Smith serves as the Company's Chief Operating Officer. Consists of 1,595,894 shares of common stock issuable upon the exercise of options.
- (5) Mr. LeBlanc serves as the Company's Chief Technology Officer and a member of the Board of Directors. Consists of (i) 5,981 shares of common stock held directly by Mr. LeBlanc; (ii) 11,175,778 shares of common stock issuable upon the exchange of Exchangeable Shares; (iii) 145,463 shares of common stock issuable upon the exercise of options; (iv) 17,881 shares of common stock issuable upon the exercise of Legacy Terrestrial Warrants; (v) 13,731 shares of common stock held by M. Denis-LeBlanc Medecine Societe Professionnelle (the "LeBlanc Entity"); (vi) 41,574 shares of common stock issuable upon the exercise of Legacy Terrestrial Warrants that are held by the LeBlanc Entity; and (vii) the removal of 3,014,391 shares of common stock (including shares of common stock issuable upon the exchange of Exchangeable Shares) held by Mr. LeBlanc and subject to the Voting Agreement. The LeBlanc Entity is an entity wholly owned by Mr. LeBlanc's wife, and, as such, Mr. LeBlanc may be deemed to beneficially own such shares.
- (6) Mr. Thrasher serves as the Company's Chief Financial Officer. Consists of 52,168 shares of common stock issuable upon the exercise of options.
- (7) Mr. Millsap serves as the Company's General Counsel, Secretary, and Chief Compliance Officer. Consists of 44,703 shares of common stock issuable upon the exercise of options.
- (8) Mr. Buckman serves as Chair of the Company's Board of Directors. Consists of (i) 6,669 shares of common stock held directly by Mr. Buckman; (ii) 223,515 shares of common stock issuable upon the exercise of options; (iii) 22,351 shares of common stock issuable upon the exercise of Legacy Terrestrial Warrants; and (iv) 14,930 shares of common stock held by the Frederick and Marion Buckman Family Trust dated July 25, 2014 (the "Buckman Trust") and (v) 44,703 shares of common stock issuable upon the exercise of Legacy Terrestrial Warrants that are held by the Buckman Trust. Mr. Buckman maintains sole voting and investment power over the securities held by the Buckman Trust and thus may be deemed to beneficially own such securities.
- (9) Mr. Hill serves as a member of the Company's Board of Directors. Consists of (i) 18,470 shares of common stock held directly by Mr. Hill; (ii) 581,138 shares of common stock issuable upon the exercise of options; and (iii) 55,879 shares of common stock issuable upon the exercise of Legacy Terrestrial Warrants.
- (10) Mr. Johnson serves as a member of the Company's Board of Directors. Consists of 134,109 shares of common stock issuable upon the exercise of options.
- (11) Mr. Jones serves as a member of the Company's Board of Directors. Consists of 22,396 shares of common stock issuable upon the exercise of options.
- (12) Mr. MacDiarmid serves as a member of the Company's Board of Directors. Consists of (i) 25,946 shares of common stock and 558,787 shares of common stock issuable upon the exchange of Exchangeable Shares held directly by Mr. MacDiarmid; (ii) 1,369,832 shares of common stock issuable upon the exercise of options; (iii) 78,230 shares of common stock issuable upon the exercise of Legacy Terrestrial Warrants; and (iv) 134,109 shares of common stock issuable upon the exchange of Exchangeable Shares held by Visex Management Corporation ("Visex"). Mr. MacDiarmid maintains sole voting and investment power over the shares held by Visex and thus may be deemed to beneficially own such shares.
- (13) Mr. Matthews serves as a member of the Company's Board of Directors. Consists of (i) 533,514 shares of common stock and 1,788,117 shares of common stock issuable upon the exercise of Legacy Terrestrial Warrants held directly by Mr. Matthews; (ii) 2,755,000 shares of common stock and 775,000 shares of common stock issuable upon the exercise of private placement warrants (as described below) distributed by HCM Investor Holdings II, LLC (the "Sponsor") to Mr. Matthews; and (iii) 1,267,599 shares of common stock issuable upon the exercise of private placement warrants held

by Hondo Holdings LLC (“Hondo”). Mr. Matthews is the sole managing member of Hondo and holds voting and investment power with respect to securities held of record by Hondo.

- (14) Mr. Pardee serves as a member of the Company’s Board of Directors. Consists of (i) 6,758 shares of common stock held directly by Mr. Pardee; (ii) 379,975 shares of common stock issuable upon the exercise of options; and (iii) 22,351 shares of common stock issuable upon the exercise of Legacy Terrestrial Warrants.

PLAN OF DISTRIBUTION

We are registering the Shares covered by this prospectus to permit the Selling Stockholders to conduct public secondary trading of these Shares from time to time after the date of this prospectus. We will not receive any of the proceeds of the sale of the Shares offered by this prospectus. The aggregate proceeds to the Selling Stockholders from the sale of the Shares will be the purchase price of the Shares less any discounts and commissions. We will not pay any brokers' or underwriters' discounts and commissions in connection with the registration and sale of the Shares covered by this prospectus. The Selling Stockholders reserve the right to accept and, together with their respective agents, to reject, any proposed purchases of Shares to be made directly or through agents.

The Shares offered by this prospectus may be sold from time to time to purchasers:

- directly by the Selling Stockholders, or
- through underwriters, broker-dealers or agents, who may receive compensation in the form of discounts, commissions or agent's commissions from the Selling Stockholders or the purchasers of the Shares.

Any underwriters, broker-dealers or agents who participate in the sale or distribution of the Shares may be deemed to be "underwriters" within the meaning of the Securities Act. As a result, any discounts, commissions or concessions received by any such broker-dealer or agents who are deemed to be underwriters will be deemed to be underwriting discounts and commissions under the Securities Act. Underwriters are subject to the prospectus delivery requirements of the Securities Act and may be subject to certain statutory liabilities under the Exchange Act. We will make copies of this prospectus available to the Selling Stockholders for the purpose of satisfying the prospectus delivery requirements of the Securities Act. To our knowledge, there are currently no plans, arrangements or understandings between the Selling Stockholders and any underwriter, broker-dealer or agent regarding the sale of the Shares by the Selling Stockholders.

The Shares may be sold in one or more transactions at:

- fixed prices;
- prevailing market prices at the time of sale;
- prices related to such prevailing market prices;
- varying prices determined at the time of sale; or
- negotiated prices.

These sales may be effected in one or more transactions:

- on any national securities exchange or quotation service on which the Shares may be listed or quoted at the time of sale, including the Nasdaq;
- in the over-the-counter market;
- in transactions otherwise than on such exchanges or services or in the over-the-counter market;
- any other method permitted by applicable law; or
- through any combination of the foregoing.

These transactions may include block transactions or crosses. Crosses are transactions in which the same broker acts as an agent on both sides of the trade.

At the time a particular offering of the Shares is made, a prospectus supplement, if required, will be distributed, which will set forth the name of the Selling Stockholders, the aggregate amount of Shares being offered and the terms of the offering, including, to the extent required, (1) the name or names of any underwriters, broker-dealers or agents, (2) any discounts, commissions and other terms constituting compensation from the Selling Stockholders and (3) any discounts, commissions or concessions allowed or reallocated to be paid to broker-dealers.

The Selling Stockholders will act independently of us in making decisions with respect to the timing, manner, and size of each resale or other transfer. There can be no assurance that the Selling Stockholders will sell any or all of the Shares under this prospectus. Further, we cannot assure you that the Selling Stockholders will not transfer, distribute, devise or gift the Shares by other means not described in this prospectus. In addition, any Shares covered by this prospectus that qualify for sale under Rule 144 of the Securities Act may be sold under Rule 144 rather than under this prospectus. The Shares may be sold in some states only through registered or licensed brokers or dealers. In addition, in some states the Shares may not be sold unless they have been registered or qualified for sale or an exemption from registration or qualification is available and complied with.

The Selling Stockholders and any other person participating in the sale of the Shares will be subject to the Exchange Act. The Exchange Act rules include, without limitation, Regulation M, which may limit the timing of purchases and sales of any of the Shares by the Selling Stockholders and any other person. In addition, Regulation M may restrict the ability of any person engaged in the distribution of the Shares to engage in market-making activities with respect to the particular Shares being distributed. This may affect the marketability of the Shares and the ability of any person or entity to engage in market-making activities with respect to the Shares.

Lock-Up Agreements. Certain of the Selling Stockholders entered into Key Holder Lock-Up Agreements with the Company. Such Selling Stockholders will not be permitted, prior to October 28, 2026 (subject to the early release conditions described below) (the “Common Stock Lock-Up Period”), to transfer any shares of Common Stock that are or will be issued or are or will be issuable to such Selling Stockholders in connection with the transactions contemplated by the Business Combination Agreement (the “Key Holder Lock-Up Shares”) in each case, without the prior written consent of the Board of Directors. The Key Holder Lock-Up Agreements further provide that, fifty percent (50%) of the Key Holder Lock-Up Shares may be transferred once the dollar volume-weighted average adjusted price of the Company’s common stock, calculated as an average for the prior twenty business days (the “VWAP”) equals or exceeds \$15.00 per share. Similarly, the Key Holder Lock-Up Agreements provide that all of the Key Holder Lock-Up Shares may be transferred once the VWAP equals or exceeds \$20.00 per share. The Key Holder Lock-Up Agreements provide for certain permitted transfers of the Key Holder Lock-Up Shares including but not limited to, transfers to certain affiliates or family members, or the exercise of certain stock options and warrants.

The Selling Stockholders may indemnify any broker or underwriter that participates in transactions involving the sale of the Shares against certain liabilities, including liabilities arising under the Securities Act.

LEGAL MATTERS

The validity of the securities offered hereby has been passed upon for us by Bryan Cave Leighton Paisner LLP.

EXPERTS

The financial statements of Terrestrial Energy Inc. as of December 31, 2025 and 2024, and for each of the two years in the period ended December 31, 2025, incorporated by reference in this prospectus, have been audited by UHY LLP, an independent registered public accounting firm, as stated in their report. Such financial statements are included in this prospectus in reliance upon such report and upon the authority of such firm as experts in accounting and auditing.

INFORMATION INCORPORATED BY REFERENCE

The Company hereby incorporates by reference in this Registration Statement the following:

- the Annual Report on Form 10-K for the year ended December 31, 2025, filed by the Company with the SEC on [March 30, 2026](#);
- the portions of the Company's Definitive Proxy Statement on Schedule 14A filed by the Company with the SEC on [April 29, 2026](#) that are specifically incorporated by reference into the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2025;
- the Quarterly Report on Form 10-Q for the three months ended March 31, 2026, filed by the Company with the SEC on [May 14, 2026](#);
- the Company's Current Reports on Form 8-K filed with the SEC on [April 16, 2026](#) and [May 8, 2026](#); and
- the description of the Company's common stock contained in [Exhibit 4.1](#) to the Company's Quarterly Report on Form 10-Q, filed by the Company with the SEC on May 14, 2026.

All documents subsequently filed by the Company pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act, prior to the filing of a post-effective amendment which indicates that all securities offered hereby have been sold or which deregisters all securities then remaining unsold, shall be deemed to be incorporated by reference in this Registration Statement and to be a part hereof from the date of filing of such documents. Any statement contained herein or in a document, all or a portion of which is incorporated or deemed to be incorporated by reference herein, shall be deemed to be modified or superseded for purposes of this Registration Statement to the extent that a statement contained herein or in any other subsequently filed document which also is or is deemed to be incorporated by reference herein modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this Registration Statement.

Notwithstanding the foregoing, no information is incorporated by reference in this Registration Statement where such information under applicable forms and regulations of the Commission is not deemed to be "filed" under Section 18 of the Exchange Act or otherwise subject to the liabilities of that section, unless the report or filing containing such information indicates that the information therein is to be considered "filed" under the Exchange Act or is to be incorporated by reference in this Registration Statement.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly, and current reports, proxy statements, and other information with the SEC. This prospectus is part of the registration statement, but does not contain all of the information included in the registration statement or the exhibits filed with the registration statement. For further information about us and the securities offered hereby, we refer you to the registration statement and the exhibits filed with the registration statement. Statements contained in this prospectus regarding the contents of any contract or any other document that is filed as an exhibit to the registration statement are not necessarily complete, and each such statement is qualified in all respects by reference to the full text of such contract or other document filed as an exhibit to the registration statement.

Our SEC filings are available to the public on the internet at a website maintained by the SEC located at <http://www.sec.gov>. Those filings are also available to the public on, or accessible through, our website under the heading “Investors” at <https://www.terrestrialenergy.com/>. Information contained on our website is not a part of this prospectus and the inclusion of our website address in this prospectus is an inactive textual reference only.

The Registrant hereby undertakes to provide without charge to each person, including any beneficial owner, to whom a copy of this prospectus is delivered, upon written or oral request of any such person, a copy of any and all of the information that has been incorporated by reference in this prospectus but not delivered with the prospectus other than the exhibits to those documents, unless the exhibits are specifically incorporated by reference into the information that this prospectus incorporates. Requests for documents should be directed to: Terrestrial Energy Inc., Attention: General Counsel, 2730 W. Tyvola Road, Suite 100, Charlotte, NC 28217.

PART I

INFORMATION REQUIRED IN THE SECTION 10(A) PROSPECTUS

Item 1. Plan Information.*

Item 2. Registrant Information and Employee Plan Annual Information.*

*As permitted by Rule 428 under the Securities Act, this Registration Statement omits the information specified in Part I of Form S-8. The documents containing the information specified in Part I of this Registration Statement have been or will be sent or given to each participant in the 2024 Plan and the 2025 Plan, as applicable, in accordance with Rule 428(b)(1). Such documents are not required to be and are not being filed with the Commission, either as part of this Registration Statement or as prospectuses or prospectus supplements pursuant to Rule 424 under the Securities Act. These documents and the documents incorporated by reference in this Registration Statement pursuant to Item 3 of Part II of this Registration Statement, taken together, constitute a prospectus that meets the requirements of Section 10(a) of the Securities Act.

PART II

INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference.

The Company hereby incorporates by reference in this Registration Statement the following:

- the Annual Report on Form 10-K for the year ended December 31, 2025, filed by the Company with the SEC on [March 30, 2026](#);
- the portions of the Company's Definitive Proxy Statement on Schedule 14A filed by the Company with the SEC on [April 29, 2026](#) that are specifically incorporated by reference into the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2025;
- the Quarterly Report on Form 10-Q for the three months ended March 31, 2026, filed by the Company with the SEC on [May 14, 2026](#);
- the Company's Current Reports on Form 8-K filed with the SEC on [April 16, 2026](#) and [May 8, 2026](#); and
- the description of the Company's common stock contained in [Exhibit 4.1](#) to the Company's Quarterly Report on Form 10-Q, filed by the Company with the SEC on May 14, 2026.

All documents subsequently filed by the Company pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), prior to the filing of a post-effective amendment which indicates that all securities offered hereby have been sold or which deregisters all securities then remaining unsold, shall be deemed to be incorporated by reference in this Registration Statement and to be a part hereof from the date of filing of such documents. Any statement contained herein or in a document, all or a portion of which is incorporated or deemed to be incorporated by reference herein, shall be deemed to be modified or superseded for purposes of this Registration Statement to the extent that a statement contained herein or in any other subsequently filed document which also is or is deemed to be incorporated by reference herein modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this Registration Statement.

Notwithstanding the foregoing, no information is incorporated by reference in this Registration Statement where such information under applicable forms and regulations of the Commission is not deemed to be "filed" under Section 18 of the Exchange Act or otherwise subject to the liabilities of that section, unless the report or filing containing such information indicates that the information therein is to be considered "filed" under the Exchange Act or is to be incorporated by reference in this Registration Statement.

Item 4. Description of Securities.

Not applicable.

Item 5. Interests of Named Experts and Counsel.

Not applicable.

Item 6. Indemnification of Directors and Officers.

Subsection (a) of Section 145 of the DGCL empowers a corporation to indemnify any person who was or is a party or who is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the corporation) by reason of the fact that the person is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by the person in connection with such action, suit or proceeding if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe the person's conduct was unlawful.

Subsection (b) of Section 145 empowers a corporation to indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the corporation to procure a judgment in its favor by reason of the fact that the person acted in any of the capacities set forth above, against expenses (including attorneys' fees) actually and reasonably incurred by the person in connection with the defense or settlement of such action or suit if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation, except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the Court of Chancery or the court in which such action or suit was brought shall determine upon application that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Court of Chancery or such other court shall deem proper.

Section 145 further provides that to the extent a director or officer of a corporation has been successful on the merits or otherwise in the defense of any action, suit or proceeding referred to in subsections (a) and (b) of Section 145, or in defense of any claim, issue or matter therein, such person shall be indemnified against expenses (including attorneys' fees) actually and reasonably incurred by such person in connection therewith; that indemnification provided for by Section 145 shall not be deemed exclusive of any other rights to which the indemnified party may be entitled; and the indemnification provided for by Section 145 shall, unless otherwise provided when authorized or ratified, continue as to a person who has ceased to be a director, officer, employee or agent and shall inure to the benefit of such person's heirs, executors and administrators. Section 145 also empowers the corporation to purchase and maintain insurance on behalf of any person who is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise against any liability asserted against such person and incurred by such person in any such capacity, or arising out of his status as such, whether or not the corporation would have the power to indemnify such person against such liabilities under Section 145.

Section 102(b)(7) of the DGCL provides that a corporation's certificate of incorporation may contain a provision eliminating or limiting the personal liability of a director or officer to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director or officer, provided that such provision shall not eliminate or limit the liability (i) for any breach of the director's or officer's duty of loyalty to the corporation or its stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) under Section 174 of the DGCL, or (iv) for any transaction from which the director or officer derived an improper personal benefit.

Additionally, our Certificate of Incorporation limits the liability of our directors to the fullest extent permitted by the DGCL, and our Bylaws provide that we will indemnify them to the fullest extent permitted by such law. We have entered

into and expect to continue to enter into agreements to indemnify our directors, executive officers and other employees as determined by our board of directors. Under the terms of such indemnification agreements, we are required to indemnify each of our directors and officers, to the fullest extent permitted by the laws of the state of Delaware, if the basis of the indemnitee's involvement was by reason of the fact that the indemnitee is or was our director or officer or was serving at our request in an official capacity for another entity. We must indemnify our officers and directors against all reasonable fees, expenses, charges and other costs of any type or nature whatsoever, including any and all expenses and obligations paid or incurred in connection with investigating, defending, being a witness in, participating in (including on appeal), or preparing to defend, be a witness or participate in any completed, actual, pending or threatened action, suit, claim or proceeding, whether civil, criminal, administrative or investigative, or establishing or enforcing a right to indemnification under the indemnification agreement. The indemnification agreements also require us, if so requested, to advance all reasonable fees, expenses, charges and other costs that such director or officer incurred, provided that such person will return any such advance if it is ultimately determined that such person is not entitled to indemnification by us. Any claims for indemnification by our directors and officers may reduce our available funds to satisfy successful third-party claims against us and may reduce the amount of money available to us.

Item 7. Exemption from Registration Claimed.

The issuance of certain of the Shares being offered by the Form S-8 resale prospectus was exempt from registration under the Securities Act in reliance upon Section 4(a)(2) of the Securities Act (or Regulation D or Regulation S promulgated thereunder) as transactions by an issuer not involving any public offering or in reliance upon Rule 701 promulgated under the Securities Act, pursuant to benefit plans and contracts relating to compensation as provided under Rule 701. The recipients of the securities in each of these transactions represented their intentions to acquire the securities for investment only and not with a view to or for sale in connection with any distribution thereof, and appropriate legends were placed upon the stock certificates issued in these transactions. All recipients had adequate access, through their relationships with us, to information about the Registrant.

Item 8. Exhibits.

Exhibit Number	Description of Documents
4.1	Composite Certificate of Incorporation of Terrestrial Energy Inc. (as amended through March 27, 2026) (incorporated herein by reference to Exhibit 3.1 filed with the Annual Report on Form 10-K filed by the Registrant on March 30, 2026).
4.2	Composite Bylaws of Terrestrial Energy Inc. (as amended through October 28, 2026) (incorporated herein by reference to Exhibit 3.2 filed with the Annual Report on Form 10-K filed by the Registrant on March 30, 2026).
5.1*	Opinion of Bryan Cave Leighton Paisner LLP.
10.1	Terrestrial Energy Inc. 2025 Equity Incentive Plan, dated as of October 28, 2025 (incorporated herein by reference to Exhibit 10.9 filed with the Current Report on Form 8-K (Reg. No. 001-42252) filed by the registrant on November 3, 2025).
10.2	Terrestrial Energy Inc. Second Amended and Restated 2024 Stock Option Plan. (incorporated herein by reference to Exhibit 10.2 filed with the Current Report on Form S-8 filed by the registrant on January 5, 2026)
23.1*	Consent of UHY LLP.
23.3*	Consent of Bryan Cave Leighton Paisner (included in Exhibit 5.1 to this Registration Statement).
24.1*	Power of Attorney (included on the signature page to this Registration Statement).
107*	Filing Fee Table.

* Filed herewith.

Item 9. Undertakings.

(a) The undersigned Registrant hereby undertakes:

(1) to file, during any period in which offers or sales are being made, a post-effective amendment to this Registration Statement:

(i) to include any prospectus required by Section 10(a)(3) of the Securities Act;

(ii) to reflect in the prospectus any facts or events arising after the effective date of this Registration Statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in this Registration Statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20% change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and

(iii) to include any material information with respect to the plan of distribution not previously disclosed in this Registration Statement or any material change to such information in this Registration Statement;

provided, however, that paragraphs (1)(i) and (1)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the Registrant pursuant to Section 13 or Section 15(d) of the Exchange Act that are incorporated by reference in this Registration Statement;

(2) that, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof; and

(3) to remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(b) The undersigned Registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the Registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) that is incorporated by reference in this Registration Statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(c) Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the Registrant pursuant to the foregoing provisions, or otherwise, the Registrant has been advised that in the opinion of the Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Charlotte, State of North Carolina, on May 19, 2026.

TERRESTRIAL ENERGY INC.

By: /s/ Brian Thrasher

Name: Brian Thrasher

Title: Chief Financial Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Simon Irish, Brian Thrasher and Steven Millsap and each of them singly (with full power to each of them to act alone), the individual's true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution in each of them, for the person and in his or her name, place and stead, and in any and all capacities, to sign any and all amendments or supplements to this Registration Statement, including any post-effective amendments, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite or necessary to be done in and about the premises, as full to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents or any of them, or his or her substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Simon Irish</u> Simon Irish	Chief Executive Officer and Director <i>(Principal Executive Officer)</i>	May 19, 2026
<u>/s/ Brian Thrasher</u> Brian Thrasher	Chief Financial Officer <i>(Principal Financial and Accounting Officer)</i>	May 19, 2026
<u>/s/ Frederick Buckman</u> Frederick Buckman	Chairman of the Board of Directors	May 19, 2026
<u>/s/ Shawn Matthews</u> Shawn Matthews	Director	May 19, 2026
<u>/s/ Hugh MacDiarmid</u> Hugh MacDiarmid	Director	May 19, 2026
<u>/s/ David Hill</u> David Hill	Director	May 19, 2026
<u>/s/ Charles Pardee</u> Charles Pardee	Director	May 19, 2026
<u>/s/ Robert W. Jones</u> Robert W. Jones	Director	May 19, 2026
<u>/s/ William Johnson</u> William Johnson	Director	May 19, 2026
<u>/s/ David LeBlanc</u> David LeBlanc	Chief Technology Officer and Director	May 19, 2026



May 19, 2026

Terrestrial Energy Inc.
2730 W. Tyvola Road, Suite 100,
Charlotte, NC 28217

BRYAN CAVE LEIGHTON PAISNER LLP
One Atlantic Center 14th Floor
1201 W Peachtree St NW
Atlanta GA 30309 3471
T: +1 404 572 6600
F: +1 404 572 6999

bcplaw.com

**Re: Terrestrial Energy Inc.
Registration Statement on Form S-8**

Ladies and Gentlemen:

We have acted as special counsel to Terrestrial Energy Inc., a Delaware corporation (the "Company"), in connection with a Registration Statement on Form S-8 (the "Registration Statement"), being filed by the Company on the date hereof with the Securities and Exchange Commission (the "SEC") under the Securities Act of 1933, as amended (the "Securities Act"), relating to the registration of up to 11,783,395 shares (the "Shares") of Common Stock, \$0.0001 par value per share (the "Common Stock"), which may be issued pursuant to the Company's Second Amended and Restated 2024 Stock Option Plan (the "2024 Plan") and the 2025 Equity Incentive Plan (the "2025 Plan") and the individual restricted stock unit award agreement referenced in the Registration Statement (the "RSU Agreement, and together with the 2024 Plan and the 2025 Plan, the "Plans").

In connection herewith, we have examined:

- (1) the Registration Statement;
- (2) the Plans;
- (3) the Second Amended and Restated Certificate of Incorporation of the Company, as amended; and
- (4) the Amended and Restated Bylaws of the Company.

We have also examined originals or copies, certified or otherwise identified to our satisfaction, of such other corporate records, agreements and instruments of the Company, statements and certificates of public officials and officers of the Company, and such other documents, records and instruments, and we have made such legal and factual inquiries, as we have deemed necessary or appropriate as a basis for us to render the opinions hereinafter expressed. In our examination of the foregoing, we have assumed the genuineness of all signatures, the legal competence and capacity of natural persons, the authenticity of documents submitted to us as originals and the conformity with authentic original documents of all documents submitted to us as copies or by facsimile or other means of electronic transmission, or which we obtained from the SEC's Electronic Data Gathering, Analysis and Retrieval system ("EDGAR") or other sites maintained by a court or governmental authority or regulatory body and the authenticity of the originals of such latter documents. If any documents we examined in printed, word processed or similar form have been filed with the SEC on Edgar or such court or governmental authority or regulatory body, we have assumed that the document so filed is identical to the document we examined except for formatting changes. When relevant facts were not independently established, we have relied without independent investigation as to matters of fact upon statements of governmental officials and upon representations made in or pursuant to the certificates and statements of appropriate representatives of the Company.

In connection herewith, we have assumed that, other than with respect to the Company, all of the documents referred to in this opinion letter have been duly authorized by, have been duly executed and delivered by, and constitute the valid, binding and enforceable obligations of, all of the parties to such

documents, all of the signatories to such documents have been duly authorized and all such parties are duly organized and validly existing and have the power and authority (corporate or other) to execute, deliver and perform such documents.

Based upon the foregoing and in reliance thereon, and subject to the assumptions, comments, qualifications, limitations and exceptions set forth herein, we are of the opinion that the Shares have been duly authorized for issuance and upon issuance and delivery of the Shares upon payment therefor, in accordance with the terms of the Plans and any relevant agreements thereunder, the Shares will be validly issued, fully paid and non-assessable.

In rendering the opinion stated herein, we have also assumed that: (a) each award agreement under which options and/or restricted stock units are granted pursuant to the Plans will be consistent with the applicable Plan and will be duly authorized, executed and delivered by the parties thereto, and (b) the consideration received by the Company for each of the Shares delivered pursuant to the Plans shall not be less than the per share par value of the Shares.

This opinion is not rendered with respect to any laws other than the General Corporation Law of the State of Delaware. The opinions set forth herein are made as of the date hereof and are subject to, and may be limited by, future changes in the factual matters set forth herein, and we undertake no duty to advise you of the same. The opinions expressed herein are based upon the law in effect (and published or otherwise generally available) on the date hereof, and we assume no obligation to revise or supplement these opinions should such law be changed by legislative action, judicial decision or otherwise. In rendering our opinions, we have not considered, and hereby disclaim any opinion as to, the application or impact of any laws, cases, decisions, rules or regulations of any other jurisdiction, court or administrative agency.

This opinion letter is being delivered by us in connection with the filing of the Registration Statement with the SEC. We do not render any opinions except as set forth above. We hereby consent to the filing of this opinion letter as Exhibit 5.1 to the Registration Statement. We also consent to your filing copies of this opinion letter as an exhibit to the Registration Statement with such agencies of such jurisdictions as you deem necessary in the course of complying with the laws of such jurisdictions regarding the offering and sale of the Shares. In giving such consent, we do not thereby concede that we are within the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the SEC promulgated thereunder.

Very truly yours,

/s/ Bryan Cave Leighton Paisner LLP

Bryan Cave Leighton Paisner LLP

INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM'S CONSENT

We hereby consent to the incorporation by reference in this Registration Statement on Form S-8 of Terrestrial Energy, Inc. (the "Company") of our report dated March 30, 2026 with respect to our audits of the consolidated financial statements of the Company as of December 31, 2025 and 2024 and for the years then ended.

/s/ UHY LLP

Melville, NY
May 19, 2026
