

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

FORM 10-K

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2022

or

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from _____ to _____

Commission File Number: 001-40209

Heliogen, Inc.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

130 West Union Street, Pasadena, California

(Address of Principal Executive Offices)

85-4204953

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

91103

(Zip Code)

Registrant's telephone number, including area code: **(626) 720-4530**

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common stock, \$0.0001 par value per share	HLGN	New York Stock Exchange
Warrants, each whole warrant exercisable for shares of Common stock at an exercise price of \$11.50 per share	HLGN.W	New York Stock Exchange

Securities registered pursuant to section 12(g) of the Act: None.

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports); and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

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

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 13(a) of the Exchange Act. ☒

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☐

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements. ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b). ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

As of June 30, 2022, the last trading day of the registrant's most recently completed second fiscal quarter, the aggregate market value of the common stock held by non-affiliates of the registrant was approximately \$230.7 million based on the closing price of the registrant's common stock on that date.

As of March 23, 2023, there were 195,775,938 shares of common stock, par value \$0.0001 per share outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

None.

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Cautionary Note Regarding Forward-Looking Statements

This Annual Report on Form 10-K contains 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”). We have based these forward-looking statements on our current expectations and projections about future events. All statements, other than statements of present or historical fact included in this Annual Report on Form 10-K regarding our future financial performance, as well as our strategy, future operations, financial position, estimated revenues, losses, projected costs, prospects, plans and objectives of management are forward-looking statements. Any statements that refer to projections, forecasts or other characterizations of future events or circumstances, including any underlying assumptions, are forward-looking statements. In some cases, you can identify forward-looking statements by terminology such as “anticipate,” “believe,” “continue,” “could,” “estimate,” “expect,” “forecast,” “intends,” “may,” “might,” “plan,” “possible,” “potential,” “predict,” “project,” “should,” “target,” “will,” “would” or the negative of such terms or other similar expressions. These forward-looking statements are based on management’s current expectations, assumptions, hopes, beliefs, intentions and strategies regarding future events and are based on currently available information as to the outcome and timing of future events. Although we believe such expectations and assumptions to be reasonable, they are inherently uncertain and involve a number of risks and uncertainties that are beyond our control. In addition, management’s assumptions about future events may prove to be inaccurate. All readers are cautioned that the forward-looking statements contained in this Annual Report on Form 10-K are not guarantees of future performance and we cannot assure any reader that such statements will be realized or that the forward-looking events and circumstances will occur.

As a result of a number of known and unknown risks and uncertainties, our actual results or performance may be materially different from those expressed or implied by these forward-looking statements. Some factors that could cause actual results to differ include:

- our financial and business performance, including risk of uncertainty in our financial projections and business metrics and any underlying assumptions thereunder;
- changes in our business and strategy, future operations, financial position, estimated revenues and losses, projected costs, prospects and plans;
- our ability to execute our business model, including market acceptance of our planned products and services and achieving sufficient production volumes at acceptable quality levels and prices;
- our ability to maintain listing on the New York Stock Exchange (“NYSE”);
- changes in domestic and foreign business, market, financial, political, legal conditions and applicable laws and regulations;
- our ability to grow market share in our existing markets or new markets we may enter;
- our ability to achieve and maintain profitability in the future;
- our ability to access sources of capital to finance operations, growth and future capital requirements;
- our ability to maintain and enhance our products and brand, and to attract and retain customers;
- our ability to find new partners for product offerings;
- the success of strategic relationships with third parties;
- our ability to scale in a cost-effective manner;
- developments and projections relating to our competitors and industry;
- supply chain disruptions;
- our ability to protect our intellectual property (“IP”);
- the actions of stockholders and the related impact on the price of our common stock;

- expectations regarding the time during which we will be an emerging growth company under the Jumpstart Our Business Startups Act of 2012 (the “JOBS Act”), as amended;
- our ability to find and retain critical employee talent and key personnel;
- our ability to successfully manage the transition process to a new Chief Executive Officer;
- the possibility that we may be adversely impacted by other economic, business, and/or competitive factors;
- future exchange and interest rates;
- the outcome of any known and unknown litigation and regulatory proceedings; and
- other risks and uncertainties, including those disclosed under “Item 1A. Risk Factors” contained in Part I of this Annual Report on Form 10-K, and the risk factors and other cautionary statements contained in other filings that have been made or will be made with the Securities and Exchange Commission (“SEC”) by the Company.

Given these risks and uncertainties, you should not place undue reliance on these forward-looking statements. Should one or more of the risks or uncertainties described in this Annual Report on Form 10-K, or should underlying assumptions prove incorrect, actual results and plans could differ materially from those expressed in any forward-looking statements. Additional information concerning these and other factors that may impact the operations and projections discussed herein may be disclosed under “Item 1A. Risk Factors” contained in Part I of this Annual Report on Form 10-K and in our periodic filings with the SEC. Our SEC filings are available publicly on the SEC’s website at www.sec.gov.

You should read this Annual Report on Form 10-K with the understanding that our actual future results, levels of activity and performance as well as other events and circumstances may be materially different from what we expect. We qualify all of our forward-looking statements by these cautionary statements.

Summary Risk Factors

The following is a summary of some of the risks and uncertainties that could materially adversely affect our business, financial condition and results of operations. This summary should be read together with the more detailed description of each risk factor disclosed under “Item 1A Risk Factors” contained in Part I of this Annual Report on Form 10-K.

Risks Relating to our Business

- If demand for our concentrated solar energy solutions does not develop as we expect or our estimates of market opportunity and forecasts of market growth prove to be inaccurate, our revenues may suffer, and our business may be harmed.
- If we fail to win new contracts and purchase orders, our business operations and financial results may be adversely affected.
- Our engagements involve complex projects that could be impacted by a number of factors, some of which are outside of our control, and therefore may result in significant losses on the projects.
- Our modular, artificial intelligence (“AI”)-enabled, concentrated solar energy plants may not generate expected output levels.
- We may not be able to develop technologies and products to satisfy changes in customer demand or industry standards, and our competitors could develop products that decrease the demand for our products.
- We may be unable to complete or operate our projects on a profitable basis or as we have committed to our customers.
- If we are not able to successfully manage our growth strategy, our business operations and financial results may be adversely affected.
- An increase in the prices or changes in the supply and demand of certain materials and commodities used in our business could adversely affect our business.
- The development of our modular, AI-enabled, concentrated solar energy plants will require significant capital, which our customers may finance through third parties, and such financing may not be available to our customers on favorable terms, if at all.
- We may require significant additional capital to pursue our growth strategy, but we may not be able to obtain additional financing on acceptable terms or at all.
- Project development or construction activities may not be successful, and we may make significant investments without first obtaining project financing, which could increase our costs and impair our ability to recover our investments.
- We have a history of operating losses and expect to incur significant additional expenses and operating losses.
- Our revenue, expenses, and operating results may fluctuate significantly.
- Failure of third parties to manufacture quality products or provide reliable services in a timely manner could cause delays in the delivery of our services and completion of our projects, which could damage our reputation, have a negative impact on our relationships with our customers and adversely affect our growth.
- Our stock price is subject to volatility, which could have a material adverse impact on investors and employee retention.
- Our business could be negatively affected as a result of stockholder actions and such actions could impact the price of our common stock.
- The transition to our new Chief Executive Officer will be critical to our success and our business may be adversely impacted if we do not successfully manage the transition process.

- Our business depends on experienced and skilled personnel and substantial specialty subcontractor resources, and if we lose key personnel or if we are unable to attract and integrate additional skilled personnel, it will be more difficult for us to manage our business and complete projects.
- If we fail to introduce or acquire new products or services that achieve broad market acceptance on a timely basis, or if our products or services are not adopted as expected, we will not be able to compete effectively.
- International expansion is one of our growth strategies, and our potential expansion into international markets may expose our business and operations to additional risks that we do not or will not face in the United States (“U.S.”), which could have an adverse effect on our operating results.
- An inability to protect our IP could negatively affect our ability to compete, our business and our results of operations.
- Certain of our facilities are or may be located in regions that may be affected by extreme weather conditions and natural disasters.
- Computer malware, viruses, ransomware, hacking, phishing attacks and other network disruptions could result in security and privacy breaches, loss of proprietary information and interruption in service, which would harm our business.
- Our mirror cleaning technology may perform below our expectations.
- We have identified material weaknesses in our internal control over financial reporting and any failure to maintain effective internal control over financial reporting may have a material and adverse effect on our business, operating results, financial condition and prospects.
- Our business benefits in part from federal, state, provincial and local government support for renewable energy, and a decline in such support could harm our business.
- Legislative or regulatory actions relating to renewable energy may impact demand for our services, our ability to remain in compliance with applicable laws, and our cost of operations.
- Opportunities associated with government contracts could lead to increased governmental regulation applicable to us.

Part I

Item 1. Business

Overview

Heliogen, Inc. and its subsidiaries (collectively, “Heliogen,” the “Company,” “we,” “us,” or “our”) is a leader in next generation concentrated solar energy. We are developing a modular, AI-enabled, concentrated solar energy plant that will use an array of mirrors to reflect sunlight and capture, concentrate, store and convert it into cost-effective energy on demand. Our product offering will deliver industrial process steam around the clock using thermal energy storage based on proven technology. This steam can also be used to produce green hydrogen when coupled with a solid oxide electrolyzer. Our next generation system will have the ability to cost-effectively generate and store thermal energy at very high temperatures, which enables cost effective production of electricity and higher temperature industrial process heat. The inclusion of a thermal energy storage system distinguishes our solution from clean energy provided by typical photovoltaic (“PV”) and wind installations which do not produce thermal energy and are only able to produce energy intermittently unless battery storage is added. The system will be configurable for several applications, including carbon-free industrial-grade heat and steam (for use in industrial processes), clean power (electricity), and generation of green hydrogen, based on a customer’s needs.

We have developed innovations in the process of concentrating sunlight which we believe fundamentally improve the potential to efficiently and cost effectively collect and deliver energy to industrial processes. We believe we will be one of the first technology providers with the ability to deliver cost-effective renewable energy capable of replacing fossil fuels used in industrial processes that require high temperature heat and/or nearly 24/7 operation. In addition, we believe our disruptive, patented design and AI technology will address a fundamental problem confronted by many renewable sources of energy: intermittency. An intermittent power supply does not match the continuous power demand of industry and the grid. Without storage, wind and PV-based renewable energy generation may rapidly fluctuate between over-supply and under-supply based on resource availability. As the grid penetration of intermittent resources increases, these fluctuations may become increasingly extreme. We believe our technology will contribute to solving this problem. Our next generation solar plants will have the ability to store very high temperature energy in solid media. This energy will then be dispatchable, including during times without sunlight, to cost-effectively deliver near 24/7 carbon-free energy in the form of heat and steam, electric power, or green hydrogen fuel.

The three use categories will be configured as follows, forming the backbone of three business lines:

HelioHeat — The production of heat or steam for use in industrial processes will be enabled by the baseline system.

HelioPower — With the baseline system as the foundation, the addition of a turbine generator system will enable power generation.

HelioFuel — With the baseline system as the foundation, the addition of an electrolyzer system will enable hydrogen fuel production.

For the hydrogen and power systems, Heliogen is developing a supercritical CO₂ Brayton cycle power block to enhance production efficiency. Using supercritical CO₂ is predicted by the U.S. Department of Energy (the “DOE”) to have “significantly lower capital costs than equivalent steam-cycle components, due to their compact footprint stemming from the higher energy density of the supercritical fluid.”

Strategic Update

On February 5, 2023, our Board of Directors (the “Board”) appointed Christiana Obiaya, previously our Chief Financial Officer, as Chief Executive Officer and Kelly Rosser, our Chief Accounting Officer, as Interim Chief Financial Officer. We also announced a renewed strategic focus to capitalize on evolving customer demand, emerging market conditions and enhanced operational efficiency. The core pillars that will serve as the basis for our comprehensive plan include:

- *Sales.* In response to emerging market conditions we intend to prioritize our sales efforts to focus on driving forward our industrial steam product. This product has the ability to provide zero-carbon energy in the form of steam for two critical applications: industrial processes and green hydrogen production when paired with a solid oxide electrolyzer. The industrial steam market provides us with a significant opportunity while the green hydrogen market is nascent but growing rapidly, turbocharged by the Inflation Reduction Act of 2022 (“IRA”).

- *First installation of commercial-scale projects.* We believe having data from completed projects will unlock demand from prospective customers for whom “operating commercial-scale project” is a must-have selection criterion. We need to convert “prospective” to “contracted” for those who are not early adopters of technology. We believe that getting projects in the ground will usher in a larger customer base, ultimately charting the path for companies who want to license our technology and build it themselves.
- *Reducing our cost structure.* We intend to cut costs, streamline our operations and focus our efforts on driving tangible, immediate results, which could extend our liquidity runway. This aligns with our goal of funding our business with internally generated cash flows from operations. This would give us time to further develop projects, putting us in a more advantageous position to pursue a future capital raise.

Products & Services

Heliogen’s business focuses on the development and deployment of our innovative concentrated solar energy technology. The main components of our concentrated solar energy technology include heliostat fields and associated control systems, solar receivers, thermal energy storage and heat engines. A heliostat is a mirror affixed to a two-axis tracking mechanism which allows it to move in a trajectory that places its reflected beam of sunlight onto a desired point. A heliostat field is a large array of many heliostats, all operating in coordination to focus their reflected beams onto a common location atop a tower located near or within the field. The solar receiver is the device mounted at that focal point which absorbs the highly concentrated solar energy and converts it to thermal energy in a heat transfer medium. The heat transfer medium then carries that thermal energy to the thermal energy storage system, where a large mass of material is brought to very high temperatures inside an insulated enclosure, acting as a thermal battery. When energy is needed, the heat transfer medium transfers thermal energy from the thermal energy storage system and delivers it to the thermal process being powered or for use in generating electricity or hydrogen.

Because Heliogen’s technology is fundamentally a thermal energy source, we believe our products are particularly well-suited to meeting the thermal energy demand of industrial processes. As one example, many industrial facilities use steam to supply energy to their process. Heliogen’s technology, in the form of a HelioHeat plant, can supply this steam nearly 24/7 by collecting thermal energy while the sun is shining, storing it in the thermal energy storage system, and using that thermal energy to supply heat to a boiler when the industrial process needs steam. Our technological innovations will enable the delivery of our HelioHeat, HelioPower and HelioFuel solutions to customers. HelioHeat plants will produce carbon-free heat (e.g. process steam) to support industrial processes. HelioPower plants will deliver solar thermal energy to a heat engine to produce electrical power. HelioFuel plants will couple HelioHeat and HelioPower technology with an electrolyzer to produce green hydrogen fuel. All three solutions will be enabled by Heliogen’s proprietary heliostat design and AI technology, and will integrate thermal energy storage to enable operation nearly 24/7, overcoming the intermittency of other solar energy technologies.

For each of the three above solutions, we are offering multiple support models to customers looking to deploy Heliogen’s technology:

- Contracting with owner-operators to build turnkey facilities that deploy Heliogen’s technology (Heliogen will contract with engineering, procurement and construction (“EPC”) partners for constructing the facility);
- Selling heliostats (and associated software control systems) to owner-operators and/or EPC contractors;
- Providing asset maintenance support services during operation, for completed facilities that use Heliogen’s technology and;
- Providing project development support services to help customers advance readiness to break ground in advance of final investment decisions.

In the future, we will also be prepared to offer Heliogen’s IP through a licensing model to third parties interested in manufacturing and installing the hardware.

Raw Materials

The most important raw materials required for our concentrated solar energy systems are steel (sheet, tube, bar, extrusions), stainless steel (pipe), glass (float glass), copper (wiring), aluminum (die castings, extrusions), commodity electrical & electronics components, ceramics & ceramic fibers, thermal insulation materials, bauxite particles and/or silica sand and concrete. Our components are produced by suppliers both domestically and internationally where most raw materials are readily available. Many major equipment and systems components are procured on a single or sole-source basis, but where multiple sources exist, we work to qualify multiple suppliers to minimize supply chain risk. We also mitigate risk by maintaining safety stock for key parts and assemblies with lengthy procurement lead times. We use a variety of agreements with suppliers to protect our IP and processes to monitor and mitigate risks of the supply base causing a business disruption. The risks monitored include supplier financial viability, the ability to increase or decrease production levels, business continuity, quality and delivery.

Growth and Market Opportunity

Growth

Heliogen's growth is tied to the global phenomenon commonly described as "the energy transition"—that is, the shift in energy supply from burning fossil fuels to harnessing low-carbon and renewable sources of energy. Data linking the role of carbon emissions in accelerating climate change has led to shareholders and activists applying pressure to companies and governments to take action. This trend has been on the rise since the signing of the Paris Agreement in 2015, led largely by Europe. As a result, the energy transition has become a major focus of both private and public sector leaders around the world. Companies and governments have begun setting ambitious goals to reduce greenhouse gas ("GHG") emissions and to use renewable resources to sustainably power their operations.

Heliogen's growth strategy is to harness the significant demand by delivering technology that enables scalable, distributed, solar-thermal energy plants that can create heat, steam, power and "clean" hydrogen — i.e., without the carbon emissions produced by fossil fuel energy sources. Our solutions target the end markets with a need for heat, electric power and hydrogen. Such markets include the oil & gas, power, cement, steel and mining industries.

Heliogen's technology platform allows modular plants for heat, steam, power and/or hydrogen to be built at customer locations. Our strategy to achieve scale is through modularity and repeatability, with minimal custom re-engineering compared to prior iterations of this technology. The majority of the plant will be built in a factory that can be scaled to produce many plants per year. Heliogen will be able to further scale by replicating that factory in multiple regions as the company expands globally.

Leveraging the modularity of the system and repeatability of its implementation, in the near to medium term, Heliogen will partner with contractors and other supply chain participants to execute projects. In the long term, we expect to license our core, patent-protected technology to owner-operators and EPC companies who can each deploy many plants, to achieve a scale and growth trajectory that can take advantage of the size of the market opportunity. Licensing could enable Heliogen to improve the pace of our deployments, as well as increase our profit margins, beyond what could be achieved solely through our direct implementation.

In order to support Heliogen's growth as described above, we will continue our dedication to research and development ("R&D") and to iterating on our novel combination and integration of hardware and software. We are working to harness our specialty of using software, automation, robotics and algorithms to reduce the quantity of materials, the amount of human labor and the duration of time required to deliver our projects at scale.

Geographically we are focused initially on the U.S., but we plan to position Heliogen to respond to global demand in locations with strong solar resources such as Mexico, South America, Australia, Africa and parts of Europe in the future. According to the U.S. Energy Information Administration, global energy demand is expected to increase nearly 50% over the next 30 years, due to an increase in population and the economic growth of developing countries. We expect that demand for carbon-free replacements for current energy sources will further increase the demand for Heliogen's products.

Renewables Growth

Governments, corporations and investors are making concerted efforts and setting aggressive targets to reduce GHG emissions and phase out fossil fuel use. Such initiatives include setting timelines for zero-emission targets, establishing caps on CO₂ emissions and instituting certain other environmental sustainability initiatives. For example, in the U.S., the Biden Administration has declared the following key environmental targets: (i) a carbon pollution-free power sector by 2035, (ii) a net-zero (i.e., carbon reduction is equal to or greater than carbon emissions) economy by 2050 and (iii) to achieve in 2030 a 50-52% reduction from 2005 levels in economy-wide net GHG pollution. In the private sector, companies have also committed to environmental sustainability initiatives. Leading financial and corporate institutions have requested that all boards of directors prepare and disclose a plan to be compatible with a net-zero economy and to commit to launching investment products aligned to a net-zero pathway. Individually and collectively, these initiatives support the increased demand for renewable fuels, transportation, energy storage, renewable power, low-carbon process heat and energy efficiency.

The key driver for renewable energy generation and storage will be increased reliance on intermittent renewable energy resources like solar PV and wind. As penetration of these renewable sources increases, the intermittency of these resources can put strain on the grid if the operator is unable to fully match supply with demand. This strain can lead to an inability to supply power when it is needed and increased costs to consumers.

Energy storage can help reduce this strain. However, beyond a threshold level of renewable penetration, current solutions to energy storage, such as batteries, are insufficient to ensure grid reliability. Research from the National Renewable Energy Laboratory, a national laboratory of the DOE, suggests that this threshold may be around 30% renewable penetration based on its Eastern Renewable Generation Integration Study; which found that the Eastern Interconnection, one of the largest power systems in the world, can accommodate upwards of 30% of wind and solar PV power. In order to maintain system stability and achieve mandated decarbonization goals, longer duration energy storage options must be deployed. We believe Heliogen's technology will be among a small list of available technologies that will be able to respond to this energy storage need in order to maintain grid reliability.

Woodside Energy (USA) Inc.

In March 2022, we entered into a series of commercial agreements with Woodside Energy (USA) Inc. ("Woodside") for the commercial-scale demonstration and deployment of our AI-enabled concentrated solar energy technology. We also entered into a collaboration agreement with Woodside to jointly market our technology in Australia (the "Collaboration Agreement") with the objective to deploy further commercial-scale modules of our HelioHeat, HelioPower and HelioFuel offerings. Under this arrangement, the parties expect to define product offerings that use Heliogen's modular technology for potential customers (including Woodside) in Australia and are establishing a roadmap to identify and engage with those customers.

Competition

We have experienced, and expect to continue to experience, strong competition from a number of alternative providers of energy technology, particularly as the economy increasingly shifts towards low-emission, zero-emission or carbon neutral solutions. As a result, we expect competition to intensify in the future as existing competitors and new market entrants introduce new products into our markets.

The traditional energy technology provider market is highly competitive. The declining cost of renewable energy is also contributing to the shift in customer demand as customers seek carbon-free solutions to replace their fossil fuel-based consumption, causing the industry to evolve and expand. The main competitive factors include, but are not limited to:

- Upfront and ongoing cost;
- Safety and reliability;
- Duration;
- Performance and uptime;
- Operational flexibility;

- Asset life length and cyclability;
- Ease of integration;
- Operability in extreme weather conditions;
- Environmental sustainability;
- Historical track record; and
- Field-proven technology.

With the rising demand for clean energy solutions with lower GHG emissions, there has been a transition to renewable energy sources. This industry transformation has created an opportunity for an increased role for thermal energy and long-duration energy storage solutions like what Heliogen will provide. As a pioneer of solar energy technology solutions that are well-suited for long duration applications, we believe we have a significant edge over our competition in this rapidly evolving environment. Our competitors include traditional fossil-fueled alternatives; providers of solutions combining solar PV with battery storage; and other forms of renewable energy. Our competitors may have longer operating histories and greater financial, marketing, personnel and other resources than we do and could focus their substantial financial resources to develop a competitive advantage. Our current and potential competitors may also establish cooperative relationships among themselves or with third parties that may further enhance their resources. Although we are small and at an earlier stage of commercial maturity compared to many of our competitors, we believe we are well-positioned to compete successfully in the market — based on our innovative closed loop tracking system, our HelioHeat, HelioPower and HelioFuel solutions, our strategic partnerships and our premier leadership team with a proven track record of success across the energy industry and other industries.

New technologies may enter the market that may have additional or superior advantages to our future offerings. A variety of newer and emerging companies have announced plans to develop heat, power, hydrogen and energy storage products using a variety of technologies, including compressed air, thermal energy and solid-state batteries among others. Although many of these companies are not in commercial production today, they may in the future offer solutions that become competitive with our expected offerings. We intend to continuously improve our product offerings and maintain robust R&D efforts in order to stay ahead of existing and emerging competitors.

Competitive Strengths and Differentiation

As a result of factors described below, we believe that we are positioned to become a market leader in renewable energy technology.

- *Significant Head Start with Proprietary Technology and Ongoing Research & Development.* We believe we have a first-mover advantage over other industry competitors as we have been committed since our founding in 2013 to the development of solar energy solutions that enable decarbonization of our economy. This is evidenced by our rich portfolio of IP. We have demonstrated capability to concentrate sunlight to produce heat at temperatures ranging from 150 to 1,000 degrees centigrade, made possible by our first-of-a-kind ability to achieve high mirror adjustment accuracy. We have patented the most valuable parts of our technology at each stage of development. Beyond the patents, our journey as a company and the bench of experience across our leadership team has provided and continues to provide invaluable learnings and technical know-how that we believe will be difficult to rival. We continue to develop and maintain our knowledge base, which we believe provides us with a substantial strategic head start and competitive advantage against competition in the concentrated solar energy and energy storage spaces. We also continue to target incremental and transformational improvements across all aspects of our technology in order to reduce costs and improve performance.
- *High-Temperature Thermal Energy Enabled by Closed-Loop Tracking System.* Fundamental to Heliogen's offering is our proprietary heliostat design and AI technology. We use proprietary advanced computer vision software technology — a form of AI — to identify and precisely align an array of mirrors to reflect sunlight to a target on the top of a tower, creating high-temperature, carbon-free thermal energy. Our tracking system makes automatic micro-adjustments of the mirrors over the course of the day to account for the movement of the sun in the sky. These automatic adjustments, using a unique closed-loop feedback system, maximize solar concentration and energy capture, resulting in higher temperature heat

than what has previously been provided by other approaches to concentrated solar energy technology. This opens up new opportunities to provide industrial process heat across a greater range of temperatures, as well as flexibility for a broader duration range of thermal energy storage. This system also enables the elimination of the expensive slew drive gearbox used in similar applications, eliminates time consuming and costly calibration processes, as well as a host of other benefits.

- *Near Always-Available Renewable Energy.* At current renewables penetration across the U.S. energy market, most of the energy storage solutions on the market provide two to four-hour energy storage. Without efficient and scalable energy storage that can exceed such two to four-hour energy storage timeframes, renewable energy generation cannot meet continuous power demands of industrial customers and the grid. The peak demand curve is essentially the opposite of the solar peak curve, which leads to curtailment during the middle of the day. Heliogen expects to be able to generate, store and provide renewable energy to match the existing demand curve. Our near-term industrial process steam solution uses a steam accumulator, which is proven technology, to store steam for delivery after the sun sets. In addition, by integrating higher temperature solid media thermal storage, we believe our next generation system will be able to provide near constant energy throughout the day to produce electrical power or green hydrogen with an electrolyzer. Heliogen's technology is designed to store the energy generated from concentrating the sun's rays into solid media — such as rocks, sand or ceramic material — in the form of heat. This type of storage is expected to be a lower cost form of storage compared to what other solar energy companies use, and it will be made possible by the high temperatures enabled by Heliogen's technology. Heliogen will store that energy, and then when it is needed, use a heat exchanger to bring that energy either to an engine, an industrial facility, or to an electrolyzer to make green hydrogen.
- *Modular and Scalable Plant Design.* Heliogen's modular and scalable plant design accommodates growth to compete with large scale renewable projects. Depending on application, our modules can be sized to as small as a few hundred kilowatts for thermal applications. For large projects, our modules can be sized to tens of megawatts and can additionally be installed in multiples. As an example of modularity, one of Heliogen's 5 MW modules can be replicated to meet larger customer demands to supply electricity for the production of hydrogen. Depending on location, we expect to design each 5 MW module to high-capacity factor renewable power, with a future target of achieving less than 5 cents per kW-hour power cost, which would have the ability to ultimately generate over 850,000 kilograms of hydrogen year. The plant's small footprint allows it to be sited alongside energy-hungry industrial facilities rather than in remote deserts.

This modular system is also designed to utilize mirrors (heliostats) smaller than traditional concentrated solar energy mirrors, enabling our heliostats to be manufactured at scale in a repeatable process. By building modularly and shifting more assembly work from the construction field into the controlled conditions of a manufacturing facility, we expect to be able to scale more quickly and efficiently, while reducing overall costs compared to alternative approaches.

- *Competitive Forecast Economics.* Historically, concentrated solar energy companies have struggled to compete with PV solar due to high costs. However, while the cost of PV solar has decreased dramatically in the last decade, the issue of intermittency remains unresolved. In addition, PV does not offer an efficient solution for generating heat. As a result, PV solar may be uneconomical for many industrial processes that require heat and/or reliable delivery.

We believe our projected economics will be competitive with other prevalent sources of clean energy that include storage. For example, on a forward-looking basis, our future targets estimate a cost of less than 5 cents per MWh for power and less than \$2.00 per kilogram of hydrogen, which is competitive with alternative sources. This analysis assumes subsidized economics with 60% debt at an 8% interest rate and 40% equity at a 12% cost over a 30-year projection period. Additionally, these projections are based on expected cost reductions associated with manufacturing production efficiencies, module-enabled economies of scale and mechanical improvements such as elimination of an expensive slew-drive gearbox that is enabled by the closed-loop tracking system.

- *International Expansion.* After our initial projects, we forecast international expansion, focusing on capital efficiency enabled by our proprietary applications and agile heliostat manufacturing approach. We are in various stages of discussions with numerous companies in Australia, Chile, Mexico and elsewhere. We also intend to leverage our strategic and commercial relationships with international footprints to cross-sell to foreign markets.
- *Highly Experienced Management Team.* We have built a world-class team composed of industry leaders with decades of experience from some of the most well-known and highly regarded companies in the energy, solar, technology, manufacturing and construction industries. Our committed, entrepreneurial team has decades of industry leading technical, operational, development and commercial experience which has positioned us to disrupt the current energy industry paradigms.

Intellectual Property

Our ability to protect our material IP is important to our business. We rely upon a combination of foreign, federal, state and common law protections afforded to owners of patents, copyrights, trade secrets and trademarks, along with employee and third-party non-disclosure agreements and other contractual restrictions to establish and protect our IP rights. In particular, unpatented trade secrets in the fields of research, development and engineering are an important aspect of our business by ensuring that our technology remains confidential. We also pursue patent protection when we believe we have developed a patentable invention and the benefits of obtaining a patent outweigh the risks of making the invention public through patent filings.

We hold a strong portfolio of patents and numerous trademarks covering key aspects of our plant and process, including our closed-loop tracking system, tracking based on radiance maps, intensity and polarization tracking, and receiver for capturing solar energy. As of December 31, 2022, we had a portfolio of 8 issued U.S. patents, 6 issued non-U.S. patents, 22 patent applications pending for examination in the U.S. and 14 patent applications pending for examination in other countries as well as numerous trademarks. However, our portfolio of patents is expected to evolve as new patents are issued, older patents expire, and we continue to innovate. Our U.S. issued patents are expected to expire between 2029 and 2040. We regularly review our development efforts to assess the existence and patentability of new inventions, and we are prepared to file additional patent applications when we determine it would benefit our business to do so.

Government, Programs, Incentives and Regulations

We operate in the heavily regulated energy sector, which is subject to a variety of federal, state and local regulations and agencies that impact our operations. As a participant in the renewable energy sector specifically, there are additional regulations, tax incentives and support mechanisms in place to promote growth.

On the U.S. federal level, tax credits are currently in place that incentivize the deployment of renewable energy. Projects generating renewable energy are eligible for investment tax credits that, with proper structuring, lower the capital requirements for renewables projects to be developed and open a new source of funding for these projects. The value of the tax credit varies depending on the year in which construction is deemed to begin. Under the current legislative framework, solar projects starting construction in 2023 qualify for a tax credit equal to 22% of the project's cost. The value of the credit drops to a permanent 10% level for projects that begin construction in 2024 or later. Projects that begin construction before 2024 but are not placed in service until 2026 or later, are also limited to the 10% credit.

The possibility of additional federal incentives and investment from the Biden Administration and Congress has garnered enthusiasm among renewable energy developers. The administration has announced goals of decarbonizing the electricity sector entirely by 2035, a goal that would necessitate billions of dollars in additional investment. Some of this money is likely to be invested in solar, hydrogen and storage technologies, potentially a benefit for a company like Heliogen. For example, the Bipartisan Infrastructure Law includes \$9.5 billion in funding for clean hydrogen, some of which will be applicable to companies which develop and install technology for clean hydrogen production.

In addition, in early 2022, the DOE announced funding for innovative R&D projects to accelerate the large-scale development of solar technologies that can deliver high-temperature solar heat on demand due to integration with a thermal energy storage system.

State-level incentives have also driven growth in the deployment of renewable energy. According to the National Conference of State Legislatures, currently 31 states, Washington, D.C. and two territories have active renewable or clean energy requirements, which mandate that a certain portion of electricity delivered to customers come from eligible renewable energy resources while an additional three states and one territory have set voluntary renewable energy goals. For example, California's renewable portfolio standards require that 60% of the state's electricity must come from renewable sources by 2030 and 100% by 2045. States have created these standards to diversify their energy resources, promote domestic energy production and encourage economic development. Historically, unfavorable utility rate structures have been a barrier to increased deployment of renewable energy technologies. However, some states have recently mandated that a certain portion of that eligible renewable energy must be distributed generation.

The IRA was signed into law on August 16, 2022. The IRA contains many provisions intended to incentivize domestic clean energy investment, clean energy production and manufacturing of necessary components, specifically: (a) the extension and enhancement of the Investment Tax Credit ("ITC") program, which the IRA extends to thermal energy storage equipment; (b) the addition of Production Tax Credits ("PTC") up to \$3.00 per kilogram for clean hydrogen and a three-year extension and modification of PTCs for facilities that begin construction before December 31, 2024; (c) the creation of the Advanced Manufacturing Production Credit that applies to the solar components we plan to manufacture at our facility in Long Beach, California; (d) the creation of a new tax credit for sustainable aviation fuel up to \$1.75 per gallon, depending on the lifecycle carbon emissions reduction of the fuel; and (e) the increase in total funds available for the DOE's Title 17 loan guarantee program by \$3.6 billion, bringing the total to \$40 billion. The ITC and PTC amount can be increased if certain domestic content requirements are satisfied or if a project is located in (i) an "energy community" or (ii) low-income community, each as defined in the IRA. Heliogen is continuing to evaluate the IRA to understand the full impact of these provisions and additional potential benefits and believes many of these provisions will drive increased demand for its renewable energy technology and related products.

Other Public Policy Considerations

Different public policy mechanisms have been used by governments to accelerate the adoption and use of solar power and energy storage. Examples of customer-focused financial mechanisms include capital cost rebates, performance-based incentives, feed-in tariffs, tax credits and net energy metering. Some of these government mandates and economic incentives are scheduled to be reduced or to expire, or could be eliminated altogether, while others are scheduled to be extended or expanded. Capital cost rebates provide funds to customers based on the cost and size of a customer's solar power or energy storage system. Performance-based incentives provide funding to a customer based on the energy produced by their solar power system or stored by their energy storage system. Feed-in tariffs pay customers for solar power system generation based on energy produced, at a rate generally guaranteed for a period of time. Tax credits reduce a customer's taxes at the time the taxes are due. Net energy metering allows customers to deliver to the electric grid any excess electricity produced by their on-site solar power systems, and to be credited for that excess electricity at or near the full retail price of electricity. New market development mechanisms to encourage the use of renewable energy sources continue to emerge.

For more information about how we avail ourselves of the benefits of public policies and the risks related to public policies, please see the risk factors set forth under the caption "Item 1A. Risk Factors."

Environmental and Other Regulations

We are subject to extensive environmental regulation, which has become more stringent over time. The laws and regulations to which we are subject govern, among others, vehicle emissions and the storage, handling, treatment, transportation and disposal of hazardous materials and the remediation of environmental contamination. Compliance with such laws and regulations at an international, regional, national, provincial and local level is an important aspect of our ability to continue our operations.

Environmental standards applicable to us are established by the laws and regulations of the countries in which we operate, standards adopted by regulatory agencies and the permits and licenses issued to us. Each of these sources is subject to periodic modifications and what we anticipate will be increasingly stringent requirements. Violations of these laws, regulations or permits and licenses may result in substantial administrative, civil or even criminal fines, penalties and possibly orders to cease any violating operations or to conduct or pay for corrective works. In some instances, violations may also result in the suspension or revocation of permits or licenses.

We use, generate and discharge toxic, volatile, or otherwise hazardous chemicals and wastes in our R&D and construction activities. We are subject to a variety of U.S. federal and state laws and regulations related to the purchase, storage, use and disposal of hazardous materials. We believe that we have all environmental permits necessary to conduct our business and expect to obtain all necessary environmental permits for future activities. We believe that we have properly handled our hazardous materials and wastes and have appropriately remediated any contamination at any of our premises. We are currently not subject to any litigation pertaining to environmental regulations and cost of compliance with applicable regulations is expected to be commensurate with our historical spend and other companies in the industry.

In addition to our existing environmental compliance initiatives, we will also be engaging additional resources to focus on a broader Environmental, Social and Governance (“ESG”) program across our business. As part of our commitment to energy sustainability, we completed an ESG assessment during 2022 to develop a baseline against which to prioritize its ESG strategies.

Finally, we are subject to federal, state and local requirements on health, safety and employment. We are subject to the requirements of the Occupational Safety and Health Act, local wage regulations and rigorous health and safety regulations in the State of California.

Human Capital

We take pride in our innovative technology and consider our employees to be the foundation for our growth and continued success. More than 80% of our employees have extensive experience or backgrounds in engineering, energy, or manufacturing. More than half of our employees are involved in product development and manufacturing. As of December 31, 2022, we employed 220 full-time employees, based primarily in Southern California.

Our high-performance culture is based on our commitment to results and our values, which we expect everyone to model in their daily conduct:

- *We are improving the world.* We will deliver affordable renewable energy, more economically than fossil fuels, benefiting the entire global community.
- *We are bold.* We are bold, persistent and challenge the status quo in order to achieve technological breakthroughs and a profitable business.
- *We treat everyone respectfully.* We are respectful, transparent and collaborative. We maintain a safe environment for the well-being and inclusion of everyone.
- *We value diversity.* We value and pursue diversity in all its forms, and welcome ideas and input from everyone.
- *We welcome feedback.* We are committed to feedback, continuous improvement and learning, so everyone can contribute their best work with passion and enjoyment.

We believe that an equitable and inclusive environment with diverse teams is crucial to our efforts to attract and retain key talent, produce more creative solutions and innovative products and services, and foster a work culture that reflects our core values. We have established a Diversity, Equity and Inclusion program, with the goal of developing a multi-year action plan to improve the diversity of our team and ensure every employee feels included and valued.

Emerging Growth Company Status

We are an “emerging growth company” as defined in Section 2(a) of the Securities Act, as modified by the JOBS Act, and we 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 of 2002 (“SOX”), reduced disclosure obligations regarding executive compensation in its periodic reports and proxy statements, and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and shareholder approval of any golden parachute payments not previously approved. Further, we have elected not use the extended transition period for complying with any new or revised financial accounting standards, and as such, we are required to adopt new or revised standards at the same time as other public companies.

We will remain an emerging growth company until the earliest of (i) the last day of our fiscal year (a) following March 19, 2026, the fifth anniversary 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 stock that is held by non-affiliates exceeds \$700 million as of the prior June 30th, or (ii) the date on which we have issued more than \$1.0 billion in non-convertible debt during the prior three-year period.

Available Information

Our website address is www.heliogen.com. We make available on our website, free of charge, our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K and any amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. The SEC maintains a website that contains reports, proxy and information statements and other information regarding our filings at www.sec.gov. The information found on our website is not incorporated by reference into this Annual Report on Form 10-K or any other report we file with or furnish to the SEC.

Item 1A. Risk Factors

Investing in our securities involves a high degree of risk. You should carefully consider the risks and uncertainties described below together with all of the other information contained in this Annual Report on Form 10-K. If any of the events or developments described below were to occur, our business, annual report, operating results and financial condition could suffer materially, the trading price of our common stock could decline, and you could lose all or part of your investment. The risks and uncertainties described below are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently believe to be immaterial may also adversely affect our business.

Risks Relating to our Business

If demand for our concentrated solar energy solutions does not develop as we expect or our estimates of market opportunity and forecasts of market growth prove to be inaccurate, our revenues may suffer, and our business may be harmed.

We believe, and our growth plans assume, that the market for solar energy solutions will continue to grow, that we will increase our penetration of this market and that our revenues from selling into this market will continue to increase over time. However, market opportunity estimates and growth and demand forecasts, whether obtained from third-party sources or developed internally, are subject to significant uncertainty and are based on assumptions and estimates that may prove to be inaccurate. The estimated addressable market may not materialize in the timeframe we expect, if ever, and even if the market meets the predicted size and growth estimates, our business could fail to grow at similar rates. If our expectations as to the size of this market or our ability to sell our products and services in this market are not correct, our revenues will suffer, and our business will be harmed.

If we fail to win new contracts and purchase orders, our business operations and financial results may be adversely affected.

Our business depends on our ability to win contracts and purchase orders with customers. To date, we have only one significant contract, with Woodside. Contract proposals and negotiations are complex and frequently involve a lengthy bidding and selection process, which is affected by a number of factors. These factors may include market conditions, financing arrangements and required governmental approvals. For example, a client may require us to provide a bond or letter of credit to protect the client should we fail to perform under the terms of the contract. If negative market conditions arise, or if we fail to secure adequate financial arrangements or the required government approvals, we may not be able to pursue particular projects, which could adversely affect our profitability. If we fail to complete a project in a timely manner, miss a required performance standard, or otherwise fail to adequately perform on a project, we may incur a loss on that project, which may reduce or eliminate our overall profitability.

Our engagements involve complex projects that could be impacted by a number of factors, some of which are outside of our control, and therefore may result in significant losses on the projects.

Our engagements will involve complex projects. The quality of our performance on such projects depends in large part upon our ability to manage the relationship with our clients and our ability to effectively manage the project and deploy appropriate resources, including third-party contractors and our own personnel, in a timely manner. If a project is not completed by the scheduled date or fails to meet required performance standards, we may either incur significant additional costs or be held responsible for the costs incurred by the client to rectify damages due to late completion or failure to achieve the required performance standards. The performance of projects can be affected by a number of factors including unavoidable delays from suppliers and subcontractors, government inaction, public opposition, inability to obtain financing, weather conditions, unavailability of vendor materials, changes in the project scope of services requested by our clients, industrial accidents, environmental hazards, labor disruptions and financial market instability or disruptions to the banking system due to bank failures, particularly in light of the recent events that have occurred with respect to Silicon Valley Bank. To the extent these events occur, the total costs of the project could exceed our estimates and we could experience reduced profits or, in some cases, incur a loss on a project, which may reduce or eliminate our overall profitability. Further, any defects or errors, or failures to meet our clients' expectations, could result in claims for damages against us.

During the year ended December 31, 2022, we recognized a provision for contract losses of \$33.8 million, primarily related to the commercial-scale demonstration agreement ("CSDA") executed with Woodside in March 2022, which reflected our best estimate of the full expected loss on the development and completion of our first commercial-scale facility (the "Facility") given the consideration expected to be realized under the CSDA and the award from the DOE (the "DOE Award") relative to the total estimated cost at completion. Our cost estimates as of December 31, 2022 for the anticipated final scope of the Facility are subject to further refinement as we continue detailed engineering and design with the customers, obtain firm pricing from subcontractors, order long-lead items and better understand short and long-term commodity and market impacts on cost inputs to the CSDA and the Facility. As a result, the actual loss for the CSDA could vary from our current estimates.

Our modular, AI-enabled, concentrated solar energy plants may not generate expected output levels.

The modular, AI-enabled, concentrated solar energy plants that we plan to construct will be subject to various operating risks that may cause them to generate less than expected amounts of output. These risks include a failure or degradation of our equipment, the equipment of our customers or that of our vendors; an inability to find suitable replacement equipment or parts; or a less than expected supply of solar insolation. Any extended interruption in a plant's operation, or the failure of a plant for any reason to generate the expected amount of output, could have a material adverse effect on our business and operating results due to the damage to our reputation and the resulting dissatisfaction of the owner-operator.

We may not be able to develop technologies and products to satisfy changes in customer demand or industry standards, and our competitors could develop products that decrease the demand for our products.

Rapidly changing technologies and industry standards, along with frequent new product introductions, characterize the industries of many of our customers and potential customers. Our financial performance depends, in part, on our ability to design, develop, manufacture, assemble, test, market and support new products and technology enhancements on a timely and cost-effective basis.

We have not yet commercialized any of our products. Our principal focus has been on R&D activities to improve our technology and make our product offerings more attractive to potential customers. These activities are subject to various risks and uncertainties we are not able to control, including changes in customer demand or industry standards and the introduction of new or superior technologies by others. Moreover, any failure by us in the future to develop new technologies or to timely react to changes in existing technologies could materially delay our development of new products, which could result in product obsolescence, decreased revenues and a loss of our market share to our competitors. In addition, products or technologies developed by others may render our products or technologies obsolete or non-competitive. Further, if our products are not in compliance with prevailing industry standards, such non-compliance could materially and adversely affect our financial condition, cash flows and results of operations.

We may be unable to complete or operate our projects on a profitable basis or as we have committed to our customers.

Development, installation, construction, and commissioning of our concentrated solar energy plants, and maintenance support of our concentrated solar energy plants, entails many risks, including:

- failure to receive critical components and equipment that meet our design specifications and can be delivered on schedule,
- failure to obtain all necessary rights to access and use land and water,
- failure to receive quality and timely performance of third-party services,
- increases in the cost of labor, equipment and commodities needed to construct or maintain projects,
- permitting and other regulatory issues, license revocation and changes in legal requirements,
- shortages of equipment or skilled labor,
- unforeseen engineering problems,
- credit risk of our customers,
- weather interferences, catastrophic events including fires, explosions, earthquakes, droughts and acts of terrorism,
- accidents involving personal injury or the loss of life,
- health or similar issues, such as a pandemic or epidemic,
- labor disputes and work stoppages,
- mishandling of hazardous substances and waste, and
- other events outside of our control.

Any of these factors could give rise to construction delays and costs in excess of our expectations. This could prevent us from completing construction of our projects, cause defaults under any then-existing financing agreements or under contracts that require completion of project construction by a certain time, cause projects to be unprofitable for us, or otherwise negatively impact our business, financial condition and operating results.

If we are not able to successfully manage our growth strategy, our business operations and financial results may be adversely affected.

Our expected future growth presents numerous managerial, administrative and operational challenges. Our ability to manage the growth of our operations will require us to continue to improve our management information systems and other internal systems and controls. In addition, our growth will increase our need to attract, develop, motivate, and retain both our management and professional employees. The inability of our management to effectively manage our growth or the inability of our employees to achieve anticipated performance could have a material adverse effect on our business.

An increase in the prices or changes in the supply and demand of certain materials and commodities used in our business could adversely affect our business.

For certain contracts, we are exposed to market risk of increases in certain commodity prices of materials. We are dependent on the availability of essential materials, parts and subassemblies from our suppliers and subcontractors. The most important raw materials required for our concentrated solar energy systems are steel, stainless steel, glass, copper, aluminum, commodity electrical & electronics components, ceramics & ceramic fibers, thermal insulation materials, bauxite particles and/or silica sand and concrete. Prices and availability of these raw materials are subject to substantial fluctuations that are beyond our control due to factors such as supply and demand trends, energy costs, transportation costs, inflation, government regulations, global trade relationships, duties and tariffs, changes in currency exchange rates, price controls, general economic conditions and other unforeseen circumstances.

Our components are produced by third-party suppliers both domestically and internationally where most raw materials are readily available and purchased by those independent contractors and suppliers in the country of manufacture. Many major equipment and systems components are procured on a single or sole-source basis, but where multiple sources exist, we work to qualify multiple suppliers to minimize supply chain risk. We also mitigate risk by maintaining safety stock for key parts and assemblies with lengthy procurement lead times. We use a variety of agreements with suppliers to monitor and mitigate risks of our supply base causing a business disruption. The risks monitored include supplier financial viability, the ability to increase or decrease production levels, business continuity, quality and delivery. Although we will continue to monitor and develop partial mitigation strategies, if existing vendors are unable to supply the raw materials we require, we cannot predict if we will be able to obtain alternative vendors within the time frames that we require and at a comparable cost. Shortages, price increases and/or delays in shipments of our raw materials and purchased component parts, have occurred and may continue to occur in the future which may have a material adverse effect on our results of operations if we are unable to successfully mitigate the impact.

In addition, our customers' capital budgets may be impacted by the prices of certain materials, and reduced customer spending could lead to fewer project awards and more competition. These prices could be materially impacted by general market conditions and other factors, including U.S. trade relationships with other countries, the imposition of tariffs, or political conditions. While we believe we can increase our prices to adjust for some price increases in commodities, there can be no assurance that price increases of commodities, if they were to occur, would be recoverable. Additionally, we expect many of our contracts to be fixed price, which would not allow us to adjust our prices and, as a result, increases in material costs could reduce our profitability with respect to such projects.

The development of our modular, AI-enabled, concentrated solar energy plants will require significant capital, which our customers may finance through third parties, and such financing may not be available to our customers on favorable terms, if at all.

We expect that our projects for customers will typically be financed by third parties. For the modular, AI-enabled, concentrated solar energy plants that we develop, we expect our customers to rely on a combination of their balance sheets and project-finance debt to fund construction costs. Increased interest rates may cause our customers to be unable to raise funds on acceptable terms when needed. Due to this, we may be unable to secure customer contracts, the size of contracts we do obtain may be smaller or we could be required to delay the development and construction of projects, reduce the scope of those projects or otherwise restrict our operations. Any inability by our customers to raise the funds necessary to finance our projects could negatively impact our business, financial condition and operating results.

We may require significant additional capital to pursue our growth strategy, but we may not be able to obtain additional financing on acceptable terms or at all.

Based on our current operating plan, we believe that our existing cash and short-term investments, will be sufficient to fund our operating expenses and capital expenditure requirements for the next twelve months following the filing of this Annual Report on Form 10-K. We have based these estimates on assumptions that may prove to be wrong, and we could use our capital resources sooner than we currently expect. We expect our capital expenditures and our R&D expenditures to continue to be significant in the foreseeable future as we continue developing our product offerings and expand our business. The growth of our business will depend on substantial amounts of additional capital for marketing and development of our HelioHeat, HelioPower and HelioFuel solutions. Our capital requirements will depend on many factors, including the rate of our enhancements to our existing HelioFuel, HelioHeat and HelioPower solutions, our expansion of sales and marketing and product development activities and customer demand for our HelioHeat, HelioPower and HelioFuel solutions. The fact that we have a limited operating history means we have limited historical data on the demand for our solutions. As a result, our future capital requirements may be uncertain and actual capital requirements may be different from those we currently anticipate. We may need to seek equity or debt financing to finance a portion of our capital expenditures. Such financing might not be available to us in a timely manner or on terms that are acceptable, or at all. The sale of additional equity or equity-linked securities could dilute our stockholders. The incurrence of indebtedness would result in increased debt service obligations and could result in operating and financing covenants that may restrict our operations or our ability to pay dividends to our stockholders. In addition, we may consider strategic acquisitions of complementary businesses or technologies to grow our business, which could require significant capital and could increase our capital expenditures related to the future operation of acquired businesses or technologies.

Our ability to obtain the necessary financing to carry out our business plan is subject to a number of factors, including general market conditions and investor acceptance of our business model. These factors may make the timing, amount, terms and conditions of such financing unattractive or unavailable to us. If we are unable to raise sufficient funds when we need or want them, we will have to significantly reduce our spending, delay or cancel our planned activities or substantially change our corporate structure and our operations and prospects could be negatively affected. We might not be able to obtain any funding, and we might not have sufficient resources to conduct our business as projected, both of which could mean that we would be forced to curtail or discontinue our operations.

Project development or construction activities may not be successful, and we may make significant investments without first obtaining project financing, which could increase our costs and impair our ability to recover our investments.

The development and construction of modular, AI-enabled, concentrated solar energy plants involves numerous risks. We may be required to spend significant sums for preliminary engineering, permitting, legal and other expenses before we can determine whether a project is feasible, economically attractive or capable of being built. In addition, we may choose to bear the costs of such efforts prior to obtaining project financing, prior to getting final regulatory approval and/or prior to our final sale to a customer, if any.

Successful completion of a particular project may be adversely affected by numerous factors, including: failures or delays in obtaining desired or necessary land rights, including ownership, leases and/or easements; failures or delays in obtaining necessary water rights, permits, licenses or other governmental support or approvals, or in overcoming objections from members of the public or adjoining land owners; uncertainties relating to land costs for projects; unforeseen engineering problems; access to available transmission for energy generated by our modular, AI-enabled, concentrated solar energy plants; construction delays and contractor performance shortfalls; work stoppages or labor disruptions and compliance with labor regulations; cost over-runs; availability of products and components from suppliers; adverse weather conditions; environmental, archaeological and geological conditions; and availability of construction and permanent financing.

If we are unable to complete the development of one or more of our modular, AI-enabled, concentrated solar energy plants or fail to meet one or more agreed target construction milestone dates, we may incur losses or be liable for damages or penalties that we are not be able to offset, which would have an adverse impact on our net income in the period in which the loss is recognized. We expect that some projects will require working capital to develop and/or build projects. If we are unable to complete a project, the associated working capital would also be an exposure that may need to be written off, which would have an adverse impact on our net income in the period in which the loss is recognized.

We have a history of operating losses and expect to incur significant additional expenses and operating losses.

We are an early-stage company and have a history of operating losses and negative operating cash flows. We incurred a net loss of \$142.0 million and \$137.4 million for the years ended December 31, 2022 and 2021, respectively. We expect that we will continue to incur operating and net losses for the medium term. The amount of future losses and when, if ever, we will achieve profitability are uncertain. In addition, even if we achieve profitability, there can be no assurance that we will be able to maintain profitability in the future. Our potential profitability is particularly dependent upon the growth of the market for renewable energy solutions, which may not occur at the levels we currently anticipate or at all.

Our revenue, expenses and operating results may fluctuate significantly.

Our revenue, expenses and operating results may fluctuate significantly because of numerous factors. In addition to the other risks described in this “Risk Factors” section, the following factors could cause our operating results to fluctuate:

- the number and significance of client contracts commenced and completed during a quarter,
- delays, increased costs, or other unanticipated changes in contract performance that may affect profitability, particularly with lumpsum contracts or contracts that have funding limits,
- reductions in the prices of products or services offered by our competitors,
- spending patterns of our private and public sector clients,

- weather conditions
- budget constraints experienced by our federal, state and local government clients,
- our ability to integrate any companies that we acquire,
- the continuing creditworthiness and solvency of clients and
- legislative and regulatory enforcement policy changes that may affect demand for our products or services.

As a consequence, operating results for a particular future period are difficult to predict and, therefore, prior results are not necessarily indicative of results to be expected in future periods. Any of the foregoing factors, or any other factors discussed elsewhere in this “Risk Factors” section, could have a material adverse effect on our business, results of operations and financial condition that could adversely affect our stock price.

Failure of third parties to manufacture quality products or provide reliable services in a timely manner could cause delays in the delivery of our services and completion of our projects, which could damage our reputation, have a negative impact on our relationships with our customers and adversely affect our growth.

Our success depends on our ability to provide services and complete projects in a timely manner, which in part depends on the ability of third parties to provide us with timely and reliable products and services. In providing our services and completing our projects, we rely on products that meet our design specifications and components manufactured and supplied by third parties, as well as on services performed by subcontractors.

We will also rely on subcontractors to perform the majority of the construction work related to our projects; and we may need to engage subcontractors with whom we have no experience for our projects.

If any of our subcontractors are unable to provide services that meet or exceed our customers’ expectations or satisfy our contractual commitments, our reputation, business and operating results could be harmed. In addition, if we are unable to avail ourselves of warranty and other contractual protections with providers of products and services, we may incur liability to our customers or additional costs related to the affected products and components, which could have a material adverse effect on our business, financial condition and operating results. Moreover, any delays, malfunctions, inefficiencies or interruptions in these products or services could adversely affect the quality and performance of our solutions and require considerable expense to establish alternate sources for such products and services. This could cause us to experience difficulty retaining current customers and attracting new customers, and could harm our brand, reputation and growth.

Our stock price is subject to volatility, which could have a material adverse impact on investors and employee retention.

The price of our stock has experienced substantial price volatility and may continue to do so in the future. From January 1, 2022 to March 23, 2023, our stock price fluctuated between a low of \$0.19 per share and a high of \$16.31 per share. Additionally, the energy and technology industries, and the stock market as a whole have, from time to time, experienced extreme stock price and volume fluctuations that have affected stock prices in ways that may have been unrelated to the performance of the companies’ in these sectors. We believe the price of our stock should reflect expectations of future growth and profitability. If we fail to meet expectations related to future growth, profitability, or other market expectations, the price of our stock may decline significantly, which could have a material adverse impact on investor confidence and employee retention.

Our business could be negatively affected as a result of actions of stockholders, and such actions could impact the price of our common stock.

Stockholders may from time to time attempt to effect changes in our business, engage in proxy solicitations or advance stockholder proposals in a manner that is not in the best interests of our Company and all of its stockholders. Certain stockholders have made, or have indicated they may make, public and private strategic proposals related to our business, strategy, management or operations and have requested, or have indicated they may request, changes to the composition of our Board. We cannot predict, and no assurances can be given as to, the outcome or timing of any such matters. In the event of a proxy contest, our business could be adversely affected. Responding to a proxy contest can be costly, time-consuming and disruptive and can divert the attention of our management and employees

from the operation of our business and execution of our strategic plan. Stockholders engaged in such activities may have interests that differ from those of other stockholders. Further, perceived uncertainties as to our future direction, including uncertainties related to the composition of our Board, may lead to the perception of instability or a change in the direction of our business, which may be exploited by our competitors, cause concern to current or potential customers, result in the loss of potential business opportunities, make it more difficult to attract and retain qualified personnel and/or affect our relationships with vendors, customers and other third parties. Moreover, a proxy contest could cause significant fluctuations in the price of our common stock based on temporary or speculative market perceptions or other factors that do not necessarily reflect the underlying fundamentals and prospects of our business.

The transition to our new Chief Executive Officer will be critical to our success and our business may be adversely impacted if we do not successfully manage the transition process.

On February 5, 2023, our Board terminated Bill Gross from his position as our Chief Executive Officer and appointed Christiana Obiaya, previously our Chief Financial Officer, as Chief Executive Officer. On February 5, 2023, the Board also appointed Kelly Rosser, our Chief Accounting Officer, as Interim Chief Financial Officer.

Our success depends, in part, on the effectiveness of our new Chief Executive Officer. The Chief Executive Officer will be critical to executing on and achieving our vision, strategic direction, culture, products and technology. Management transitions, such as the company's transition to a new Chief Executive Officer and Chief Financial Officer, may create uncertainty, divert resources and management attention, or impact public or market perception, any of which could negatively impact the company's ability to operate effectively or execute its strategies and result in an adverse impact on its business. Further, these new executives may have different backgrounds, experiences and perspectives from those individuals who previously served in these roles and thus may have different views on the issues that will determine the company's future, potentially resulting in employee, customer and supplier uncertainty.

A lack of continuity of management and personnel may harm our ability to effectively manage our operations and implement our strategy and our business may suffer.

Our business depends on experienced and skilled personnel and substantial specialty subcontractor resources, and if we lose key personnel or if we are unable to attract and integrate additional skilled personnel, it will be more difficult for us to manage our business and complete projects.

The success of our business and construction projects will depend in large part on the skill of our personnel and on trade labor resources, including those with certain specialty subcontractor skills. Competition for personnel, particularly those with expertise in the energy services and renewable energy industries, is high. In the event we are unable to attract, hire and retain the requisite personnel and subcontractors, we may experience delays in completing projects in accordance with project schedules and budgets.

Further, any increase in demand for personnel and specialty subcontractors may result in higher costs, causing us to exceed the budget on a project. Either of these circumstances may have an adverse effect on our business, financial condition and operating results, harm our reputation among and relationships with our customers and cause us to curtail our pursuit of new projects.

If we fail to introduce or acquire new products or services that achieve broad market acceptance on a timely basis, or if our products or services are not adopted as expected, we will not be able to compete effectively.

We operate in a highly competitive, quickly changing environment and our future success depends on our ability to develop or acquire and market products and services that are recognized and accepted as reliable, enabling and cost-effective and that achieve broad market acceptance. Some of our potential customers may already use products or services similar to what we currently offer or what we may offer in the future and may be reluctant to replace those products or services. Market acceptance of our products, services and technology will depend on many factors, including, but not limited to, market demand costs, timely completion and introduction of these products, prompt resolution of any defects or bugs in these products, our ability to support these products, market acceptance of these products, delays and quality issues in releasing new products and services and our ability to convince potential customers that our products, services and technology are an attractive alternative to existing products, services and technology. Prior to adopting our products, services and technology, some potential customers may need to devote time and effort to testing and validating our systems. Any failure of our systems to meet these customer benchmarks

could result in potential customers choosing to retain their existing systems or to purchase systems other than ours. The occurrence of one or more of the foregoing factors may result in lower revenue than expected, and we may in the future experience product or service introductions that fall short of their projected rates of market adoption.

Our ability to successfully introduce and market new products is unproven. Because we have a limited operating history and the market for our products, including newly acquired or developed products, is rapidly evolving, it is difficult to predict our operating results, particularly with respect to any new products that we may introduce. Our future success will depend in large part upon our ability to identify demand trends in the market in which we operate and quickly develop or acquire, and design, manufacture and sell, products and services that satisfy these demands in a cost-effective manner. Also, we may not be able to respond effectively to new product or service announcements by competitors by quickly introducing competitive products and services.

In order to differentiate our products and services from competitors' products, we will need to increase focus and capital investment in R&D, including software development. If any products currently sold by, and services offered by, us do not continue, or if our new products or services fail to achieve widespread market acceptance, or if we are unsuccessful in capitalizing on opportunities in the market in which we operate, our future growth may be slowed and our business, results of operations and financial condition could be materially adversely affected.

International expansion is one of our growth strategies, and our potential expansion into international markets may expose our business and operations to additional risks that we do not or will not face in the U.S., which could have an adverse effect on our operating results.

As part of our business strategy, we intend to continue to consider the expansion of our addressable market by pursuing opportunities to provide our HelioHeat, HelioPower and HelioFuel solutions in international markets, and we expect to generate a material portion of our revenues from operations outside of the U.S. in the future. Operations in international markets may require us to respond to new and unanticipated regulatory, marketing, sales and other challenges. These efforts may be time-consuming and costly, and there can be no assurance that we will be successful in responding to these and other challenges we may face as we enter and attempt to expand in international markets, including:

- building and managing a highly experienced foreign workforce and overseeing and ensuring the performance of foreign subcontractors,
- difficulties in developing, staffing and simultaneously managing a large number of varying foreign operations as a result of distance, language and cultural differences,
- increased travel, infrastructure and legal and compliance costs associated with multiple international locations,
- additional withholding taxes or other taxes on our foreign income and tariffs or other restrictions on foreign trade or investment,
- imposition of, or unexpected adverse changes in, foreign laws or regulatory requirements, many of which differ from those in the U.S.,
- increased exposure to foreign currency exchange rate risk,
- longer payment cycles for sales in some foreign countries and potential difficulties in enforcing contracts and collecting accounts receivable,
- difficulties in repatriating overseas earnings,
- compliance with numerous legislative, regulatory or market requirements of foreign countries,
- compliance with U.S. laws, such as the U.S. Foreign Corrupt Practices Act ("FCPA") and local laws prohibiting bribery and corrupt payments to government officials,
- laws and business practices that favor local competitors or prohibit foreign ownership of certain businesses,
- potentially adverse tax consequences,

- compliance with laws of foreign countries, international organizations, such as the European Commission, treaties and other international laws,
- the inability to continue to benefit from local subsidies due to change in control,
- unfavorable labor regulations and
- general economic conditions in the countries in which we operate.

Our future international operations will also be subject to general geopolitical risks, such as political, social and economic instability, war (including the repercussions of Russia's invasion of Ukraine), incidents of terrorism, changes in diplomatic and trade relations, or responses to such events. One or more of these factors could adversely affect any of our international operations and result in lower revenue and/or greater operating expenses than we expect and could significantly affect our results of operations and financial condition.

Our overall success in international markets will depend, in part, on our ability to succeed in differing legal, regulatory, economic, social and political conditions. We may not be successful in developing and implementing policies and strategies that will be effective in managing these risks in each country where we do business. Our failure to manage these risks successfully could harm our international operations, reduce our international sales and increase our costs, thus adversely affecting our business, financial condition and operating results.

An inability to protect our IP could negatively affect our ability to compete, our business and our results of operations.

Our ability to compete effectively depends in part upon the maintenance and protection of the IP related to our HelioHeat, HelioPower and HelioFuel solutions. As of December 31, 2022, we had a portfolio of 8 issued U.S. patents, 6 issued non-U.S. patents, 22 patent applications pending for examination in the U.S. and 14 patent applications pending for examination in other countries as well as numerous trademarks. However, our portfolio of patents is expected to evolve as new patents are issued and older patents expire, and the expiration of patents could have a negative effect on our ability to prevent competitors from duplicating certain or all of our products. Our U.S. issued patents are expected to expire between 2029 and 2040.

We might not succeed in obtaining patents from any of our pending applications. Even if we are awarded patents, they may not provide any meaningful protection or commercial advantage to us, as they may not be of sufficient scope or strength or may not be issued in all countries where our products can be sold. Patent protection is unavailable for certain aspects of the technology and operational processes that are important to our business. Any patent held by us or to be issued to us, or any of our pending patent applications, could be challenged, invalidated, unenforceable or circumvented. In addition, our competitors may be able to design around our patents. To date, we have relied principally on patent, copyright, trademark and trade secret laws, as well as confidentiality and proprietary information agreements and licensing arrangements, to establish and protect our IP. However, we have not obtained confidentiality and proprietary information agreements from our targeted customers and vendors, and although we have entered into confidentiality and proprietary information agreements with all of our employees, we cannot be certain that these agreements will be honored. Some customers are subject to laws and regulations that require them to disclose information that we would otherwise seek to keep confidential. Policing unauthorized use of our IP is difficult and expensive, as is enforcing our rights against unauthorized use.

The steps that we have taken or may take may not prevent misappropriation of the IP on which we rely. In addition, effective protection may be unavailable or limited in jurisdictions outside the U.S., as the IP laws of foreign countries sometimes offer less protection or have onerous filing requirements. From time to time, third parties may infringe our IP rights. Litigation may be necessary to enforce or protect our rights or to determine the validity and scope of the rights of others. Any litigation could be unsuccessful, cause us to incur substantial costs, divert resources away from our daily operations and result in the impairment of our IP. Failure to adequately enforce our rights could cause us to lose rights in our IP and may negatively affect our business.

In addition to patent protection, we rely significantly upon trade secret laws to protect our proprietary technologies. We regularly enter into confidentiality agreements with our key employees, customers, potential customers and other third parties and limit access to and distribution of our trade secrets and other proprietary information. However, these measures may not be adequate to prevent misappropriation of our technologies or to assure that our competitors will

not independently develop technologies that are substantially equivalent or superior to our technologies. In addition, the laws of other countries in which we operate may not protect our proprietary rights to the same extent as the laws of the U.S. We are also subject to the risk of adverse claims and litigation alleging infringement of IP rights.

Certain of our facilities are or may be located in regions that may be affected by extreme weather conditions and natural disasters.

Our business is headquartered in Southern California and we expect to have multiple facilities in California. Historically, California has been susceptible to natural disasters, such as earthquakes, drought, floods and wildfires. Although we intend to maintain loss insurance where necessary, an earthquake, wildfire or other natural disaster in the geographic regions in which we operate could result in significant damage to our facilities, destruction or disruption of our critical business or information technology systems, recovery costs and interruption to certain of our operations. In addition, a catastrophic event could interrupt our operations or those of our customers and suppliers, which could result in delays or cancellation of customer orders, the loss of customers and impediments to the manufacture or shipment of products or execution of projects, which could result in loss of business or an increase in expense, both of which may have a material adverse effect on our business. Delays and other weather impacts could adversely affect our ability to meet project deadlines and may increase a project's cost and decrease its profitability. In the specific case of wildfires, an accusation or ultimate determination that our operations were the cause of a wildfire may also have a material adverse effect on our business. Moreover, we expect to have multiple facilities in other domestic and international markets, which may be subject to similar risks as California.

Computer malware, viruses, ransomware, hacking, phishing attacks and other network disruptions could result in security and privacy breaches, loss of proprietary information and interruption in service, which would harm our business.

Computer malware, viruses, physical or electronic break-ins and similar disruptions could lead to interruption and delays in our services and operations and loss, misuse or theft of data. Computer malware, viruses, ransomware, hacking, phishing attacks or denial of service, against online networks have become more prevalent and may occur on our systems. Any attempts by cyber attackers to disrupt our services or systems, if successful, could harm our business, introduce liability to data subjects, result in the misappropriation of funds, be expensive to remedy and damage our reputation or brand. Insurance may not be sufficient to cover significant expenses and losses related to cyberattacks. Notwithstanding the security measures we have implemented, such as managed security services, that are designed to detect and protect against cyberattacks, and any additional measures we may implement or adopt in the future, our facilities and systems and those of our third-party service providers, could be vulnerable to security breaches, computer viruses, lost or misplaced data, programming errors, scams, burglary, human errors, acts of vandalism, or other events. The risk of such cyberattacks may be heightened as a result of remote or hybrid working environments. Although we make significant efforts to maintain the security and integrity of our information technology and related systems and have implemented measures to manage the risk of a security breach or disruption, there can be no assurance that our security efforts and measures will be effective, or that attempted security breaches or disruptions would not be successful or damaging. Efforts to prevent cyber attackers from entering computer systems are expensive to implement, and we may not be able to cause the implementation or enforcement of such preventions with respect to our third-party vendors. Hardware, software, or applications we develop or procure from third parties may contain defects in design or manufacture or other problems that could unexpectedly compromise information security. Intentional or non-malicious breaches by employees or others may pose a risk that sensitive data, including our IP, trade secrets or personal information of our employees, customers or users, or other business partners may be exposed to unauthorized persons or to the public, or that risks of loss or misuse of this information could occur. Though it is difficult to determine what, if any, harm may directly result from any specific interruption or attack, any failure to maintain performance, reliability, security and availability of systems and technical infrastructure may cause harm to our reputation, brand and ability to attract customers and result in exposure to significant costs, including costs to rebuild our systems, modify our products and services, defend litigation, respond to government enforcement actions, pay damages, take other remedial steps, in addition to other losses, any of which could adversely affect our business, results of operations and financial condition.

There are several factors ranging from human error to data corruption that could materially impact the efficacy of any processes and procedures designed to enable us to recover from a disaster or catastrophe, including by lengthening the time services are partially or fully unavailable to customers and users. It may be difficult or impossible to perform

some or all recovery steps and continue normal business operations due to the nature of a particular cyberattack, disaster or catastrophe or other disruption, especially during peak periods, which could cause additional reputational damages, or loss of revenues, any of which would adversely affect our business and financial results.

Further, we cannot be certain that (a) our liability insurance will be sufficient in type or amount to cover us against claims related to security breaches, cyberattacks and other related breaches; (b) such coverage will cover any indemnification claims against us relating to any incident, will continue to be available to us on economically reasonable terms, or at all; or (c) any insurer will not deny coverage as to any future claim. The successful assertion of one or more large claims against us that exceed available insurance coverage, or the occurrence of changes in our insurance policies, including premium increases or the imposition of large deductible or co-insurance requirements, could adversely affect our reputation, business, financial condition and results of operations.

Our mirror cleaning technology may perform below our expectations.

The primary maintenance activity for solar thermal projects using our systems will be the routine and continuous cleaning of reflective mirror surfaces. We anticipate each mirror will need to be deep cleaned (rotating brush and water mist) every two weeks to prevent a buildup of soiling which would otherwise significantly degrade the system performance. Operational testing is ongoing on our ChariotAV autonomous cleaning vehicle which is intended to confirm the vehicles ability to accurately navigate the heliostat field autonomously while effectively and repeatedly cleaning the mirrors to maintain optimal light reflectivity. If our ChariotAV autonomous cleaning vehicle does not ultimately operate as intended, actual operating costs of our concentrated solar energy plants may be substantially higher than forecasted or total energy generation may fall short of estimates.

We have identified material weaknesses in our internal control over financial reporting and any failure to maintain effective internal control over financial reporting may have a material and adverse effect on our business, operating results, financial condition and prospects.

In connection with the preparation and audit of our financial statements as of and for the fiscal year ended December 31, 2021, we identified material weaknesses, as described below, in our internal control over financial reporting, which is an integral component of our disclosure controls and procedures. If we are unable to remediate these material weaknesses, or if we identify additional material weaknesses in the future or otherwise fail to maintain an effective system of internal controls, we may not be able to accurately or timely report our financial condition or results of operations, which may adversely affect investor confidence in us and, as a result, our stock price.

Our material weaknesses relate to Heliogen not designing or maintaining an effective control environment specific to the areas of financial reporting and our close process, including effective review of technical accounting matters, proper segregation of duties, including separate review and approval of journal entries and access within our accounting system.

We are currently taking actions to remediate the deficiencies in our internal control over financial reporting and are implementing additional processes and controls designed to address the underlying root causes associated with the above-mentioned deficiencies.

Although we have made significant progress in remediating the aforementioned deficiencies outlined above, the material weaknesses continued to exist as of December 31, 2022 as the measures taken to address the material weaknesses had not been operating for a sufficient period of time to fully demonstrate they were operating effectively.

Regulatory Risks

Our business benefits in part from federal, state, provincial and local government support for renewable energy, and a decline in such support could harm our business.

We benefit in part from legislation and government policies, incentives, mandates or other programs that support renewable energy, and energy storage projects that enhance the economic feasibility of our solar energy projects. This support includes legislation and regulations that encourage or in some cases require other customers to procure power from renewable or low-emission sources or otherwise to procure our services; and provide us or our customers with tax and other incentives that reduce our costs or increase our revenues. For example, the IRA contains many provisions intended to incentivize domestic clean energy investment, clean energy production and manufacturing of necessary

components. However, it is unclear whether these initiatives will create sufficient incentives for projects or result in increased demand for our services. In addition, some of these government mandates and economic incentives are scheduled to be reduced or to expire, or could be eliminated altogether, while others are scheduled to be extended or expanded. Without ongoing federal, state, provincial and local government support for renewable energy our ability to obtain project commitments and related financing could be adversely affected and our business, financial condition and results of operations could be adversely affected.

Legislative or regulatory actions relating to renewable energy may impact demand for our services, our ability to remain in compliance with applicable laws and our cost of operations.

We are subject to laws, regulations and rules enacted by national, regional and local governments. Compliance with, and monitoring of, applicable laws, regulations and rules may be difficult, time consuming and costly. Those laws, regulations and rules and their interpretation and application may also change from time to time and those changes could have a material adverse effect on our business, investments and results of operations. In addition, a failure to comply with applicable laws, regulations and rules, as interpreted and applied, could have a material adverse effect on our business and results of operations.

In addition, laws and regulations impacting our customers may affect the demand for our products. Because most of our revenue is expected to be derived from the energy and industrial market sectors, regulatory and environmental requirements affecting those industries could adversely affect our business, financial condition, results of operations and cash flows. Customers in the industries we serve, including oil & gas companies and power providers, face stringent regulatory and environmental requirements, as well as permitting processes, as they implement plans for their projects, which may result in delays, reductions and cancellations of some of their projects. Our customers' energy procurement policies may prohibit or limit their willingness to procure our products. Our business prospects may be negatively impacted if we are prevented from completing new installations or our installations become more costly as a result of laws, regulations, ordinances, or rules applicable to our products. These regulatory factors may result in decreased demand for our services, potentially impacting our operations and our ability to grow.

The demand for our product could also be impacted by infrastructure legislation and funding. The locations of renewable energy projects, including the expected locations of our concentrated solar energy plants, are often remote and may not be viable unless new or expanded transmission infrastructure to transport the energy to demand centers is economically feasible. Furthermore, funding for renewable energy initiatives may not be available. These factors could result in fewer renewable energy projects and a delay in the construction of these projects and the related infrastructure, which could negatively impact our business.

Opportunities associated with government contracts could lead to increased governmental regulation applicable to us.

Most government contracts are awarded through a regulated competitive bidding process, including the award we received from the DOE to deploy our renewable energy technology in California. We may incur significant costs associated with bidding for government contracts before we realize any revenues from these contracts. Government agencies may review a contractor's performance, cost structure and compliance with applicable laws, regulations and standards. If government agencies determine through these reviews that costs were improperly allocated to specific contracts, they will not reimburse the contractor for those costs or may require the contractor to refund previously reimbursed costs. If government agencies determine that we engaged in improper activity, we may be subject to civil and criminal penalties. Government contracts are also subject to renegotiation of profit and termination by the government prior to the expiration of the term.

Risks Related to Ownership of Shares and Warrants

We are currently not in compliance with the NYSE's continued listing requirements relating to the minimum average closing price and our stock may be delisted if we do not timely cure the non-compliance.

On December 23, 2022, we received a written notice from the NYSE that we were not in compliance with the NYSE's continued listing requirements relating to the minimum average closing price per share of our common stock, because the average closing price of our common stock over a period of 30 consecutive trading days was below \$1.00 per share, which is the minimum average closing price per share required to maintain continued listing on the NYSE. We have

timely notified the NYSE of our intent to regain compliance with the minimum share price requirement during the six-month cure period from the date of receipt of the notice. We can regain compliance at any time during the cure period if (i) on the last trading day of any calendar month during the cure period our common stock has a closing share price of at least \$1.00 and (ii) an average closing share price of at least \$1.00 over the 30 trading-day period ending on the last trading day of that month. We are currently in compliance with all other NYSE continued listing standard rules. In the event that we fail to restore our compliance with the continued listing standards of the NYSE, our common stock will be subject to NYSE's suspension and delisting procedures. To address this issue, we intend take steps to increase the value of our common stock through execution of our business strategy and we are still considering our other options for regaining compliance with the NYSE's minimum share price requirement including, but not limited to a reverse stock split, subject to stockholder approval, no later than at our next annual meeting of stockholders, if necessary to cure the stock price non-compliance.

If the NYSE delists our common stock from trading on its exchange for failure to meet the listing standards, we and our stockholders could face significant material adverse consequences including:

- a limited availability of market quotations for our securities;
- a determination that our common stock is a "penny stock" which will require brokers trading in our common stock to adhere to more stringent rules, possibly resulting in a reduced level of trading activity in the secondary trading market for our common stock;
- a limited amount of analyst coverage; and
- a decreased ability to issue additional securities or obtain additional financing in the future.

Additionally, if our securities are not listed on, or become delisted from, the NYSE for any reason, and are quoted on the OTC Bulletin Board, an inter-dealer automated quotation system for equity securities that is not a national securities exchange, the liquidity and price of our securities may be more limited than if we were quoted or listed on NYSE or another national securities exchange. You may be unable to sell your securities unless a market can be established or sustained.

We may redeem our outstanding Public and Private Warrants prior to their exercise at a time that is disadvantageous to warrant holders, thereby making such warrants worthless.

As of December 31, 2022, we had public warrants ("Public Warrants") and private placement warrants ("Private Warrants," and together with the Public Warrants, the "Public and Private Warrants") outstanding. We have the ability to redeem our outstanding Public Warrants at a price of \$0.01 per warrant, provided that the last reported sales price of our common stock equals or exceeds \$18.00 per share for any 20 trading days within a 30 trading-day period ending on the third trading day prior to the date we send the notice of redemption to the warrant holders. We may exercise our redemption right even if we are unable to register or qualify the underlying securities for sale under all applicable state securities laws.

In addition, we have the ability to redeem all (but not less than all) of our outstanding Public and Private Warrants at a price of \$0.10 per warrant if the following conditions are satisfied: (i) the last reported sale prices of our common stock equals or exceeds \$10.00 (as may be adjusted for stock splits, stock dividends, reorganizations, recapitalizations or the like) on the trading day prior to the date of the notice; (ii) the Private Warrants are also concurrently exchanged at the same price as the outstanding Public Warrants; and (iii) there is an effective registration statement covering the issuance of the shares of our common stock issuable upon exercise of the warrants and a current prospectus relating thereto available throughout the 30-day period after written notice of redemption is given.

In either case, the redemption of our outstanding Public and Private Warrants could force the warrant holders (i) to exercise their warrants and pay the exercise price therefor at a time when it may be disadvantageous for them to do so, (ii) to sell their warrants at the then-current market price when they might otherwise wish to hold their warrants or (iii) to accept the nominal redemption price which, at the time the outstanding warrants are called for redemption, is likely to be substantially less than the market value of their warrants. The value received upon exercise of the warrants (i) may be less than the value the holders would have received if they had exercised their warrants at a later time where the underlying share price is higher and (ii) may not compensate the holders for the value of the warrants, including

because the number of shares of common stock received is capped at 0.361 shares of our common stock per warrant (subject to adjustment) irrespective of the remaining life of the warrants. Refer to Note 5 — Convertible Instruments and Equity for additional information about our Public and Private Warrants.

We have outstanding Public and Private Warrants that are exercisable into our common stock, which would increase the number of shares eligible for future resale in the public market and result in dilution to our stockholders.

We have outstanding Public and Private Warrants to purchase an aggregate of approximately 8.6 million shares of our common stock that became exercisable on March 18, 2022. The exercise price of the Public and Private Warrants is \$11.50 per share, or approximately \$98.5 million in the aggregate for all shares underlying these warrants, assuming none of the warrants are exercised through “cashless” exercise. To the extent such warrants are exercised, additional shares of our common stock will be issued, which will result in dilution to holders of our common stock and increase the number of shares eligible for resale in the public market. Sales of substantial numbers of such shares in the public market or the fact that such warrants may be exercised could adversely affect the market price of our common stock. However, there is no guarantee that the Public and Private Warrants will ever be in the money prior to their expiration, and as such, the warrants may expire worthless.

We may be subject to securities litigation, which is expensive and could divert management attention.

The market price of our common stock may be volatile and, in the past, companies that have experienced volatility in the market price of their stock have been subject to securities class action litigation. We may be the target of this type of litigation in the future. Securities litigation against us could result in substantial costs and divert our management’s attention and resources from other business concerns and could also require us to make substantial payments to satisfy judgments or to settle litigation either of which could seriously harm our business.

If securities or industry analysts do not publish or cease publishing research or reports about us, our business, or market, or if they change their recommendations regarding our securities adversely, the price and trading volume of our securities could decline.

The trading market for our securities will be influenced by the research and reports that securities or industry analysts may publish about us, our business, our market, or our competitors. If any of the analysts who may cover us change their recommendation regarding our stock adversely, or provide more favorable relative recommendations about our competitors, the price of our securities would likely decline. If any analyst who may cover us were to cease coverage of us or fail to regularly publish reports on us, we could lose visibility in the financial markets, which could cause our stock price or trading volume to decline.

General Risk Factors

The requirements of being a public company may strain our resources and divert management’s attention.

As a public company, we are subject to the reporting requirements of the Exchange Act, the SOX, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2009, NYSE Listing Rules and other applicable securities rules and regulations. Compliance with these rules and regulations increases our legal and financial compliance costs, makes some activities more difficult, time-consuming or costly and increases demand on our systems and resources, which will further increase after we are no longer an “emerging growth company.” The SOX requires, among other things, that we maintain effective disclosure controls and procedures and internal control over financial reporting. In order to maintain and, if required, improve our disclosure controls and procedures and internal control over financial reporting to meet this standard, significant resources and management oversight may be required. Our management and other personnel will need to devote a substantial amount of time to these compliance initiatives. Moreover, these rules and regulations will significantly increase our legal and financial compliance costs and will make some activities more time-consuming and costly. Among other things, we are required to:

- maintain and evaluate a system of internal controls over financial reporting in compliance with the requirements of Section 404 of the SOX and the related rules and regulations of the SEC and the Public Company Accounting Oversight Board;
- maintain policies relating to disclosure controls and procedures;

- prepare and distribute periodic reports in compliance with our obligations under federal securities laws;
- institute a more comprehensive compliance function, including with respect to corporate governance; and
- involve, to a greater degree, our outside legal counsel and accountants in the above activities.

The costs of preparing and filing annual and quarterly reports, proxy statements and other information with the SEC and furnishing audited reports to stockholders is expensive and much greater than that of a privately-held company and compliance with these rules and regulations involves a material increase in regulatory, legal and accounting expenses and the attention of our Board and management. As a result, management's attention may be diverted from other business concerns, which could adversely affect our business and operating results. We may need to hire more employees in the future or engage outside consultants to comply with these requirements, which will increase our costs and expenses.

In addition, changing laws, regulations and standards relating to corporate governance and public disclosure create uncertainty for public companies, increasing legal and financial compliance costs and making some activities more time consuming. These laws, regulations and standards are subject to varying interpretations, in many cases due to their lack of specificity, and, as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. This could result in continuing uncertainty regarding compliance matters and higher costs necessitated by ongoing revisions to disclosure and governance practices. We intend to invest resources to comply with evolving laws, regulations and standards and this investment may result in increased general and administrative expenses and a diversion of management's time and attention from revenue-generating activities to compliance activities. If our efforts to comply with new laws, regulations and standards differ from the activities intended by regulatory or governing bodies due to ambiguities related to their application and practice, regulatory authorities may initiate legal proceedings against us, and our business may be adversely affected. In addition, the costs to maintain our director and officer liability insurance may continue to rise. In the future, we may be required to accept reduced coverage or incur substantially higher costs to obtain this coverage. These factors could also make it more difficult for us to attract and retain qualified executives and members of our Board.

Our stockholders may not be able to enforce judgments entered by U.S. courts against certain of our directors.

We are incorporated in the State of Delaware. However, some of our directors may reside outside of the U.S. As a result, our stockholders may not be able to effect service of process upon those persons within the U.S. or enforce against those persons judgments obtained in U.S. courts.

Anti-takeover provisions contained in our second amended and restated certificate of incorporation as well as provisions of Delaware law, could impair a takeover attempt.

Our second amended and restated certificate of incorporation ("Certificate of Incorporation") contains provisions that may discourage unsolicited takeover proposals that stockholders may consider to be in their best interests. We are also subject to anti-takeover provisions under Delaware law, which could delay or prevent a change of control. Together these provisions may make the removal of management more difficult and may discourage transactions that otherwise could involve payment of a premium over prevailing market prices for our securities. These provisions include:

- no cumulative voting in the election of directors, which limits the ability of minority stockholders to elect director candidates;
- a classified Board with three-year staggered terms, which could delay the ability of stockholders to change the membership of a majority of our Board;
- the right of our Board to elect a director to fill a vacancy created by the expansion of our Board or the resignation, death or removal of a director in certain circumstances, which prevents stockholders from being able to fill vacancies on our Board;
- a prohibition on stockholder action by written consent, which forces stockholder action to be taken at an annual or special meeting of our stockholders; and

- the requirement that a meeting of stockholders may only be called by members of our Board or the stockholders holding a majority of our shares, which may delay the ability of our stockholders to force consideration of a proposal or to take action, including the removal of directors.

These provisions, alone or together, could delay hostile takeovers and changes in control or changes in our Board or our management.

As a Delaware corporation, we are also subject to provisions of Delaware law, including Section 203 of the Delaware General Corporation Law (“DGCL”), which prevents some stockholders holding more than 15% of our outstanding common stock from engaging in certain business combinations without approval of the holders of substantially all of our common stock. Any provision of our Certificate of Incorporation or bylaws or Delaware law that has the effect of delaying or deterring a change in control could limit the opportunity for our stockholders to receive a premium for their shares of our common stock and could also affect the price that some investors are willing to pay for our common stock.

Our Certificate of Incorporation provides, subject to limited exceptions, that the Court of Chancery of the State of Delaware and the U.S. federal district courts will be the sole and exclusive forums for substantially all disputes between us and our stockholders, which could limit our stockholders’ ability to obtain a favorable judicial forum for disputes with us or our directors, officers, stockholders or employees.

Our Certificate of Incorporation provides that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for any stockholder (including a beneficial owner) to bring (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 director, officer or other employee to us or our stockholders, (iii) any action asserting a claim against us, our directors, officers or employees arising pursuant to any provision of the DGCL or our Certificate of Incorporation or bylaws, or (iv) any action asserting a claim against us, our directors, officers or employees governed by the internal affairs doctrine and, if brought outside of Delaware, the stockholder bringing the suit will be deemed to have consented to service of process on such stockholder’s counsel, except any action (A) as to which the Court of Chancery of the State of Delaware determines that there is an indispensable party not subject to the jurisdiction of the Court of Chancery (and the indispensable party does not consent to the personal jurisdiction of the Court of Chancery within ten days following such determination), (B) which is vested in the exclusive jurisdiction of a court or forum other than the Court of Chancery, or (C) for which the Court of Chancery does not have subject matter jurisdiction.

Our Certificate of Incorporation also provides that the exclusive forum provision will be applicable to the fullest extent permitted by applicable law. Section 27 of the Exchange Act creates exclusive federal jurisdiction over all suits brought to enforce any duty or liability created by the Exchange Act or the rules and regulations thereunder. As a result, the exclusive forum provision will not apply to suits brought to enforce any duty or liability created by the Exchange Act or any other claim for which the federal courts have exclusive jurisdiction. Furthermore, Section 22 of the Securities Act establishes concurrent jurisdiction for federal and state courts over Securities Act claims. Accordingly, both state and federal courts have jurisdiction to hear such claims. To prevent having to litigate claims in multiple jurisdictions and the threat of inconsistent or contrary rulings by different courts, among other considerations, our Certificate of Incorporation also provides that, unless we consent in writing to the selection of an alternative forum, the federal district courts of the U.S. will be the sole and exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act.

While the Delaware courts have determined that such choice of forum provisions are facially valid and several state trial courts have enforced such provisions and required that suits asserting Securities Act claims be filed in federal court, there is no guarantee that courts of appeal will affirm the enforceability of such provisions and a stockholder may nevertheless seek to bring a claim in a venue other than those designated in the exclusive forum provisions. In such instance, we would expect to vigorously assert the validity and enforceability of the exclusive forum provisions of our Certificate of Incorporation. This may require significant additional costs associated with resolving such action in other jurisdictions and there can be no assurance that the provisions will be enforced by a court in those other jurisdictions. If a court were to find either exclusive forum provision in our Certificate of Incorporation to be inapplicable or unenforceable in an action, we may incur further significant additional costs associated with litigating Securities Act claims in state court, or both state and federal court, which could seriously harm our business, financial condition, results of operations and prospects.

Any person or entity purchasing or otherwise acquiring or holding or owning (or continuing to hold or own) any interest in any of our securities shall be deemed to have notice of and consented to the forum provisions in our Certificate of Incorporation. Although we believe these exclusive forum provisions benefit us by providing increased consistency in the application of Delaware law and federal securities laws in the types of lawsuits to which each applies, the exclusive forum provisions may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our current or former directors, officers, stockholders or other employees, which may discourage such lawsuits with respect to such claims. Our stockholders will not be deemed to have waived our compliance with the federal securities laws and the rules and regulations thereunder as a result of our exclusive forum provisions.

The warrant agreement governing our Public and Private Warrants designates the courts of the State of New York or the U.S. District Court for the Southern District of New York as the sole and exclusive forum for certain types of actions and proceedings that may be initiated by holders of the warrants, which could limit the ability of warrant holders to obtain a favorable judicial forum for disputes with our company.

Our Public and Private Warrants are issued in registered form under a warrant agreement between us and Continental Stock Transfer & Trust Company, as warrant agent. The warrant agreement provides that, subject to applicable law, (i) any action, proceeding or claim against us arising out of or relating in any way to the warrant agreement, including under the Securities Act, will be brought and enforced in the courts of the State of New York or the U.S. District Court for the Southern District of New York and (ii) that we irrevocably submit to such jurisdiction, which jurisdiction shall be the exclusive forum for any such action, proceeding or claim. We will waive any objection to such exclusive jurisdiction and that such courts represent an inconvenient forum.

Notwithstanding the foregoing, these provisions of the warrant agreement will not apply to suits brought to enforce any liability or duty created by the Exchange Act or any other claim for which the U.S. federal district courts are the sole and exclusive forum. Any person or entity purchasing or otherwise acquiring any interest in any of our warrants shall be deemed to have notice of and to have consented to the forum provisions in our warrant agreement. If any action, the subject matter of which is within the scope the forum provisions of the warrant agreement, is filed in a court other than a court of the State of New York or the U.S. District Court for the Southern District of New York (a "foreign action") in the name of any holder of our warrants, such holder shall be deemed to have consented to: (x) the personal jurisdiction of the state and federal courts located in the State of New York in connection with any action brought in any such court to enforce the forum provisions (an "enforcement action") and (y) having service of process made upon such warrant holder in any such enforcement action by service upon such warrant holder's counsel in the foreign action as agent for such warrant holder.

This choice-of-forum provision may limit a warrant holder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us, which may discourage such lawsuits. Alternatively, if a court were to find this provision of our warrant agreement inapplicable or unenforceable with respect to one or more of the specified types of actions or proceedings, we may incur additional costs associated with resolving such matters in other jurisdictions, which could materially and adversely affect our business, financial condition and results of operations and result in a diversion of the time and resources of our management and Board.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Our headquarters are located in Pasadena, California, where we design, engineer and develop our HelioHeat, HelioPower and HelioFuel solutions. We also have a manufacturing facility in Long Beach, California to produce heliostats for our modular, concentrated solar energy projects. The state-of-the-art facility includes assembly lines, an expansive test facility and a rapid development center for the production of heliostats and other components in Heliogen's concentrated solar energy system. Our Pasadena and Long Beach facilities are leased.

In January 2022, we entered into a lease for corporate office facilities in Houston, Texas.

We built a test facility in Lancaster, California, which we completed in November of 2019 to successfully demonstrate our fundamental technology innovations and continue to use to test and evaluate new developments and product generations. We also have a satellite office located at the National Solar Thermal Test Facility inside Sandia National Laboratories, which enables us to efficiently utilize their world-class solar technology testing capabilities as we validate our products.

Item 3. Legal Proceedings

Information relating to various commitments and contingencies is described in Note 16 — Commitments and Contingencies to our consolidated financial statements in Part II, Item 8 of this Annual Report on Form 10-K and the information discussed therein is incorporated by reference into this Part I, Item 3.

Item 4. Mine Safety Disclosures

Not applicable.

Part II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Market Information

Our common stock and warrants are traded on the NYSE under the symbol "HLGN" and "HLGN.W," respectively. On December 23, 2022, we received a written notice from the NYSE that we were not in compliance with the NYSE's continued listing requirements relating to the minimum average closing price per share of our common stock, because the average closing price of our common stock over a period of 30 consecutive trading days was below \$1.00 per share, which is the minimum average closing price per share required to maintain continued listing on the NYSE. We have timely notified the NYSE of our intent to regain compliance with the minimum share price requirement during the six-month cure period from the date of receipt of the notice. We can regain compliance at any time during the cure period if (i) on the last trading day of any calendar month during the cure period our common stock has a closing share price of at least \$1.00 and (ii) an average closing share price of at least \$1.00 over the 30 trading-day period ending on the last trading day of that month. We are currently in compliance with all other NYSE continued listing standard rules.

Holders of Record

As of March 23, 2023, we had 464 stockholders of record of our common stock and 5 holders of record of our Public and Private Warrants.

The actual number of stockholders of our common stock and warrants is greater than this number of record holders and includes holders who are beneficial owners but whose shares of common stock or warrants are held in "street name" by banks, brokers and other nominees.

Dividend Policy

We currently do not pay dividends on our common stock, and we do not anticipate paying cash dividends in the foreseeable future. Payment of cash dividends, if any, in the future will be at the discretion of our Board and will depend on then-existing conditions, including our financial condition, operating results, contractual restrictions, capital requirements, business prospects and other factors our Board may deem relevant.

Recent Sales of Unregistered Equity Securities

None.

Issuer Purchases of Equity Securities

None.

Item 6. [Reserved]

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following management's discussion and analysis ("MD&A") provides information that management believes is relevant to an assessment and understanding of our consolidated results of operations and financial condition and includes forward-looking statements that involve risks, uncertainties and assumptions. This section should be read in conjunction with Part I of this Annual Report on Form 10-K, the consolidated financial statements and related notes included in Part II Item 8 in this Annual Report on Form 10-K and the section titled "Cautionary Note Regarding Forward-Looking Statements" included in the fore-part in this Annual Report on Form 10-K.

Overview

Heliogen is a leader in next generation concentrated solar energy technology. We are developing a modular, AI-enabled, concentrated solar energy plant that will use an array of mirrors to reflect sunlight and capture, concentrate, store and convert it into cost-effective energy on demand. Our product offering will deliver industrial process steam around the clock using thermal energy storage based on proven technology. This steam can also be used to produce green hydrogen

when coupled with a solid oxide electrolyzer. Our next generation system will have the ability to cost-effectively generate and store thermal energy at very high temperatures, which enables cost effective production of electricity and higher temperature industrial process heat. The inclusion of a thermal energy storage system distinguishes our solution from clean energy provided by typical PV and wind installations which do not produce thermal energy and are only able to produce energy intermittently unless battery storage is added. The system will be configurable for several applications, including carbon-free industrial-grade heat and steam (for use in industrial processes), clean power (electricity), and generation of green hydrogen, based on a customer's needs.

Recent Developments

Research and Development Services Agreement. In March 2023, we entered into an agreement with NantG Power, LLC ("NantG"), an advanced battery design and manufacturing company and a related party, to provide front-end concept design and R&D engineering services, as a precursor for NantG to purchase a commercial-scale calcination facility. We will be compensated up to \$5 million on a time and materials basis.

Proxima Hydrogen Production Project. In March 2023, we entered into a lease agreement with a purchase option for a site in Lancaster, California where we intend to build the Proxima hydrogen production project. This property includes a water well and associated water production rights. We intend to exercise the purchase option once an offtake agreement has been executed and the requisite zoning approvals are complete.

ChariotAV Customer Environment Testing. After completing initial field testing of the ChariotAV's autonomous cleaning functionality, it was handed over to Heliogen's internal projects team in January 2023 to validate its usability in a customer environment. The vehicle has now successfully accumulated over 125 hours of operational life and over 25 miles travelled.

Generation 5 Heliostats. We successfully completed our first automated installation test of Generation 5 heliostats at our demonstration facility in Lancaster, California. These heliostats will exit our factory fully assembled with higher packing density. They will be produced using less material and will be able to be installed autonomously in the field. As a result of improvements in design and installation, they are expected to cost significantly less than the current fourth generation heliostats to produce and install.

U.S. Department of Energy Award. In October 2022, we were selected to receive an additional \$4.1 million award from the DOE to accelerate the large-scale development and deployment of concentrated solar-thermal power technology for industrial decarbonization and electrical power generation and storage. This project will aim to demonstrate a first-of-its-kind concentrated solar-thermal power process for decarbonizing the heating of limestone to 950°C, which could reduce the carbon emissions associated with cement manufacturing.

Results of Operations

Heliogen is undergoing a significant transition as it moves from design to testing and implementation of its innovative supercritical CO₂ power generation system. We have secured a contract to engineer and construct a 5 MW commercial-scale concentrated solar energy facility with Woodside in Mojave, California with a total transaction price of \$45.5 million and received an award from the DOE of \$39.0 million to support the project, of which \$3.9 million will be paid directly by the DOE to another party providing services under the DOE Award at our direction. We remain in the early stages of commercializing our technology and investing in the R&D and infrastructure necessary to achieve these goals. As a result, we have historically incurred operating losses. However, we remain focused on achieving sufficient scale and efficiency improvements through technological progress and additional learning to ultimately achieve attractive levels of profitability.

How We Generate Revenue

We primarily generate revenue by contracting with owner-operators to build turnkey facilities that deploy Heliogen's technology. Our revenue derived from customer contracts is recognized over time using the incurred costs method for our contracts with customers that include projects under development and engineering and design services. Additionally, we have government contracts which are accounted for as grant revenue and is recognized only when there is reasonable assurance that the entity will comply with any conditions attached to the grant and the grant will be received.

Cost of Conducting Our Business

Cost of revenue consists primarily of direct material, labor and subcontractor costs related to our revenue contracts. Additionally, we have indirect costs related to contract performance, such as indirect labor, supplies, tools and allocated depreciation.

Factors Impacting Comparability

Athena Business Combination. On December 30, 2021, Heliogen, Inc., a Delaware corporation (“Legacy Heliogen”), Athena Technology Acquisition Corp., a Delaware corporation (“Athena”), HelioMax Merger Sub, Inc., a Delaware corporation and a direct, wholly owned subsidiary of Athena (“Merger Sub”), consummated the closing of the transactions contemplated by the Business Combination Agreement, dated July 6, 2021, by and among Athena, Merger Sub and Legacy Heliogen (the “Business Combination Agreement”). While the legal acquirer in the Business Combination Agreement was Athena, for financial accounting and reporting purposes under accounting principles generally accepted in the United States (“GAAP”), Legacy Heliogen was the accounting acquirer and the Transaction was accounted for as a “reverse recapitalization.”

A reverse recapitalization does not result in a new basis of accounting for the accounting acquirer and the consolidated financial statements of the combined company represent the continuation of the historical consolidated financial statements of Legacy Heliogen in many respects. Under this method of accounting, Athena is treated as the “acquired” company for financial reporting purposes and the Business Combination is accounted for as a recapitalization of Legacy Heliogen (i.e., a capital transaction involving the issuance of stock by Legacy Heliogen for the net assets of Athena accompanied by a recapitalization).

Comparison of the Years Ended December 31, 2022 and 2021

\$ in thousands	Year Ended December 31,		\$ Change	% Change
	2022	2021		
Revenue:				
Services revenue	\$ 6,519	\$ 7,362	\$ (843)	(11)%
Grant revenue	7,232	1,442	5,790	402%
Total revenue	13,751	8,804	4,947	
Cost of revenue:				
Cost of services revenue (including depreciation)	8,107	5,762	2,345	41%
Cost of grant revenue	5,653	3,177	2,476	78%
Provision for contract losses	33,776	508	33,268	n/m
Total cost of revenue	47,536	9,447	38,089	
Gross loss	(33,785)	(643)	(33,142)	
Operating expenses:				
Selling, general and administrative	81,224	29,844	51,380	172%
Research and development	38,281	13,478	24,803	184%
Impairment charges	6,922	—	6,922	n/m
Total operating expenses	126,427	43,322	83,105	
Operating loss	(160,212)	(43,965)	(116,247)	
Interest income, net	995	634	361	57%
SAFE instruments remeasurement	—	(86,907)	86,907	(100)%
Gain (loss) on warrant remeasurement	13,921	(6,651)	20,572	(309)%
Other income (expense), net	2,280	(517)	2,797	(541)%
Net loss before taxes	(143,016)	(137,406)	(5,610)	
Benefit (provision) for income taxes	1,016	(2)	1,018	n/m
Net loss	\$ (142,000)	\$ (137,408)	\$ (4,592)	

n/m — not meaningful.

Revenue and Gross Loss

During the year ended December 31, 2022, we recognized total revenue of \$13.8 million, an increase of \$4.9 million compared to total revenue of \$8.8 million for the year ended December 31, 2021. This was primarily driven by an increase in grant revenue of \$5.8 million, of which \$4.2 million related to reimbursable costs incurred under the DOE Award and \$1.6 million related to the employee tax credit provision under the Coronavirus Aid, Relief and Economic Security Act (the “CARES Act”). This was offset by a decrease in services revenue of \$0.8 million. During the year ended December 31, 2022, services revenue was \$6.5 million which was primarily related to the CSDA executed with Woodside in March 2022. During the year ended December 31, 2021, services revenue was \$7.4 million primarily related to engineering and design services in connection to the development and completion of our first commercial-scale facility.

As of December 31, 2022, we had approximately \$39.2 million of transaction prices allocated to remaining performance obligations from our customer contracts, we expect to recognize approximately 22% as revenue over the next 12 months and the remainder to be recognized thereafter through 2026.

During the year ended December 31, 2022, we recognized a gross loss of \$33.8 million, primarily driven by the recognition of a provision for contract losses of \$33.8 million, primarily related to the CSDA and an increase in share-based compensation expense attributable to employees working directly on the project of \$1.6 million. The provision for contract losses reflects our best estimate of the full expected loss on the Facility given the consideration expected to be realized under the CSDA and the DOE Award relative to the total estimated cost at completion. Our cost estimates as of December 31, 2022 for the anticipated final scope of the Facility are subject to further refinement as we continue detailed engineering and design with the customers, obtain firm pricing from subcontractors, order long-lead items and better understand short and long-term commodity and market impacts on cost inputs to the CSDA and the Facility. As a result, the actual loss for the CSDA could vary from our current estimates.

Selling, General and Administrative Expense

During the year ended December 31, 2022, we recognized selling, general and administrative (“SG&A”) expense of \$81.2 million, an increase of \$51.4 million compared to SG&A expense of \$29.8 million for the year ended December 31, 2021. This increase was primarily driven by our growth to support commercial operations, resulting in higher headcount and related employee expenses of \$31.4 million, of which \$24.3 million of the increase was related to share-based compensation. We also had increases in our office related expenses of \$11.3 million due to expansion of our corporate office facilities, professional and consulting services to support our public company transition of \$6.3 million and an expense of \$1.8 million related to the vesting of warrants issued in connection with the Collaboration Agreement with Woodside.

Research and Development Expense

During the year ended December 31, 2022, we recognized R&D expense of \$38.3 million, an increase of \$24.8 million compared to R&D expense of \$13.5 million for the year ended December 31, 2021. This increase was primarily driven by our growth in headcount and related employee expenses of \$21.5 million, of which \$5.6 million was related to share-based compensation. The remaining increase was related to costs incurred to progress our product offerings.

Impairment Charges

During the year ended December 31, 2022, we recognized impairment charges of \$6.9 million, consisting of \$3.8 million for impairments of property, plant and equipment related to certain project-related costs as management determined the project was no longer probable of being constructed and \$3.1 million for an impairment of an intangible asset related to acquired technology as the deployability of this technology has been delayed, resulting in a higher likelihood of this technology becoming obsolete during its useful life. We had no impairment charges for the year ended December 31, 2021.

Interest Income, Net

During the year ended December 31, 2022, we recognized interest income of \$1.0 million, an increase of \$0.4 million compared to interest income of \$0.6 million for the year ended December 31, 2021 which was primarily driven by a higher balance of funds in our interest-bearing investment account in 2022 as a result of the funds received in the Business Combination.

SAFE Instruments Remeasurement

In the first half of 2021, we executed Simple Agreements for Future Equity (“SAFE”) financing transactions with third-party investors in connection with a private round of funding to provide investors an opportunity to convert their investment into common or preferred stock, upon defined triggering events. Pursuant to the SAFE agreement provisions, the SAFE instruments were converted to common stock immediately prior to the closing of the Business Combination. Due to the terms of the SAFE instruments, the SAFE instruments were measured at fair value each reporting period and through the date of conversion resulting in the recognition of a \$86.9 million loss on the remeasurement during the year ended December 31, 2021.

Warrant Remeasurement

During the year ended December 31, 2022, we recognized a gain of \$13.9 million, a change of \$20.6 million compared to a loss for the year ended December 31, 2021 of \$6.7 million which was related to the change in fair value of our outstanding Public and Private Warrants. The change in fair value of the Public and Private Warrants are highly correlated to changes in our stock price.

Other Income (Expense), Net

During the year ended December 31, 2022, we recognized other income of \$2.3 million, a change of \$2.8 million compared to other expense of \$0.5 million for the year ended December 31, 2021. This change is primarily attributable to a gain of \$1.7 million related to the change in estimated fair value of the contingent consideration associated with the acquisition of HelioHeat GmbH (the “HelioHeat Acquisition”) based on the revised probability of payment. Additionally, we had an increase of \$1.6 million related to asset accretion due to a higher investments balance.

Benefit (Provision) For Income Taxes

During the year ended December 31, 2022, we recognized an income tax benefit of \$1.0 million primarily related to the release of our deferred tax liability, which was established upon the finalization of the HelioHeat Acquisition in March 2022. The deferred tax liability was related to the intangible asset acquired in the HelioHeat Acquisition and it was fully impaired during the year ended December 31, 2022. During the year ended December 31, 2021, we had recognized a tax provision of \$2 thousand related to certain state tax payments.

Liquidity and Capital Resources

Our principal sources of liquidity are cash and investments on hand, which are short-term in duration and highly liquid, and cash receipts from customers and government grants. Our principal uses of cash are expenditures related to project development and completion, as well as R&D and SG&A expenditures in support of our technology development and operational support and growth efforts.

Total liquidity, including cash and cash equivalents and available-for-sale investment are as follows:

<i>\$ in thousands</i>	March 23, 2023	December 31, 2022
Cash and cash equivalents.	\$ 32,658	\$ 45,719
Investments, available-for-sale	89,279	97,504
Total liquidity	<u>\$ 121,937</u>	<u>\$ 143,223</u>

We have evaluated whether there were conditions and events, considered in the aggregate, which raise substantial doubt as to our ability to continue as a going concern within one year after the original issuance date of our consolidated financial statements. During the years ended December 31, 2022 and 2021, we incurred net losses of \$142.0 million and \$137.4 million, respectively. We expect to continue to generate operating losses in the next few years.

Our liquidity as of March 23, 2023 was \$121.9 million, compared to \$143.2 million as of December 31, 2022. The decrease in our liquidity is due to funding our operations and continued work on our projects. We believe we have the ability to manage our operating costs and capital expenditures such that our existing cash, cash equivalents and investments will be sufficient to fund our operations and capital expenditures for the next twelve months following the filing of this Annual Report on Form 10-K.

Our long-term liquidity will depend on our ability to (i) successfully complete current projects within budget, (ii) raise additional capital through the issuance of additional equity or debt securities, (iii) sign additional projects at a profit (iv) obtain funding and receive payment for R&D projects under government subsidies, (v) implement project cost reductions to reduce the expected cash outflows and (vi) manage operating costs. There is no assurance that we will be successful in achieving these items. If we are unsuccessful, we will be forced to delay, reduce or eliminate some or all of our R&D programs, product expansion or commercialization efforts, which could adversely affect our business prospects, or we may be unable to continue operations.

Summary of Cash Flows

The following table provides a summary of our cash flows:

<i>\$ in thousands</i>	Year Ended December 31,	
	2022	2021
Net cash used in operating activities.	\$ (69,837)	\$ (31,055)
Net cash used in investing activities	(73,763)	(38,646)
Net cash provided by (used in) financing activities	(107)	242,948

Net Cash from Operating Activities. Net cash used in operating activities was \$69.8 million for the year ended December 31, 2022 compared to \$31.1 million in cash used for the year ended December 31, 2021. The \$38.8 million increase in the cash used by operating activities was primarily driven by higher operating costs related to the growth of our operations and costs incurred related to our projects.

Net Cash from Investing Activities. For the year ended December 31, 2022, net cash used in investing activities was \$73.8 million compared to \$38.6 million for the year ended December 31, 2021 and consisted primarily of a net increase in investments in available-for-sale securities of \$31.6 million. In addition, capital expenditures were higher by \$5.2 million, driven primarily to support growth in our commercial operations, machinery, equipment and improvements for our facilities and office and computer equipment to support our headcount growth. Cash used in investing activities in 2021 also included cash consideration paid for the HelioHeat Acquisition, net of acquired cash, of \$1.7 million.

Net Cash from Financing Activities. Net cash used in financing activities was \$0.1 million for the year ended December 31, 2022 compared to net cash provided by financing activities of \$242.9 million for the year ended December 31, 2021, driven primarily by \$159.4 million from the closing of the Business Combination in 2021, inclusive of the PIPE proceeds, net of transactions costs and \$83.4 million cash received from the issuance of the SAFE instruments in 2021.

Cash Requirements

Our material cash requirements from known contractual and other obligations include:

Operating Lease Liabilities. Our long-term operating leases are primarily for real estate. Refer to Note 15 — Leases to our consolidated financial statements in Part II, Item 8 of this Annual Report on Form 10-K, for additional information regarding maturity analysis of our operating leases.

Critical Accounting Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the amounts reported in the consolidated financial statements and accompanying notes. Although these estimates are based on our knowledge of current events and actions we may undertake in the future, actual results could differ from those estimates and assumptions. The following are considered critical to our consolidated financial statements because they require the most difficult, subjective or complex judgments, often because of the need to make estimates about matters that are inherently uncertain. We analyze our estimates on a periodic basis and base our estimates on historical experience and various other assumptions that we believe are reasonable under the circumstances. Our significant accounting policies are included in Note 2 — Significant Accounting Policies.

Revenue Recognition

We recognize revenue over time as work is performed using the incurred costs method, which we believe is the method that most accurately reflects our progress toward satisfaction of our performance obligations. Under this method, revenue arising from fixed-price contracts, which include cost reimbursable contracts with a cap, is recognized as work is performed based on the ratio of costs incurred to date compared to the total estimated costs at completion of the performance obligations.

Incurred costs include all direct material, labor, subcontract costs and those indirect costs related to contract performance, such as indirect labor, supplies and tools. Cost-based input methods of revenue recognition require us to make estimates of net contract revenues and costs to complete the projects. In making such estimates, significant judgment is required to evaluate assumptions related to the amount of net contract revenues, including the impact of any performance incentives, liquidated damages and other payments to customers. Significant judgment is also required to evaluate assumptions related to the costs to complete the projects, including materials, labor, contingencies and other system costs. If the estimated total costs on any contract are greater than the net contract revenues, we recognize the entire estimated loss in the period the loss becomes known and can be reasonably estimated.

Share-based Compensation

We recognize share-based compensation expense in accordance with the provisions of ASC 718, *Compensation — Stock Compensation* (“ASC 718”). ASC 718 requires the measurement and recognition of compensation expense for all share-based compensation awards based on the grant date fair values of the awards.

We estimate the fair value of stock options using the Black-Scholes option pricing model. For stock options with service conditions, the value of the award is recognized as expense over the requisite service period on a straight-line basis. The Black-Scholes option pricing model requires the input of subjective assumptions, including the fair value of our common stock, expected term, expected volatility, risk-free interest rate and expected dividends, which are described in greater detail below.

Fair value of common stock — Prior to the close of the Business Combination, our common stock was not publicly traded. As a result, the estimated fair value of our common stock required significant judgment by management, including the valuation methodology used, weighting of potential scenarios and discount rate. Our common stock was measured at fair value using a probability-weighted method considering two potential outcomes: a merger with a special purpose acquisition company exit scenario and a stay private scenario. In addition, we applied a discount for lack of marketability. After the close of the Business Combination, the closing price of our common stock as reported on the NYSE was used.

Expected term — The expected term of the stock options represents the average period the stock options are expected to remain outstanding. We use the simplified method for estimating the expected term.

Expected volatility — Prior to the Business Combination, we had no trading history for our common stock. Thus, expected volatility was based on the historical volatilities of the common stock of comparable publicly traded companies. After the close of the Business Combination, expected volatility was based on changes in Heliogen’s stock price as the only instruments impacted after the close of the Business Combination were modifications of existing stock options upon the termination of certain employees with an exercise period of three months. If we choose to issue new stock options, we would use implied volatility based on comparable publicly traded companies until we have sufficient history to rely on Heliogen volatility, which is generally at least two years of historical data.

Risk-free interest rate — The risk-free interest rate is based on the yield of zero-coupon U.S. Treasury notes as of the grant date or measurement date with maturities commensurate with the expected term of the awards.

Expected dividends — The expected dividends assumption is based on the expectation of not paying dividends in the foreseeable future; therefore, we used an expected dividend yield of zero.

Assumptions used in applying the Black-Scholes option pricing model to determine the estimated fair value of stock options granted involve inherent uncertainties and the application of judgment. As a result, if factors or expected outcomes change and significantly different assumptions or estimates are used, the expenses related to our share-based compensation could be materially different.

Fair Value Measurements

For Legacy Heliogen's SAFE instruments and preferred stock warrants, we determined the fair value of these instruments each reporting period and through the date of conversion as part of the Business Combination. The determination of fair value required significant judgment by management, including the valuation methodology used, weighting of potential scenarios and discount rate. The SAFE instruments and Legacy Heliogen preferred stock warrants were initially measured at fair value using a probability-weighted method considering two potential outcomes: a merger with a special purpose acquisition company exit scenario and a stay private scenario. On December 30, 2021, immediately prior to their conversion, the SAFE instruments and Legacy Heliogen preferred stock warrants were remeasured at fair value utilizing the income approach based on the Merger occurring on the valuation date. In addition, we applied a discount for lack of marketability, which was estimated using the Black-Scholes option pricing model.

Following the closing of the Business Combination, Athena's public and private warrants became Heliogen warrants for which liability classification remained. Each reporting period, we are required to measure the fair value of the Public and Private Warrants. The Public Warrants are traded on an exchange and thus management uses the closing price of the warrants at each period end. In assessing the valuation of the Private Warrants, management assessed the value holders of the Private Warrants would receive in a redemption scenario and concluded that due to the make-whole exercise provision, the value of Private Warrants approximates the value of the Public Warrants. Thus, we have estimated the fair value of the Private Warrants based on the closing price of the Public Warrants.

Contingent consideration arrangements are classified as liabilities and are remeasured to fair value at each reporting period, with any change in fair value being recognized on the consolidated statement of operations. The estimated fair value of the contingent consideration is based primarily on estimates of meeting the applicable contingency conditions as per the terms of the agreements. Significant judgment related to the probability and timing of payment is required by management in estimating the fair value of the contingent consideration.

Business Combination

We accounted for the HelioHeat Acquisition as a business combination under GAAP. Under business combination accounting, we estimated the fair value of assets acquired and liabilities assumed in a business combination. Goodwill, as of the acquisition date, was measured as the excess of consideration transferred over the net of the acquisition date fair values of the assets acquired and the liabilities assumed. Such valuations require us to make significant estimates and assumptions, especially with respect to intangible assets. Our estimates of fair value are based upon assumptions believed to be reasonable, but which are inherently uncertain and unpredictable, and therefore, our actual results may differ from these estimates.

Contingent consideration arrangements are recognized at their acquisition date fair value using a probability-weighted discounted cash flow model and included as part of the purchase price at the acquisition date. The purchase price allocation for the HelioHeat Acquisition was finalized as of March 31, 2022.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

We are a smaller reporting company as defined by Item 10 of Regulation S-K and are not required to provide the information otherwise required under this item.

Item 8. Financial Statements and Supplementary Data

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Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of
Heliogen, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheet of Heliogen, Inc. and its subsidiaries (the “Company”) as of December 31, 2022, and the related consolidated statements of operations and comprehensive loss, of convertible preferred stock and shareholders’ equity (deficit), and of cash flows for the year ended December 31, 2022, including the related notes (collectively referred to as the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2022, and the results of its operations and its cash flows for the year ended December 31, 2022 in conformity with accounting principles generally accepted in the United States of America.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on the Company’s consolidated financial statements based on our audit. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit of these consolidated financial statements in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audit we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company’s internal control over financial reporting. Accordingly, we express no such opinion.

Our audit included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audit also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audit provides a reasonable basis for our opinion.

Emphasis of Matter

As discussed in Note 1 to the consolidated financial statements, the Company has incurred net losses since inception. Management’s evaluation of the events and conditions and management’s plans to mitigate this matter are also described in Note 1.

/s/ PricewaterhouseCoopers LLP

Los Angeles, CA
March 29, 2023

We have served as the Company’s auditor since 2022.

Report of Independent Registered Public Accounting Firm

Shareholders and Board of Directors
Heliogen, Inc.
Pasadena, California

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheet of Heliogen, Inc. (the “Company”) as of December 31, 2021, the related consolidated statement of operations, convertible preferred stock and shareholders’ equity (deficit), and cash flows for the year then ended, and the related notes (collectively referred to as the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2021, and the results of its operations and its cash flows for the year then ended, in conformity with accounting principles generally accepted in the United States of America.

Restatement to Correct 2021 Misstatements

As discussed in Note 3 to the consolidated financial statements, the 2021 financial statements have been restated to correct misstatements.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on the Company’s consolidated financial statements based on our audit. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (“PCAOB”) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB and in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audit we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company’s internal control over financial reporting. Accordingly, we express no such opinion.

Our audit included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audit also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audit provides a reasonable basis for our opinion.

/s/ BDO USA, LLP

We served as the Company’s auditor from 2020 to 2022.

Los Angeles, California

March 31, 2022, except for the effects of the restatement discussed in Note 3, which is as of May 23, 2022.

Heliogen, Inc.
Consolidated Balance Sheets
(\$ in thousands, except share data)

	December 31,	
	2022	2021
ASSETS		
Cash and cash equivalents	\$ 45,719	\$ 190,081
Short-term restricted cash	655	—
Investments, available-for-sale	97,504	32,332
Receivables	9,195	3,896
Inventories	2,442	—
Prepaid and other current assets	3,306	874
Total current assets	158,821	227,183
Operating lease right-of-use assets	14,772	16,093
Property, plant and equipment, net	7,071	4,102
Goodwill and intangible assets, net	1,160	4,351
Long-term restricted cash	1,500	1,500
Other long-term assets	8,295	4,219
Total assets	\$ 191,619	\$ 257,448
LIABILITIES, CONVERTIBLE PREFERRED STOCK AND SHAREHOLDERS' EQUITY		
Trade payables	\$ 6,921	\$ 4,645
Contract liabilities	10,348	513
Contract loss provisions	28,418	397
Accrued expenses and other current liabilities	5,602	6,974
Total current liabilities	51,289	12,529
Operating lease liabilities, net of current portion	13,921	14,183
Warrant liabilities	642	14,563
Other long-term liabilities	443	2,115
Total liabilities	66,295	43,390
Commitments and contingencies (Note 16)		
Convertible preferred stock, \$0.0001 par value; 10,000,000 shares authorized and no shares outstanding as of December 31, 2022 and 2021 . . .		
	—	—
Shareholders' equity		
Common stock, \$0.0001 par value; 500,000,000 shares authorized; 192,924,429 shares issued and outstanding (excluding restricted shares of 59,770) as of December 31, 2022 and 183,367,037 shares issued and outstanding (excluding restricted shares of 481,301) as of December 31, 2021	19	18
Additional paid-in capital	434,478	380,624
Accumulated other comprehensive loss	(593)	(4)
Accumulated deficit	(308,580)	(166,580)
Total shareholders' equity	125,324	214,058
Total liabilities, convertible preferred stock and shareholders' equity	\$ 191,619	\$ 257,448

The accompanying notes are an integral part of these consolidated financial statements.

Heliogen, Inc.
Consolidated Statements of Operations and Comprehensive Loss
(\$ in thousands, except per share and share data)

	Year Ended December 31,	
	2022	2021
Revenue:		
Services revenue	\$ 6,519	\$ 7,362
Grant revenue	7,232	1,442
Total revenue	13,751	8,804
Cost of revenue:		
Cost of services revenue (including depreciation)	8,107	5,762
Cost of grant revenue	5,653	3,177
Provision for contract losses	33,776	508
Total cost of revenue	47,536	9,447
Gross loss	(33,785)	(643)
Operating expenses:		
Selling, general and administrative	81,224	29,844
Research and development	38,281	13,478
Impairment charges	6,922	—
Total operating expenses	126,427	43,322
Operating loss	(160,212)	(43,965)
Interest income, net	995	634
SAFE instruments remeasurement	—	(86,907)
Gain (loss) on warrant remeasurement	13,921	(6,651)
Other income (expense), net	2,280	(517)
Net loss before taxes	(143,016)	(137,406)
Benefit (provision) for income taxes	1,016	(2)
Net loss	(142,000)	(137,408)
Other comprehensive loss, net of taxes:		
Unrealized losses on available-for-sale securities	(292)	(17)
Cumulative translation adjustment	(297)	13
Total comprehensive loss	\$ (142,589)	\$ (137,412)
Loss per share:		
Loss per share – Basic and Diluted	\$ (0.75)	\$ (11.48)
Weighted average number of shares outstanding – Basic and Diluted	190,190,057	11,970,550

The accompanying notes are an integral part of these consolidated financial statements.

Heliogen, Inc.
Consolidated Statements of Convertible Preferred Stock and Shareholders' Equity (Deficit)
(\$ in thousands, except share data)

	Convertible Preferred Stock		Shareholders' Equity (Deficit)					
			Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Loss		Total
	Shares	Amount	Shares	Amount		Loss	Deficit	
Balance as of December 31, 2020.	117,886,982	\$ 45,932	8,160,828	\$ 1	\$ 1,309	\$ —	\$ (29,172)	\$ (27,862)
Net loss	—	—	—	—	—	—	(137,408)	(137,408)
Other comprehensive loss	—	—	—	—	—	(4)	—	(4)
Share-based compensation	—	—	—	—	11,380	—	—	11,380
Common stock issued for stock options exercised.	—	—	4,756,937	—	462	—	—	462
Common stock issued for warrants exercised	—	—	199,315	—	30	—	—	30
Conversion of preferred stock to common stock	(117,886,982)	(45,932)	121,038,967	12	45,920	—	—	45,932
Conversion of warrants to common stock	—	—	582,509	—	3,011	—	—	3,011
Conversion of SAFE instruments to common stock	—	—	20,080,464	2	170,316	—	—	170,318
Reverse recapitalization and PIPE financing, net	—	—	28,548,017	3	148,196	—	—	148,199
Balance as of December 31, 2021.	<u>—</u>	<u>\$ —</u>	<u>183,367,037</u>	<u>\$ 18</u>	<u>\$ 380,624</u>	<u>\$ (4)</u>	<u>\$ (166,580)</u>	<u>\$ 214,058</u>
Net loss	—	—	—	—	—	—	(142,000)	(142,000)
Other comprehensive loss	—	—	—	—	—	(589)	—	(589)
Share-based compensation	—	—	—	—	42,647	—	—	42,647
Common stock issued for restricted stock vestings	—	—	1,084,398	—	—	—	—	—
Common stock issued for stock options exercised.	—	—	8,472,984	1	1,234	—	—	1,235
Common stock issued for warrants exercised.	—	—	10	—	—	—	—	—
Issuance of warrants in connection with vendor agreements	—	—	—	—	214	—	—	214
Issuance of warrants in connection with customer agreements	—	—	—	—	9,759	—	—	9,759
Balance as of December 31, 2022.	<u>—</u>	<u>\$ —</u>	<u>192,924,429</u>	<u>\$ 19</u>	<u>\$ 434,478</u>	<u>\$ (593)</u>	<u>\$ (308,580)</u>	<u>\$ 125,324</u>

The accompanying notes are an integral part of these consolidated financial statements.

Heliogen, Inc.
Consolidated Statements of Cash Flows
(\$ in thousands)

	Year Ended December 31,	
	2022	2021
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net loss	\$ (142,000)	\$ (137,408)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	2,587	562
Impairment charges	6,922	—
Share-based compensation	42,647	11,380
Loss on remeasurement of SAFE instruments	—	86,907
Change in fair value of warrants	(13,921)	6,651
Change in fair value of contingent consideration	(1,656)	—
Deferred income taxes	(1,018)	—
Non-cash operating lease expense	1,592	1,277
Other non-cash expenses, net	(50)	583
Changes in assets and liabilities:		
Receivables	(5,151)	(3,597)
Inventories	(2,442)	—
Prepaid and other current assets	1,114	(497)
Other long-term assets	1,017	(2,571)
Trade payables	3,721	1,885
Contract liabilities	10,559	123
Provision for contract losses, net	28,058	397
Accrued expenses and other current liabilities	(989)	4,245
Operating lease liabilities	(815)	(1,061)
Other long-term liabilities	(12)	69
Net cash used in operating activities	(69,837)	(31,055)
CASH FLOWS FROM INVESTING ACTIVITIES:		
Capital expenditures	(9,034)	(3,836)
Purchases of available-for-sale securities	(271,246)	(49,304)
Maturities of available-for-sale securities	140,700	16,224
Sales of available-for-sale securities	65,817	—
Acquisition of HelioHeat, net of cash acquired	—	(1,684)
Other investing activities	—	(46)
Net cash used in investing activities	(73,763)	(38,646)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Proceeds from SAFE instruments, net of issuance costs of \$30	—	83,411
Proceeds from Business Combination with Athena, net of transaction costs	—	159,400
Repayments on Paycheck Protection Program loan	—	(411)
Proceeds from exercise of stock options	1,167	524
Proceeds from exercise of warrants	—	30
Other financing costs	(1,274)	(6)
Net cash provided by (used in) financing activities	(107)	242,948
Increase (decrease) in cash, cash equivalents and restricted cash	(143,707)	173,247
Cash, cash equivalents and restricted cash at the beginning of the year	191,581	18,334
Cash, cash equivalents and restricted cash at the end of the year	<u>\$ 47,874</u>	<u>\$ 191,581</u>

Heliogen, Inc.
Consolidated Statements of Cash Flows — (Continued)
(\$ in thousands)

	Year Ended December 31,	
	2022	2021
Reconciliation of cash, cash equivalents and restricted cash:		
Cash and cash equivalents	\$ 45,719	\$ 190,081
Short-term restricted cash	655	—
Long-term restricted cash	1,500	1,500
Total cash, cash equivalents and restricted cash	<u>\$ 47,874</u>	<u>\$ 191,581</u>
Supplemental cash flow information:		
Cash paid for interest	\$ —	\$ 4
Cash paid for amounts included in the measurement of operating lease liabilities	2,318	1,152
Non-cash investing and financing activities:		
Right-of-use assets obtained in exchange for new operating lease liabilities . .	\$ 201	\$ 16,757
Right-of-use asset removed upon lease termination	306	—
Fair value of Project Warrants and Collaboration Warrants recognized in equity	9,759	—
Warrants assumed as part of the Business Combination	—	10,880
Fair value of contingent consideration for HelioHeat Acquisition	—	2,009
Transaction costs incurred but not yet paid	—	1,474
Net working capital assumed as part of the Business Combination	—	1,153
Capital expenditures incurred but not yet paid	282	429
Non-cash settlement of note receivable	—	45

The accompanying notes are an integral part of these consolidated financial statements.

Heliogen, Inc.
Notes to the Consolidated Financial Statements
For the Years Ended December 31, 2022 and 2021

Note 1 — Organization and Operations

Background

Heliogen, Inc. and its subsidiaries (collectively, “Heliogen” or the “Company”), is involved in the development and commercialization of next generation concentrated solar energy. We are developing a modular, artificial intelligence (“AI”)-enabled, concentrated solar energy plant that will use an array of mirrors to reflect sunlight and capture, concentrate, store and convert it into cost-effective energy on demand. Unless otherwise indicated or the context requires otherwise, references in our consolidated financial statements to “we,” “us,” or “our” and similar expressions refer to Heliogen.

Basis of Presentation

The accompanying consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States (“GAAP”) and include the accounts of Heliogen and the subsidiaries it controls. All material intercompany balances are eliminated in consolidation. Certain prior period amounts have been reclassified to conform to current period presentation.

The Company has evaluated whether there were conditions and events, considered in the aggregate, which raise substantial doubt as to the entity’s ability to continue as a going concern within one year after the original issuance date of the consolidated financial statements. During the years ended December 31, 2022 and 2021, the Company incurred net losses of \$142.0 million and \$137.4 million, respectively. The Company expects to continue to generate operating losses in the next few years.

As of December 31, 2022, the Company had unrestricted cash and investments totaling \$143.2 million, consisting of \$45.7 million of cash and cash equivalents and \$97.5 million of investments and no substantial debt. Management believes it has the ability to manage operating costs and capital expenditures such that its existing cash, cash equivalents and investments will be sufficient to fund its operations and capital expenditures for the next twelve months following the filing of this Annual Report on Form 10-K.

The Company’s long-term liquidity will depend on its ability to (i) successfully complete current projects within budget, (ii) raise additional capital through the issuance of additional equity or debt securities, (iii) sign additional projects at a profit (iv) obtain funding and receive payment for research and development (“R&D”) projects under government subsidies, (v) implement project cost reductions to reduce the expected cash outflows and (vi) manage operating costs. There is no assurance that the Company will be successful in achieving these items. If the Company is unsuccessful, the Company will be forced to delay, reduce or eliminate some or all of its R&D programs, product expansion or commercialization efforts, which could adversely affect its business prospects, or the Company may be unable to continue operations.

Emerging Growth Company

We are an “emerging growth company” as defined in Section 2(a) of the Securities Act of 1933, as modified by the Jumpstart Our Business Startups Act of 2012, and we 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 its periodic reports and proxy statements and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and shareholder approval of any golden parachute payments not previously approved. Further, we have elected not to use the extended transition period for complying with any new or revised financial accounting standards, and as such, we are required to adopt new or revised standards at the same time as other public companies.

Heliogen, Inc.
Notes to the Consolidated Financial Statements
For the Years Ended December 31, 2022 and 2021

Note 1 — Organization and Operations (cont.)

Athena Business Combination

On December 30, 2021 (the “Closing Date”), Heliogen, Inc., a Delaware corporation (“Legacy Heliogen”), Athena Technology Acquisition Corp., a Delaware corporation (“Athena”) and HelioMax Merger Sub, Inc., a Delaware corporation and a direct, wholly-owned subsidiary of Athena (“Merger Sub”), consummated the closing of the transactions contemplated by the Business Combination Agreement, dated July 6, 2021, by and among Athena, Merger Sub and Legacy Heliogen (the “Business Combination Agreement”), following the approval at the Special Meeting held on December 28, 2021.

Pursuant to the terms of the Business Combination Agreement, a business combination of Legacy Heliogen and Athena was effected by the merger of Merger Sub with and into Legacy Heliogen, with Legacy Heliogen surviving as a wholly-owned subsidiary of Athena (the “Merger,” and, together with the other transactions contemplated by the Business Combination Agreement, the “Business Combination”). In connection with the consummation of the Merger on the Closing Date, Athena changed its name from Athena Technology Acquisition Corp. to Heliogen, Inc. and Legacy Heliogen changed its name from Heliogen, Inc. to Heliogen Holdings, Inc.

Upon consummation of the Merger:

- Each share of Legacy Heliogen capital stock that was then issued and outstanding (other than dissenting shares and shares owned by Athena, Merger Sub or Legacy Heliogen immediately prior to the Merger) was cancelled and converted into the right to receive 2.013 shares (the “Exchange Ratio”) of the Company’s common stock, par value \$0.0001 per share (“common stock”).
- Each stock option to purchase Legacy Heliogen capital stock that was outstanding and unexercised immediately prior to the Merger was assumed by the Company and converted into a stock option to purchase a number of shares of common stock (such stock option, an “Exchanged Stock Option”) equal to the product (rounded down to the nearest whole number) of (x) the number of shares of Legacy Heliogen capital stock subject to such Legacy Heliogen stock option immediately prior to the Merger and (y) the Exchange Ratio, at an exercise price per share (rounded up to the nearest whole cent) equal to (1) the exercise price per share of such Legacy Heliogen stock option immediately prior to the Merger, divided by (2) the Exchange Ratio. Except as specifically provided in the Business Combination Agreement, following the Merger, each Exchanged Stock Option will continue to be governed by the same terms and conditions (including vesting and exercisability terms) as were applicable to the corresponding Legacy Heliogen stock option immediately prior to the Merger.
- Each award of restricted stock units (“RSU Award”) in respect of Legacy Heliogen common stock outstanding as of immediately prior to the Merger was assumed by the Company and converted into an award of restricted stock units in respect of a number of shares of common stock (such award, an “Exchanged RSU Award”) equal to the product (rounded down to the nearest whole share) of (x) the number of shares of Legacy Heliogen common stock covered by the RSU Award and (y) the Exchange Ratio.
- Each share of common stock of Merger Sub issued and outstanding immediately prior to the Merger was cancelled and converted into and exchanged for one validly issued, fully paid and non-assessable share of common stock, par value \$0.001 per share, of Legacy Heliogen, the surviving corporation in the Merger.

Per the terms and conditions of the Business Combination Agreement and reflection of certain adjustments outlined therein, the consideration received by Legacy Heliogen equity holders was approximately 154.8 million shares of common stock. Additionally, approximately 45.8 million shares of common stock were attributed to shares issuable under outstanding Legacy Heliogen stock options, RSU Awards or restricted shares. As a result, a total of approximately 200.6 million shares comprises the total merger share consideration as outlined in the Business Combination Agreement valued at \$10.00 per share and reflecting 2.013 shares of the Company’s common stock issued for each Legacy Heliogen share of common stock issued and outstanding or issuable under outstanding Legacy Heliogen

Heliogen, Inc.
Notes to the Consolidated Financial Statements
For the Years Ended December 31, 2022 and 2021

Note 1 — Organization and Operations (cont.)

stock options, RSU Awards or restricted shares on the Closing Date. Also, immediately prior to and upon the Merger, certain investors subscribed for and purchased 16.5 million shares of common stock for aggregate gross proceeds of \$165.0 million (the “PIPE Investment”).

The following table reconciles the elements of the Business Combination to the consolidated statement of cash flows and the consolidated statement of convertible preferred stock and shareholders’ equity (deficit) for the year ended December 31, 2021:

\$ in thousands

Cash received from PIPE Investment	\$ 165,000
Cash from Athena Trust Account, net of redemptions and cash on hand	22,848
Less: Athena transaction costs and advisory fees paid	(16,186)
Less: Heliogen transaction costs and advisory fees paid	(12,262)
Net proceeds from the Business Combination and PIPE financing	159,400
Less: Accrued transaction costs	(1,474)
Add: Prepaid expenses and receivables assumed as part of the Business Combination	1,651
Less: Warrants assumed as part of the Business Combination	(10,880)
Less: Accounts payable assumed as part of the Business Combination	(498)
Reverse recapitalization and PIPE financing, net	<u>\$ 148,199</u>

The Business Combination was accounted for as a reverse recapitalization in accordance with Accounting Standards Codifications (“ASC”) 805, *Business Combinations*, with no goodwill or other intangible assets recorded. Under this method of accounting, Athena was treated as the “accounting acquiree” and Legacy Heliogen was deemed the “accounting acquirer” for financial reporting purposes primarily based on the following as of the date of the Business Combination:

- Legacy Heliogen was assessed and determined not to be a variable interest entity of Athena following the Merger, thus the voting interest model was applied;
- The pre-combination equity holders of Legacy Heliogen will hold the majority of shares of common stock and voting rights in the post-combination company;
- Legacy Heliogen has the ability, pursuant to the Business Combination, to appoint six (6) of the seven (7) members of the post-combination company’s board of directors;
- Senior management of Legacy Heliogen will comprise the senior management of the post-combination company; and
- Operations of Legacy Heliogen will comprise the ongoing operations of post-combination company.

Accordingly, for accounting purposes, the Business Combination was treated as Legacy Heliogen issuing equity for the net assets of Athena, followed by a recapitalization. The consolidated assets, liabilities and results of operations of Legacy Heliogen comprise the historical consolidated financial statements of the post combination company and Athena’s assets, liabilities and results of operations are consolidated with Legacy Heliogen beginning on the acquisition date. Accordingly, for accounting purposes, the consolidated financial statements of the post combination company represent a continuation of the historical consolidated financial statements of Legacy Heliogen and the net assets of Athena are stated at historical cost, with no goodwill or other intangible assets recorded. In accordance with accounting guidance applicable to these circumstances, the equity structure has been recast in all comparative periods up to the Closing Date to reflect the number of shares of the Company’s common stock, \$0.0001 par value per share, issued to Legacy Heliogen’s stockholders in connection with the Business Combination. As such, the shares and corresponding capital amounts and earnings per share related to Legacy Heliogen redeemable

Heliogen, Inc.
Notes to the Consolidated Financial Statements
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Note 1 — Organization and Operations (cont.)

convertible preferred stock, common stock, warrants, stock options and restricted stock units prior to the Business Combination have been retroactively recast as shares reflecting the Exchange Ratio of 2.013 established in the Business Combination.

Post combination, Heliogen common stock and warrants commenced trading on the New York Stock Exchange (“NYSE”) under the symbols “HLGN” and “HLGN.W,” respectively, on December 31, 2021.

Note 2 — Significant Accounting Policies

Use of Estimates

The preparation of financial statements in conformity with GAAP requires us to make estimates and assumptions that affect the amounts reported in our consolidated financial statements and the accompanying notes. On an ongoing basis, we evaluate our estimates, including those related to inputs used to recognize revenue over time, accounting for income taxes, fair values of share-based compensation, lease liabilities, common and preferred stock and warrant liabilities, contingent consideration and long-lived asset impairments. Despite our intention to establish accurate estimates and reasonable assumptions, actual results could differ materially from such estimates and assumptions.

Segments

The Company operates as one operating segment. The Company’s chief executive officer, who is the chief operating decision maker, reviews financial information on a consolidated basis for the purposes of allocating resources and assessing performance.

Cash and Cash Equivalents

We consider highly liquid investments with original maturities of three months or less at the time of purchase to be cash equivalents. As of December 31, 2022 and 2021, our cash and cash equivalents balances were \$45.7 million and \$190.1 million, respectively. As of December 31, 2022 and 2021, our restricted cash balance, including the long-term portion, was \$2.2 million and \$1.5 million, respectively, and was comprised of a standby letter of credit issued in relation to the lease for our Long Beach, California facility and a commercial letter of credit used to pay a supplier as certain conditions are met.

Investments in Available-for-Sale Securities

We classify investments in fixed maturity securities at the acquisition date and reevaluate the classification at each balance sheet date. Held-to-maturity investments are carried at amortized cost, reflecting the ability and intent to hold the securities to maturity. Trading investments are securities acquired with the intent to sell in the near term and are carried at fair value with changes in fair value reported in earnings. All other fixed maturity securities are classified as available-for-sale and are carried at fair value with net unrealized gains or losses related to non-credit factors reported as a component of accumulated other comprehensive income. As of December 31, 2022 and 2021, all investments in fixed maturities were classified as available-for-sale. The difference between the original cost and maturity value of a fixed maturity security is amortized to earnings using the interest method. As of December 31, 2022 and 2021, interest receivable on our available-for-sale securities was \$0.1 million and \$0.3 million, respectively, and included in receivables on our consolidated balance sheets.

The primary objectives of our investment portfolio are to maintain the safety of our invested capital, provide prudent levels of liquidity to accommodate operational and capital needs and maintain an acceptable level of risk. These risks include credit risk, interest rate risk and concentration risk, which are mitigated through the use of various well-established financial institutions as well as an investments portfolio consisting of very liquid and high credit quality instruments. The Company reviews its available-for-sale securities portfolio for impairment and determines if impairment is due to credit losses or other reasons. In making the assessment of whether a loss is from credit or other

Heliogen, Inc.
Notes to the Consolidated Financial Statements
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Note 2 — Significant Accounting Policies (cont.)

factors, management considers the extent to which fair value is less than amortized cost, any changes to the rating of the security by a rating agency and adverse conditions related to the security, among other factors. If this assessment indicates that a credit loss exists, the present value of cash flows expected to be collected from the security are compared to the amortized cost basis of the security. If the present value of cash flows is less than the amortized cost basis, a credit loss exists and an allowance is created, limited by the amount that the fair value is less than the amortized cost basis. Subsequent activity related to the credit loss component (e.g. write-offs, recoveries) is recognized as part of the allowance for credit losses on available-for-sale securities. For the years ended December 31, 2022 and 2021, no credit losses were recognized on available-for-sale securities.

Accounts Receivable

We record accounts receivable based on contracted prices when we obtain an unconditional right to payment under the terms of our customer contracts or government grants. The carrying value of such receivables, net of the allowance for credit losses, represents the estimated net realizable value. Payment terms for receivables from customers are generally due upon demand or within 30 days.

As a practical expedient, we do not adjust the promised amount of consideration for the effects of a significant financing component when we expect, at contract inception, that the period between our transfer of a promised product or service to a customer and when the customer pays for that product or service will be one year or less. We typically do not include extended payment terms in our contracts with customers.

Allowance for Credit Losses

The allowance for credit losses is a valuation account that is deducted from a financial asset's amortized cost to present the net amount we expect to collect from such asset. We estimate allowances for credit losses using relevant available information from both internal and external sources. We monitor the estimated credit losses associated with our trade accounts receivable and unbilled accounts receivable based primarily on our collection history and the delinquency status of amounts owed to us, which we determine based on the aging of such receivables. Such methods and estimates are adjusted, as appropriate, for relevant past events, current conditions and reasonable and supportable forecasts. We recognize write-offs within the allowance for credit losses when cash receipts associated with our financial assets are deemed uncollectible. We did not have any allowances for credit losses as of December 31, 2022 and 2021.

We consider governmental grant receivables to be fully collectible and accordingly, no allowance for credit loss balance has been established. If amounts become uncollectible, they are charged to operations.

Inventories

Inventory is stated at the lower of cost or net realizable value. As of December 31, 2022, all inventory was raw material valued using the weighted-average cost method. As of December 31, 2021, we had no inventory.

Property, Plant and Equipment

We report our property, plant and equipment at cost, less accumulated depreciation and any impairment losses. Cost includes the price paid to acquire or construct the assets, required installation costs, interest capitalized during the construction period and any expenditures that substantially add to the value of or substantially extend the useful life of the assets. We capitalize costs related to computer software obtained or developed for internal use, which generally includes enterprise-level business and finance software that we customize to meet our specific operational requirements. We expense repair and maintenance costs at the time we incur them.

We begin depreciation for our property, plant and equipment when the assets are placed in service. We consider such assets to be placed in service when they are both in the location and condition for their intended use. We compute depreciation expense using the straight-line method over the estimated useful lives of assets. We depreciate leasehold

Heliogen, Inc.
Notes to the Consolidated Financial Statements
For the Years Ended December 31, 2022 and 2021

Note 2 — Significant Accounting Policies (cont.)

improvements over the shorter of their estimated useful lives or the remaining term of the lease. The estimated useful life of an asset is reassessed whenever applicable facts and circumstances indicate a change in the estimated useful life of such asset has occurred. Refer to Note 8 — Property, Plant & Equipment for additional information.

Impairment of Long-lived Assets

We assess long-lived assets classified as “held and used,” including our property, plant and equipment for impairment whenever events or changes in circumstances arise, including consideration of technological obsolescence, that may indicate that the carrying amount of such assets may not be recoverable. For purposes of recognition and measurement of an impairment loss, long-lived assets are grouped with other assets and liabilities at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities.

When impairment indicators are present, we compare undiscounted future cash flows, including the eventual disposition of the asset group at market value, to the asset group’s carrying value to determine if the asset group is recoverable. If the carrying value of the asset group exceeds the undiscounted future cash flows, we measure any impairment by comparing the fair value of the asset group to its carrying value. Fair value is generally determined by considering (i) internally developed discounted cash flows for the asset group, (ii) third-party valuations, and/or (iii) information available regarding the current market value for such assets. If the fair value of an asset group is determined to be less than its carrying value, an impairment in the amount of the difference is recorded in the period that the impairment indicator occurs. Estimating future cash flows requires significant judgment and such projections may vary from the cash flows eventually realized. Refer to Note 8 — Property, Plant & Equipment for additional information.

We consider a long-lived asset to be abandoned after we have ceased use of the asset and we have no intent to use or repurpose it in the future. Abandoned long-lived assets are recorded at their salvage value, if any.

Leases

At inception, we determine whether an arrangement is a lease and the appropriate classification as operating or finance. When a lease is identified, a right-of-use asset and the corresponding lease liability are recognized upon commencement based on the present value of the lease payments not yet paid, discounted using our incremental borrowing rate, in the event that the implicit rate is not available. The right-of-use asset is also adjusted for prepayments and initial direct costs. Many of our leases contain renewal options that are exercisable at our discretion. At the commencement date of a lease, we include in the lease term any periods covered by a renewal option, to the extent we are reasonably certain to exercise such options. Leases with an initial term of one year or less are considered short-term leases and are not recognized as lease assets and liabilities. Right-of-use assets are assessed periodically for impairment if events or circumstances occur that indicate the carrying amount of the asset may not be recoverable.

We recognize operating lease costs on a straight-line basis over the lease term, and any variable lease costs are recognized in the period in which they are incurred. We do not separate lease and nonlease components of a contract.

Goodwill

Goodwill represents the excess of the purchase price over the estimated fair value of net tangible and identifiable intangible assets acquired in business combinations. Goodwill is not amortized but is evaluated for impairment at the reporting unit level. The Company determined it has one reporting unit as of December 31, 2022 and 2021, which is the same as its single operating segment. The Company performs its goodwill impairment evaluation at least annually, as of October 1, or more frequently if events or changes in circumstances indicate that it is more likely than not that the fair value of the Company’s reporting unit is less than its carrying value. The Company may first apply a qualitative assessment to determine if it is more likely than not that goodwill is impaired. If the qualitative assessment indicates that it is more likely than not that impairment exists, or if the Company chooses to bypass the assessment, a quantitative assessment is performed, which involves comparing the fair value of the reporting unit to its carrying value, including goodwill. If the carrying value of the reporting unit exceeds its estimated fair value, the Company would record an impairment loss equal to the excess. Refer to Note 9 — Goodwill and Intangible Assets for additional information.

Heliogen, Inc.
Notes to the Consolidated Financial Statements
For the Years Ended December 31, 2022 and 2021

Note 2 — Significant Accounting Policies (cont.)

Intangible Assets

Finite-lived intangible assets purchased in a business combination are recorded at fair value and amortized over their estimated useful lives. Finite-lived intangible assets are tested for impairment whenever events or changes in circumstances would indicate that the carrying value may not be recoverable. An impairment charge would be recognized if the carrying value exceeds fair value in the period the impairment is identified. Refer to Note 9 — Goodwill and Intangible Assets for additional information.

Cloud Computing Arrangements

Implementation costs incurred in cloud computing hosting arrangements that are service contracts are capitalized. These costs include external direct costs for materials and services. Software maintenance and training costs are expensed in the period in which they are incurred. The capitalized implementation costs are recorded within other long-term assets on our consolidated balance sheets and are amortized using the straight-line method to selling, general and administrative (“SG&A”) expenses over the term of the cloud computing hosting arrangement, including reasonably certain renewals, beginning when the module or component of the hosting arrangement is ready for its intended use. Cash payments for capitalized implementation costs are classified as cash outflows from operating activities.

During the years ended December 31, 2022 and 2021, we capitalized cloud computing implementation costs for enterprise resource planning systems of \$0.7 million and \$1.2 million, respectively. Amortization expense related to capitalized cloud computing implementation costs was \$0.6 million and \$49 thousand for the years ended December 31, 2022 and 2021, respectively, and is recorded in SG&A expense.

Revenue Recognition

Our services revenue is derived from customer contracts and is recognized in accordance with ASC 606, *Revenue from Contracts with Customers*. We recognize revenue over time as work is performed using the incurred costs method, which we believe is the method that most accurately reflects our progress toward satisfaction of the performance obligation. Under this method, revenue arising from fixed-price contracts is recognized as work is performed based on the ratio of costs incurred to date compared to the total estimated costs at completion of the performance obligations.

Incurred costs include all direct material, labor and subcontractor costs, and those indirect costs related to contract performance, such as indirect labor, supplies and tools. Other costs for inventoried items, such as heliostats, are included in incurred costs when the item has been installed by being permanently attached or fitted. Cost-based input methods of revenue recognition require us to make estimates of net contract revenues and costs to complete the projects. In making such estimates, significant judgment is required to evaluate assumptions related to the amount of net contract revenues, including the impact of any performance incentives, liquidated damages and other payments to customers. Significant judgment is also required to evaluate assumptions related to the costs to complete the projects, including materials, labor, contingencies and other system costs. If a change in facts or circumstances occurs, the estimates will be adjusted, and the revenue will be recognized based on the revised estimates. The difference between the cumulative revenue recognized based on the previous estimates and the revenue recognized based on the revised estimates would be recognized as an adjustment to revenue in the period in which the change in estimate occurs.

If the estimated total costs on any contract are greater than the net contract revenues, we recognize the entire estimated loss in the period the loss becomes known and present such losses as contract loss provisions. Following recognition of contract loss provisions, we amortize the loss recognized in future periods as a reduction to cost of revenues using a similar method of measuring progress for each contract as done for revenue being recognized.

Our contracts with customers may include multiple promised goods and services. In such cases, we identify performance obligations by evaluating whether the promised goods and services are capable of being distinct within the context of the contract at contract inception. Promised goods and services that are not distinct at contract inception are combined. Once we identify the performance obligations, we determine a transaction price based on contractual amounts and

Heliogen, Inc.
Notes to the Consolidated Financial Statements
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Note 2 — Significant Accounting Policies (cont.)

an estimate of variable consideration. We allocate the transaction price to each performance obligation based on the relative stand-alone selling price (“SSP”) maximizing the use of observable inputs. Judgment is exercised to determine the SSP of each distinct performance obligation.

Contract Assets and Liabilities. Billing practices are governed by the contract terms of each project based upon costs incurred, achievement of milestones or predetermined schedules. Billings do not necessarily correlate with revenue recognized over time using the incurred costs method. Contract assets include unbilled amounts typically resulting from revenue under long-term contracts when the incurred costs method of revenue recognition is utilized and revenue recognized exceeds the amount billed to the customer. Contract liabilities consist of deferred revenue for advance payments and billings in excess of revenue recognized. When we receive consideration, or such consideration is unconditionally due, from a customer prior to transferring goods or services to the customer under the terms of a sales contract, we record deferred revenue, which represents a contract liability.

As a practical expedient, we do not adjust the consideration in a contract for the effects of a significant financing component when we expect, at contract inception, that the period between a customer’s advance payment and our transfer of a promised product or service to the customer will be one year or less. Additionally, we do not adjust the consideration in a contract for the effects of a significant financing component when the consideration is received as a form of performance security.

Government Grants

We assess government contracts received, including cost reimbursement agreements, to determine if the agreement should be accounted for as an exchange transaction or a grant. An agreement is accounted for as a grant if the resource provider does not receive commensurate value in return for the assets transferred. As there is no authoritative guidance under GAAP for accounting for grants to for-profit business entities, the Company accounts for the grants by analogy to International Accounting Standard 20, *Accounting for Government Grants and Disclosure of Government Assistance*. Additionally, a government grant is recognized only when there is reasonable assurance that (1) the entity will comply with any conditions attached to the grant and (2) the grant will be received.

Funds to be received under the Company’s government grants are presented as grant revenue gross of the related reimbursable expenses on the Company’s consolidated statements of operations. The related reimbursable expenses are expensed as incurred and presented separately as cost of revenues. Refer to Note 4 — Revenue, Receivables and Contract Assets and Liabilities for additional information.

Research and Development

We incur R&D costs during the process of researching and developing new products and enhancing our existing products, technologies and manufacturing processes. Our R&D costs consist primarily of employee compensation, materials and outside services. We expense these costs as incurred until the resulting product has been completed, tested and made ready for commercial scale-up.

Share-based Compensation

We recognize share-based compensation expense for the estimated fair value of equity awards issued as compensation to individuals over the requisite service period, which generally ranges from six months to four years. We account for forfeitures as they occur. Accordingly, in the absence of a modification, if an individual’s continuous service is terminated, all previously unvested awards granted to such individual are forfeited, which results in a benefit to share-based compensation expense in the period of termination equal to the cumulative expense recorded through the termination date for the unvested awards. For employee stock awards with graded vesting schedules and only services conditions, we recognize share-based compensation expense on a straight-line basis over the total requisite service period of the award, ensuring that cumulative recorded share-based compensation expense equals the grant date fair value of vested awards at each period-end. For awards with graded vesting schedules that contain a market or performance condition, we recognize share-based compensation expense using the graded vesting attribution method, in which we concurrently recognize compensation cost over the requisite service period for each separately-vesting tranche.

Heliogen, Inc.
Notes to the Consolidated Financial Statements
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Note 2 — Significant Accounting Policies (cont.)

For modification of share-based payment awards, we record the incremental fair value of the modified award as share-based compensation on the date of modification for vested awards or over the remaining vesting period for unvested awards. The incremental compensation is the excess of the fair value of the modified award on the date of modification over the fair value of the original award immediately before the modification. In addition, we record the remaining unrecognized compensation cost for the original cost for the original award on the modification date over the remaining vesting period for unvested awards.

Commitments and Contingencies

We record liabilities for loss contingencies arising from claims, assessments, litigation, fines and penalties and other sources when it is probable that a liability has been incurred and the amount of the assessment can be reasonably estimated. Legal costs incurred in connection with loss contingencies are expensed as incurred.

Although we cannot predict the outcome of legal or other proceedings with certainty, when it is probable that a loss has been incurred and the amount is reasonably estimable, GAAP requires us to accrue an estimate of the probable loss or range of loss or make a statement that such an estimate cannot be made.

Income Taxes

We use the asset and liability method to account for income taxes whereby we calculate deferred tax assets or liabilities using the enacted tax rates and tax law applicable to when any temporary differences are expected to reverse. We establish valuation allowances, when necessary, to reduce deferred tax assets to the extent it is more likely than not that such deferred tax assets will not be realized.

Income tax expense includes (i) deferred tax expense, which generally represents the net change in deferred tax assets or liabilities during the year plus any change in valuation allowances and (ii) current tax expense, which represents the amount of tax currently payable to or receivable from taxing authorities. We only recognize tax benefits related to uncertain tax positions that are more likely than not of being sustained upon examination. For those positions that satisfy such recognition criteria, the amount of tax benefit that we recognize is the largest amount of tax benefit that is more likely than not of being sustained on ultimate settlement of the uncertain tax position. The Company's policy is to recognize interest and penalties related to uncertain tax positions, if any, in the income tax provision.

Fair Value Measurements

We measure certain assets and liabilities at fair value, which is defined as the price that would be received from the sale of an asset or paid to transfer a liability (i.e., an exit price) on the measurement date in an orderly transaction between market participants in the principal or most advantageous market for the asset or liability. Our fair value measurements use the following hierarchy, which prioritizes valuation inputs based on the extent to which the inputs are observable in the market.

- Level 1 — Valuations based on unadjusted quoted prices from active markets for identical assets or liabilities.
- Level 2 — Valuations in which significant inputs are observable either directly or indirectly — other than Level 1 inputs.
- Level 3 — Valuations in which significant inputs are unobservable.

Recently Adopted Accounting Standards

In August 2020, the Financial Accounting Standards Board ("FASB") issued ASU No. 2020-06, *Debt — Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging — Contracts in Entity's Own Equity (Subtopic 815-40): Accounting for Convertible Instruments and Contracts in an Entity's Own Equity* ("ASU 2020-06"). The amendments eliminate two of the three accounting models that require separate accounting for

Heliogen, Inc.
Notes to the Consolidated Financial Statements
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Note 2 — Significant Accounting Policies (cont.)

convertible features of debt securities, simplify the contract settlement assessment for equity classification, require the use of the if-converted method for all convertible instruments in the diluted earnings per share calculation and expand disclosure requirements. The adoption of ASU 2020-06 on January 1, 2022 had no impact on our consolidated financial statements.

Note 3 — Restatement of 2021 Consolidated Financial Statements on May 22, 2022

As part of the Company's accounting for revenue contracts with customers during the first quarter of 2022, management considered ongoing contracts that were entered into and accounted for during the year ended December 31, 2021. During this evaluation, management determined that a government contract which had previously been assessed as within the scope of ASC 606, represents a government grant and therefore was not within the scope of ASC 606. The impact of this revised conclusion resulted in the separate presentation of amounts previously presented as revenue and cost of revenue as grant revenue and cost of grant revenue, respectively, with no change in total revenue, and a reduction in total cost of revenue, including the reversal of a contract loss recognized during the year ended December 31, 2021. Refer to Note 2 — Significant Accounting Policies — Government Grants and Note 4 — Revenue, Receivables and Contract Assets and Liabilities for additional information.

The following table sets forth the consolidated balance sheet, including the balances as originally reported, adjustments and the restated balances as of December 31, 2021:

<i>\$ in thousands</i>	As Reported	Adjustments	As Restated
Contract loss provisions	\$ 5,180	\$ (4,783)	\$ 397
Total current liabilities	17,312	(4,783)	12,529
Total liabilities.	48,173	(4,783)	43,390
Accumulated deficit	(171,363)	4,783	(166,580)
Total shareholders' equity	209,275	4,783	214,058

The following table sets forth the consolidated statement of operations, including the amounts as originally reported, adjustments and the restated amounts for the year ended December 31, 2021:

<i>\$ in thousands, except per share data</i>	As Reported	Adjustments	As Restated
Revenue:			
Services revenue	\$ 8,804	\$ (1,442)	\$ 7,362
Grant revenue	—	1,442	1,442
Total revenue	8,804	—	8,804
Cost of revenue:			
Cost of services revenue	7,203	(1,441)	5,762
Cost of grant revenue	—	3,177	3,177
Provision for contract losses	6,485	(5,977)	508
Total cost of revenue	13,688	(4,241)	9,447
Gross loss	(4,884)	4,241	(643)
Selling, general and administrative.	30,386	(542)	29,844
Total operating expenses.	43,864	(542)	43,322
Operating loss	(48,748)	4,783	(43,965)
Net loss before taxes	(142,189)	4,783	(137,406)
Net loss	(142,191)	4,783	(137,408)
Total comprehensive loss	(142,195)	4,783	(137,412)
Loss per share — Basic and Diluted.	\$ (11.88)	\$ 0.40	\$ (11.48)

Heliogen, Inc.
Notes to the Consolidated Financial Statements
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Note 3 — Restatement of 2021 Consolidated Financial Statements on May 22, 2022 (cont.)

The adjustments summarized above reduced accumulated deficit and increased total shareholders' equity presented on the consolidated statements of convertible preferred stock and shareholders' deficit for the year ended December 31, 2021 by \$4.8 million.

The following table sets forth certain amounts from the consolidated statement of cash flows including the amounts as originally reported, adjustments and the restated amounts for the year ended December 31, 2021:

<i>\$ in thousands</i>	<u>As Reported</u>	<u>Adjustments</u>	<u>As Restated</u>
Cash flows from operating activities:			
Net loss	\$ (142,191)	\$ 4,783	\$ (137,408)
Adjustments to reconcile net loss to net cash used in operating activities:			
Provision for contract losses, net	5,180	(4,783)	397

Note 4 — Revenue, Receivables and Contract Assets and Liabilities

Disaggregated Revenue

The following table provides information about disaggregate revenue:

<i>\$ in thousands</i>	Year Ended December 31,	
	2022	2021
Project revenue	\$ 6,155	\$ 900
Engineering services revenue	364	6,462
Total services revenue	6,519	7,362
Grant revenue	7,232	1,442
Total revenue	<u>\$ 13,751</u>	<u>\$ 8,804</u>

Project revenue consists of amounts recognized under contracts with customers for the development, construction and delivery of commercial-scale concentrated solar energy facilities. Engineering services revenue consists of amounts recognized under contracts with customers for the provision of engineering, R&D or other similar services in our field of expertise. Revenue recognized during 2022 and 2021 includes non-governmental customers in the United States ("U.S.") and Europe.

Pursuant to a commercial-scale demonstration agreement ("CSDA") executed with Woodside Energy (USA) Inc. ("Woodside") in March 2022, Heliogen will complete the engineering, procurement and construction of a new 5 MW concentrated solar energy facility to be built in Mojave, California (the "Facility") for the customer's use in research, development and testing. Pursuant to the CSDA, the customer will pay up to \$50.0 million to Heliogen to complete the Facility. The total transaction price for the CSDA is \$45.5 million reflecting a reduction in contract price for the fair value of the Project Warrants (defined and discussed further in Note 5 — Convertible Instruments and Equity — Project Warrants) granted to the customer in connection with the CSDA. The CSDA modified and replaced a limited notice to proceed executed in October 2021. For the years ended December 31, 2022 and 2021, the CSDA contributed \$6.2 million and \$0.9 million, respectively, or 94% and 12%, respectively, to total services revenue.

In October 2021, the Company received an award from the U.S. Department of Energy (the "DOE") of \$39.0 million (the "DOE Award"), of which \$3.9 million will be paid directly by the DOE to another party providing services under the DOE Award at the Company's direction. Under the DOE Award, the Company will apply up to \$35.1 million in funds received under the DOE Award pursuant to budget periods defined in the DOE Award through 2024 as reimbursement for costs incurred in completing the tasks specified in the DOE Award that are part of the commercial-scale facility

Heliogen, Inc.
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Note 4 — Revenue, Receivables and Contract Assets and Liabilities (cont.)

being constructed for a third-party customer pursuant to a separate customer contract. Management has evaluated the recapture provisions with the DOE Award and concluded that it is not probable that the recapture provisions will be triggered. The Company and DOE have the ability to terminate the DOE Award for convenience. Under such a termination, the Company will be permitted to seek reimbursement of valid costs incurred, including permitted indirect costs, through the date of termination.

During the years ended December 31, 2022 and 2021, the Company recognized grant revenue under the Company's award from the DOE of \$5.6 million and \$1.4 million, respectively, related to costs incurred during such periods that are reimbursable under the DOE Award.

In response to the Coronavirus Disease 2019 pandemic, Congress passed the Coronavirus Aid, Relief and Economic Security Act (the "CARES Act") which, among other provisions, provides for an Employee Retention Credit ("ERC") against applicable employment taxes, if certain criteria are met. During the year ended December 31, 2022, we recognized \$1.6 million related to the ERC within grant revenue on our consolidated statements of operations and comprehensive loss and within receivables on our consolidated balance sheet.

Provision for Contract Losses

During the year ended December 31, 2022, we recognized a total provision for contract losses of \$33.8 million, driven primarily by the CSDA, of which we amortized \$5.7 million as a reduction to cost of sales incurred during 2022, based on the percentage of completion. During the year ended December 31, 2021, we recognized a total provision for contract losses of \$0.5 million, of which we amortized \$0.1 million as a reduction to cost of sales incurred during 2021.

Performance Obligations

Revenue recognized under contracts with customers relates solely to the performance obligations satisfied in 2022 with no revenue recognized from performance obligations satisfied in prior periods. As of December 31, 2022, we had approximately \$39.2 million of transaction prices allocated to remaining performance obligations from our customer contract, we expect to recognize approximately 22% as revenue over the next 12 months and the remainder to be recognized thereafter through 2026.

Receivables

Receivables consisted of the following:

<i>\$ in thousands</i>	December 31,	
	2022	2021
Trade receivables	\$ 1,119	\$ 900
Grant receivables:		
Unbilled	5,610	1,442
Other grant receivables	1,578	—
Total grant receivables	7,188	1,442
Contract assets	560	1,195
Other receivables	328	359
Total receivables	<u>\$ 9,195</u>	<u>\$ 3,896</u>

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Note 4 — Revenue, Receivables and Contract Assets and Liabilities (cont.)

Contract Assets and Liabilities

The following table outlines the activity related to contract assets, which is included in total receivables on our consolidated balance sheets:

\$ in thousands

Balance as of December 31, 2020.	\$	—
Unbilled receivables additions		1,195
Balance as of December 31, 2021.	\$	1,195
Unbilled receivables additions		364
Amounts billed to customers		(972)
Foreign currency translation adjustments		(27)
Balance as of December 31, 2022.	\$	560

The following table outlines the activity related to contract liabilities:

\$ in thousands

Balance as of December 31, 2020.	\$	—
Payments received in advance of performance		5,770
Revenue recognized		(5,257)
Balance as of December 31, 2021.	\$	513
Payments received in advance of performance		17,100
Revenue recognized		(6,519)
Recognition of consideration payable associated with Project Warrants		(707)
Other		(39)
Balance as of December 31, 2022.	\$	10,348

Note 5 — Convertible Instruments and Equity

Preferred Stock

Prior to the Business Combination, the Company had outstanding shares of convertible preferred stock. Immediately prior to the Merger, all shares of outstanding preferred stock were automatically converted into approximately 60.1 million shares of Legacy Heliogen common stock at the effective conversion prices, which were then converted into approximately 121.0 million shares of the Company's common stock with the application of the Exchange Ratio as a result of the Merger as discussed in Note 1 — Organization and Operations — Athena Business Combination.

Following the conversion of the Legacy Heliogen preferred stock immediately prior to the Merger and pursuant to the Company's Second Amended and Restated Certificate of Incorporation, as of December 31, 2021, we had authorized 10.0 million shares of preferred stock, \$0.0001 par value, of which no shares have been issued. The Company's Board of Directors (the "Board") has the authority to issue shares of preferred stock and to determine the rights, preferences, privileges and restrictions, including voting rights, of those shares.

Public Warrants and Private Warrants

The Company's warrant liabilities as of December 31, 2022 includes public warrants (the "Public Warrants") and private placement warrants (the "Private Warrants," and together with the Public Warrants, the "Public and Private Warrants"). The Public and Private Warrants permit warrant holders to purchase in the aggregate approximately 8.3 million shares and approximately 0.2 million shares, respectively, of the Company's common stock at an

Heliogen, Inc.
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Note 5 — Convertible Instruments and Equity (cont.)

exercise price of \$11.50 per share. The Public and Private Warrants became exercisable on March 18, 2022 and expire on December 30, 2026, or earlier upon redemption or liquidation. The Company has the ability to redeem outstanding Public Warrants prior to their expiration, at a price of \$0.01 per warrant, provided that the last reported sales price of the Company's common stock equals or exceeds \$18.00 per share for any 20 trading days within a 30 trading-day period ending on the third trading day prior to the notice date of redemption. In addition, the Company has the ability to redeem all, but not less than all, of the outstanding Public and Private Warrants prior to their expiration, at a price of \$0.10 per warrant if the last reported sales price of the Company's common stock equals or exceeds \$10.00 on the trading day prior to the date of the notice. The Company evaluated the Public and Private Warrants and concluded that a provision in the underlying warrant agreement dated March 16, 2021, by and between Athena and Continental Stock Transfer & Trust Company, related to certain tender or exchange offers precludes the Public and Private Warrants from being accounted for as components of equity. As both the Public and Private Warrants meet the definition of a derivative, they are recorded on the consolidated balance sheets as liabilities and measured at fair value at each reporting date, with the change in fair value reported in gain (loss) on warrant remeasurement on the consolidated statements of operations and comprehensive loss.

Project Warrants

In connection with the concurrent execution of the CSDA with Woodside in March 2022, the Company issued warrants permitting Woodside to purchase approximately 0.9 million shares of the Company's common stock at an exercise price of \$0.01 per share (the "Project Warrants"). The Project Warrants expire upon the earlier of a change in control of the Company or March 28, 2027 and vest pro rata with certain payments required to be made by the customer under the CSDA. The fair value of the Project Warrants upon issuance was \$4.96 per warrant based on the closing price of the Company's shares on March 28, 2022 less the exercise price.

The Project Warrants were determined to be consideration payable to a customer and are equity-classified pursuant to the guidance in ASC 718, *Compensation — Stock Compensation* ("ASC 718"). For the Project Warrants, the total consideration payable to the customer of \$4.5 million reduced the transaction price associated with the customer's contract and the Company recognized \$0.2 million as an increase to additional paid-in capital related to the Project Warrants to reflect the attribution of the Project Warrants' fair value in a manner similar to revenue recognized under the customer's contract. As of December 31, 2022, 0.4 million of the Project Warrants had vested with a value of \$0.7 million which was recognized as additional paid-in capital.

Collaboration Warrants

In connection with the concurrent execution of a collaboration agreement (the "Collaboration Agreement") with Woodside in March 2022, the Company issued warrants permitting Woodside to purchase approximately 3.6 million shares of the Company's common stock at an exercise price of \$0.01 per share (the "Collaboration Warrants"). Under the Collaboration Agreement, Woodside will assist us in defining product offerings that use our modular technology for potential customers in Australia. The Collaboration Warrants expire upon the earlier of a change in control of the Company or March 28, 2027. Of these warrants, (i) approximately 1.8 million warrants vested immediately upon execution of the Collaboration Agreement and (ii) approximately 1.8 million warrants will vest based on certain specified performance goals under the Collaboration Agreement. The fair value of the Collaboration Warrants upon issuance was \$4.96 per warrant based on the closing price of the Company's shares on March 28, 2022 less the exercise price.

The Collaboration Warrants were determined to be consideration payable to a customer or non-employee and are equity-classified under ASC 718. For the Collaboration Warrants, the Company recognized a prepaid expense of \$9.1 million, of which \$2.6 million was classified as current and \$6.5 million was classified as long-term, with a

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Note 5 — Convertible Instruments and Equity (cont.)

corresponding increase to additional paid-in capital related to the Collaboration Warrants that immediately vested. This amount has been recognized ratably as SG&A expense beginning in April 2022 for marketing services to be provided over the estimated service period. As of December 31, 2022, the remaining estimated period is approximately four years. For the year ended December 31, 2022, we recognized \$1.8 million SG&A expense related to the vesting of the Collaboration Warrants.

Additional vesting of the Collaboration Warrants as a result of a project sold to Woodside or an affiliate will be accounted for as a reduction of the contract price pursuant to ASC 606. Collaboration Warrants that vest upon sales to other customers shall be capitalized as sales commission under ASC 340-40, *Other Assets and Deferred Costs — Contracts with Customers*, and recognized over the life of the contract to the customer or expensed immediately if the cost is not recoverable under the contract with the customer.

Vendor Warrants

On April 19, 2022, the Company issued warrants to purchase approximately 0.1 million shares of the Company's common stock, at an exercise price of \$0.01 per share ("Vendor Warrants"), to a vendor as compensation for services to be performed by the vendor. The Vendor Warrants vest in twelve equal monthly installments, subject to continued service by the vendor, and are completely vested upon the one-year anniversary of issuance. The Vendor Warrants were determined to be consideration payable to a non-employee and are equity-classified under ASC 718. The Vendor Warrants had a fair value upon issuance of \$0.3 million, which will be recognized ratably over one year as SG&A expense. For the year ended December 31, 2022, the Company recognized \$0.2 million of share-based compensation expense, included in SG&A, related to the portion of the Vendor Warrants that vested during the period. The fair value of the Vendor Warrants upon issuance was \$4.18 per warrant based on the closing price of the Company's shares on April 19, 2022 less the exercise price.

Registration Rights

The holders of the Project Warrants, Collaboration Warrants and Vendor Warrants are entitled to certain demand registration rights. The Company will bear the expenses incurred in connection with the filing of any such registration statements.

SAFE Instruments

In the first half of 2021, we entered into Simple Agreements for Future Equity ("SAFE") financing transactions with third-party investors and received \$83.4 million in gross proceeds in connection with a private round of funding to provide investors an opportunity to convert into common or preferred stock, upon defined triggering events. The Company determined that the SAFE instruments were not a legal form debt (i.e., no creditors' rights) and allowed for redemption based upon certain events that are outside of the control of the Company. Therefore, the SAFE instruments were classified as liabilities pursuant to ASC 480, *Distinguishing Liabilities from Equity*, and were measured at fair value at each reporting period, with changes in fair value recorded on the consolidated statements of operations and comprehensive loss.

Immediately prior to the Merger, the SAFE instruments were automatically converted into approximately 10.0 million shares of Legacy Heliogen common stock, which were converted into approximately 20.1 million shares of the Company's common stock with the application of the Exchange Ratio as a result of the Merger as discussed in Note 1 — Organization and Operations — Athena Business Combination.

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Note 6 — Acquisitions

In September 2021, Heliogen acquired 100% of the equity interests of HelioHeat GmbH (“HelioHeat”), a private limited liability company in Germany engaged in the development, planning and construction of renewable energy systems and components, including a novel solar receiver.

The components of the fair value of consideration transferred are as follows:

\$ in thousands

Cash paid at closing ⁽¹⁾	\$	1,714
Contingent consideration ⁽²⁾		2,009
Settlement of pre-existing relationship		45
Total fair value of consideration transferred	\$	<u>3,768</u>

(1) Includes \$0.5 million of cash paid to an escrow that becomes payable to the selling shareholders of HelioHeat to the extent the funds are not used to offset certain costs incurred for the assumed customer projects and \$0.2 million to repay certain HelioHeat outstanding indebtedness. The amount was being treated as consideration transferred as the release of the funds is likely to occur.

(2) Refer to Note 18 — Fair Value of Financial Instruments for additional information.

We accounted for the HelioHeat Acquisition using the acquisition method of accounting, which requires, among other things, that the assets acquired and liabilities assumed be recognized at their fair values on the consolidated balance sheet as of the acquisition date. The purchase price allocation for the HelioHeat Acquisition was finalized as of March 31, 2022.

The following table summarizes the purchase price allocation as of the acquisition date and the adjustments recorded during the measurement period:

<i>\$ in thousands</i>	Preliminary Valuation as of December 31, 2021	Measurement Period Adjustments	Final Valuation
Cash and cash equivalents	\$ 30	\$ —	\$ 30
Prepaid and other current assets	33	—	33
Property, plant and equipment, net	6	—	6
Intangible assets	—	4,204	4,204
Goodwill	4,204	(3,093)	1,111
Total assets acquired	4,273	1,111	5,384
Accrued expenses and other current liabilities	74	—	74
Contract liabilities ⁽¹⁾	390	—	390
Debt	41	—	41
Deferred tax liabilities	—	1,111	1,111
Total liabilities assumed	505	1,111	1,616
Net assets acquired	<u>\$ 3,768</u>	<u>\$ —</u>	<u>\$ 3,768</u>

(1) The acquired contract liability for the assumed customer contracts was measured in accordance with ASC 606 pursuant to ASU 2021-08, *Accounting for Contract Assets and Contract Liabilities from Contracts with Customers*, which the Company early adopted in 2021.

The purchase price allocation resulted in the recognition of \$1.1 million in goodwill, of which none is expected to be tax deductible. Goodwill represents the value expected to be received from the synergies of integrating HelioHeat’s operations with Heliogen’s operations to expand commercial opportunities and the assembled workforce in place.

The fair value of the intangible asset was estimated using the replacement cost approach, which was based on Level 3 inputs. Significant valuation assumptions include management’s estimated costs to reproduce HelioHeat’s solar receiver technology if the Company had developed the technology using its own resources, developer’s profit margin based on estimated market participants’ required margin, and an estimated discount for economic obsolescence.

Heliogen, Inc.
Notes to the Consolidated Financial Statements
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Note 6 — Acquisitions (cont.)

The fair value of contingent consideration was estimated to be \$2.0 million at the acquisition date. The fair value as of the acquisition date was estimated using a probability-weighted discounted cash flow model utilizing estimated timing for the commissioning and required operational period of a commercial facility using the acquired particle receiver technology.

During the year ended December 31, 2022, there were no additional costs incurred in relation to the HelioHeat Acquisition.

Note 7 — Investments

Investments in fixed maturity securities as of December 31, 2022 and 2021 are classified as available-for-sale and are summarized in the following table below:

<i>\$ in thousands</i>	December 31, 2022			December 31, 2021		
	Amortized Cost	Unrealized Losses	Fair Value	Amortized Cost	Unrealized Losses	Fair Value
Corporate bonds	\$ 3,997	\$ (22)	\$ 3,975	\$ 32,349	\$ (17)	\$ 32,332
Commercial paper	10,837	(3)	10,834	—	—	—
U.S. treasury bills	82,979	(284)	82,695	—	—	—
Total investments, available-for-sale . .	<u>\$ 97,813</u>	<u>\$ (309)</u>	<u>\$ 97,504</u>	<u>\$ 32,349</u>	<u>\$ (17)</u>	<u>\$ 32,332</u>

The cost of securities sold is based on the specific-identification method. There were no credit losses recognized for the years December 31, 2022 and 2021 and no allowance for credit losses as of December 31, 2022 and 2021.

We realized losses of \$0.2 million on the sale of investments during the year ended December 31, 2022 included in other income, net on our consolidated statements of operations and comprehensive loss related to \$65.8 million in proceeds from the sale of investments. There were no realized gains or losses on investments during the year ended December 31, 2021.

Note 8 — Property, Plant & Equipment

Major classes of property, plant and equipment, consisted of the following:

<i>\$ in thousands</i>	Estimated Useful Lives in Years	December 31,	
		2022	2021
Leasehold improvements	5 – 7	\$ 2,931	\$ 699
Computer equipment	2 – 3	2,124	1,532
Machinery, vehicles and other equipment	5 – 10	3,528	1,188
Furniture and fixtures	2 – 5	646	314
Construction in progress		419	1,076
Total property, plant and equipment		9,648	4,809
Accumulated depreciation		(2,577)	(707)
Total property, plant and equipment, net		<u>\$ 7,071</u>	<u>\$ 4,102</u>

Depreciation expense for property, plant and equipment was \$1.9 million and \$0.5 million for the years ended December 31, 2022 and 2021, respectively, and is recorded in SG&A expense and a portion is allocated to cost of services revenue.

During the year ended December 31, 2022, we recorded an impairment of \$3.8 million, included in impairment charges on our consolidated statement of operations, related to construction in progress for certain project-related costs as management determined the project was no longer probable of being constructed. We did not record any impairments of property, plant and equipment during the year ended December 31, 2021.

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Note 9 — Goodwill and Intangible Assets

Goodwill

As of December 31, 2022 and 2021, the Company had goodwill of \$1.0 million and \$4.2 million, respectively, related to the HelioHeat Acquisition. Refer to Note 6 — Acquisitions for additional information.

The Company performed its annual goodwill assessment as of October 1, 2022 and concluded it was more likely than not that the fair value of our reporting unit exceeds its carrying value. As December 31, 2022 and 2021, there were no impairment losses on goodwill.

The changes in the carrying amount of goodwill are as follows:

\$ in thousands

Balance as of December 31, 2020	\$	—
Addition from HelioHeat Acquisition		4,204
Balance as of December 31, 2021	\$	4,204
Remeasurement period adjustments ⁽¹⁾		(3,093)
Currency translation adjustments		(107)
Balance as of December 31, 2022	\$	1,004

(1) Refer to Note 6 — Acquisitions for additional information.

Intangible Assets

Intangible assets consisted of the following:

<i>\$ in thousands</i>	Useful Life in Years	December 31, 2022			December 31, 2021		
		Gross Carrying Amounts	Accumulated Amortization and Impairment	Intangible Assets, Net	Gross Carrying Amounts	Accumulated Amortization	Intangible Assets, Net
Acquired developed technology rights ⁽¹⁾	5	\$ 3,799	\$ (3,799)	\$ —	\$ —	\$ —	\$ —
Software licenses	3	259	(103)	156	174	(27)	147
Total		<u>\$ 4,058</u>	<u>\$ (3,902)</u>	<u>\$ 156</u>	<u>\$ 174</u>	<u>\$ (27)</u>	<u>\$ 147</u>

(1) Gross carrying amount for December 31, 2022 reflects currency translation adjustments of \$0.4 million.

Developed technology rights represent the fair value of HelioHeat's solar receiver technology acquired in the HelioHeat Acquisition. During the year ended December 31, 2022, management determined that the deployability of this technology has been delayed, resulting in a higher likelihood of this technology becoming obsolete during its useful life. As a result, we determined the carrying value of our acquired developed technology rights were not recoverable and recorded an impairment of \$3.1 million during the year ended December 31, 2022, included in impairment charges on our consolidated statement of operations. We did not record any impairments of intangible assets during the year ended December 31, 2021.

Amortization expense related to intangible assets was \$0.7 million and \$23 thousand for the years ended December 31, 2022 and 2021, respectively. As of December 31, 2022, intangible assets will be fully amortized through 2025.

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Note 10 — Accrued Expenses and Other Current Liabilities

Accrued expenses and other current liabilities consisted of the following:

<i>\$ in thousands</i>	December 31,	
	2022	2021
Payroll and other employee benefits	\$ 811	\$ 862
Professional fees	729	1,379
Research, development and project costs	1,313	1,895
Inventory in-transit	654	—
Operating lease liabilities, current portion	1,570	2,240
Other accrued expenses	525	598
Total accrued expenses and other current liabilities	<u>\$ 5,602</u>	<u>\$ 6,974</u>

Note 11 — Income Taxes

Provision (benefit) for income taxes consisted of the following:

<i>\$ in thousands</i>	Year Ended December 31,	
	2022	2021
Current:		
State	\$ 4	\$ 2
Deferred:		
Foreign	(1,020)	—
Provision (benefit) for income taxes	<u>\$ (1,016)</u>	<u>\$ 2</u>

The domestic and foreign components of pre-tax income were as follows:

<i>\$ in thousands</i>	Year Ended December 31,	
	2022	2021
Domestic	\$ (136,881)	\$ (136,753)
Foreign	(6,135)	(653)
Net loss before taxes	<u>\$ (143,016)</u>	<u>\$ (137,406)</u>

The effective tax rate of the Company differed from the federal statutory rate as follows:

<i>\$ in thousands</i>	Year Ended December 31,			
	2022		2021	
U.S. federal statutory income tax rate	\$ (30,033)	21.0%	\$ (28,855)	21.0%
State taxes, net of federal benefit	(9,125)	6.4%	(3,590)	2.6%
SAFE instruments remeasurement	—	—%	18,250	(13.3)%
Warrant liabilities remeasurement	(2,923)	2.0%	1,397	(1.0)%
Share-based compensation	4,401	(3.1)%	—	—%
Transaction costs	—	—%	(1,531)	1.1%
Valuation allowance	37,355	(26.1)%	14,531	(10.6)%
Other	(691)	0.5%	(200)	0.2%
Provision (benefit) for income taxes	<u>\$ (1,016)</u>	<u>0.7%</u>	<u>\$ 2</u>	<u>—%</u>

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Note 11 — Income Taxes (cont.)

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. A valuation allowance is established when necessary to reduce deferred tax assets to the amounts more likely than not to be realized. The increase in the valuation allowance during the year ended December 31, 2022 was due to net increases in our net deferred tax assets. No portion of our valuation allowance was released into our income tax benefit during the year ended December 31, 2022.

The components of the deferred tax assets and liabilities were as follows:

<i>\$ in thousands</i>	December 31,	
	2022	2021
Deferred tax assets:		
Net operating loss carryforwards	\$ 44,221	\$ 19,816
Share-based compensation	3,779	1,705
Operating lease liabilities	4,628	4,896
Capitalized research and development costs	5,716	—
Provision for contract losses	8,221	—
Other	1,468	1,619
Gross deferred tax assets	68,033	28,036
Less: Valuation allowance	(58,595)	(21,238)
Net deferred tax assets	9,438	6,798
Deferred tax liabilities:		
Depreciation and amortization	(1,537)	(887)
Operating lease right-of-use assets	(4,419)	(4,824)
Other	(3,482)	(1,087)
Total deferred tax liabilities	(9,438)	(6,798)
Net deferred income taxes	\$ —	\$ —

In assessing the realizability of deferred tax assets, we consider whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. Based upon the analysis of federal and state deferred tax balances, future tax projections and availability of taxable income in the carryback period, the Company recorded a valuation allowance against the federal and state deferred tax assets of \$58.6 million and \$21.2 million as of December 31, 2022 and 2021, respectively.

As of December 31, 2022, the Company has federal net operating loss carryforwards of \$146.8 million and state net operating loss carryforwards of \$143.8 million. The federal and state net operating losses will expire starting with 2033 and a portion of the federal net operating losses may be carried forward indefinitely. As of December 31, 2022, the Company has foreign net operating losses carryforwards of \$2.7 million, which may be carried forward indefinitely.

The 2019 through 2022 tax years remain open to examination by the Internal Revenue Service and the 2018 through 2022 tax years remain open to examination by the state tax authorities. In addition, the utilization of net loss carryforwards is subject to federal and state review for the periods in which those net losses were incurred. The Company is not under audit by any taxing jurisdictions at this time.

Utilization of the net operating loss and research tax credit carryforwards are subject to an annual limitation based on changes in ownership, as defined by Sections 382 and 383 of the Internal Revenue Code of 1986, as amended.

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Note 12 — Share-based Compensation

Legacy Heliogen's 2013 Stock Incentive Plan (the "2013 Plan") aimed to incentivize employees, directors and consultants who rendered services to the Company through the granting of stock awards, including stock options and RSU Awards.

The Board administered the 2013 Plan, approved the individuals to whom the stock awards were granted, determined the number of awards to be granted, and the term and vesting pattern of awards, and the exercise price of each stock option. An aggregate of 20.6 million shares were reserved for issuance under the 2013 Plan. Stock options granted pursuant to the terms of the 2013 Plan could not be granted with an exercise price of less than 100% of the fair market value of the underlying stock on the date of grant or 110% for incentive stock options issued to a 10% or more stockholder of the Company. The term of the stock options granted under the 2013 Plan could not be greater than 10 years or 5 years for incentive stock options granted to a 10% or more stockholder of the Company. Stock options granted generally vested 25% on the one-year anniversary of the date of grant with the remaining balance vesting equally on a monthly basis over the subsequent three years. In November 2021, the Company granted stock options to Bill Gross, our former Chief Executive Officer and RSU Awards to certain employees (the "November 2021 Awards"). The November 2021 Awards included a service-based requirement and a liquidity event requirement in order to vest. The liquidity event requirement was satisfied by the closing of the Merger on December 30, 2021.

As a result of the Merger, the Legacy Heliogen stock options and RSU Awards that were outstanding immediately prior to the Merger were converted by applying the Exchange Ratio (as described in Note 1 — Organization and Operations — Athena Business Combination). Except as specifically provided in the Business Combination Agreement, each Exchanged Stock Option and Exchanged RSU Award shall be subject to the same terms and conditions (including applicable vesting, expiration and forfeiture provisions) that applied to the corresponding Legacy Heliogen stock option or RSU Award immediately prior to the Merger. All stock award activity was retroactively restated to reflect the Exchanged Stock Options and Exchanged RSU Awards.

At the special meeting of Athena's stockholders held on December 28, 2021, the stockholders approved the Heliogen, Inc. 2021 Equity Incentive Plan (the "2021 Plan") and the Heliogen, Inc. 2021 Employee Stock Purchase Plan (the "2021 ESPP"). The 2021 Plan and the 2021 ESPP were previously approved, subject to shareholder approval, by Athena's board of directors on November 10, 2021, and on the Closing Date, the board of directors ratified the approval of the 2021 Plan and the 2021 ESPP, which became effective immediately upon the closing of the Merger on December 30, 2021.

The aggregate number of shares of common stock authorized for issuance under the 2021 Plan will not exceed 11.9 million shares as of December 31, 2022. In addition, such aggregate number of shares of common stock will automatically increase on January 1 of each year, beginning on January 1, 2022 and ending on (and including) January 31, 2031, in an amount equal to 4% of the total number of shares of the Company's common stock outstanding on December 31 of the preceding year. The aggregate number of shares of common stock that may be issued pursuant to the exercise of incentive stock options under the 2021 Plan is 35.7 million shares.

The 2021 Plan aims to incentivize employees, directors and consultants who render services to the Company through the granting of stock awards, including stock options, SARs, restricted stock awards, RSU Awards, performance awards and other stock-based awards.

The following table summarizes our share-based compensation expense on our consolidated statements of operations and comprehensive loss:

<i>\$ in thousands</i>	Year Ended December 31,	
	2022	2021
Cost of services revenue	\$ 1,627	\$ —
Selling, general and administrative	34,423	10,158
Research and development	6,811	1,222
Total share-based compensation expense	<u>\$ 42,861</u>	<u>\$ 11,380</u>

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Note 12 — Share-based Compensation (cont.)

Stock Options

We value our stock options using the Black-Scholes option pricing model, which was developed for use in estimating the fair value of stock options. Black-Scholes and other option valuation models require the input of highly subjective assumptions, including the fair value of our common stock, expected term, expected volatility, risk-free interest rate and expected dividends.

Prior to the consummation of the Business Combination, the Company's common stock was not publicly traded; therefore, the expected volatility of the stock options granted was estimated using the historical volatility of comparable publicly traded companies over the expected term of the stock options as a substitute for the historical volatility of the Company's common shares, which was not determinable without an active external or internal market.

Additionally, as a result of the Company's common stock not being publicly traded prior to the Business Combination, the estimated fair value of our common stock required significant judgment by management, including the valuation methodology used, weighting of potential scenarios and discount rate. Our common stock was measured at fair value for use in the Black-Scholes option pricing model using a probability-weighted method considering two potential outcomes: a merger with a special purpose acquisition company exit scenario and a stay private scenario. In addition, we applied a discount for lack of marketability, which was estimated using the Black-Scholes option pricing model. We use the simplified method to determine the expected term of the stock options.

During the year ended December 31, 2022, no stock option awards were granted. During the year ended December 31, 2021, the valuation assumptions, on a weighted-average basis, used in the Black-Scholes option pricing model to estimate the fair value of stock option awards granted were as follows:

Expected term (in years)	6.08
Expected volatility	40.7%
Risk-free interest rate	1.2%
Expected dividend yield	—

The following table summarizes the Company's stock option activity:

<i>\$ in thousands, except share and per share data</i>	Number of Shares	Weighted Average Exercise Price (\$)	Weighted Average Remaining Contractual Life (Years)	Aggregate Intrinsic Value (\$)
Outstanding balance as of December 31, 2020 . . .	30,752,163	\$ 0.13	8.65	
Granted	17,582,483	5.42		
Exercised	(5,741,547)	0.11		
Forfeited	(1,736,001)	0.21		
Expired	(28,940)	0.22		
Outstanding balance as of December 31, 2021 . . .	40,828,158	2.41	8.41	\$ 535,438
Exercised	(8,051,454)	0.14		
Forfeited	(1,532,556)	0.41		
Expired	(41,103)	0.82		
Outstanding balance as of December 31, 2022 . . .	31,203,045	\$ 3.10	7.62	\$ 10,725
Exercisable as of December 31, 2022	15,576,553	\$ 1.63	6.77	\$ 6,996

For the years ended December 31, 2022 and 2021, the Company recognized \$19.7 million and \$7.0 million, respectively, of share-based compensation expense related to stock options. For the year ended December 31, 2021, the weighted average grant date fair value of options granted was \$2.34 per share. The total intrinsic value of stock

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Notes to the Consolidated Financial Statements
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Note 12 — Share-based Compensation (cont.)

options exercised was \$29.0 million and \$15.6 million for the years ended December 31, 2022 and 2021, respectively. As of December 31, 2022, the unrecognized compensation cost related to stock options was \$16.5 million which is expected to be recognized over a weighted-average period of 2.9 years.

During the year ended December 31, 2022, in connection with the termination of certain former employees, we modified certain outstanding stock options to accelerate the vesting and exercise period. We measured the modification charge by calculating the incremental fair value of the modified award compared to the fair value of the original award immediately prior to the modification. The value of the modified award as of the modification date was estimated using the Black-Scholes option pricing model. During the year ended December 31, 2021, in connection with the termination of certain former employees, we modified their outstanding stock options to accelerate the vesting, and the exercise period of the stock options. Stock option modifications during the years ended December 31, 2022 and 2021 resulted in total incremental cost of \$0.1 million and \$2.2 million, respectively.

Restricted Stock Unit Awards

The fair value of RSU Awards is measured at the fair value of the Company's common stock on the grant date. For the year ended December 31, 2022, we estimated the fair value of RSU Awards using the closing stock price on the grant date or the modification date. For the year ended December 31, 2021, we estimated the fair value of RSU Awards using a discounted cash flow approach based on the expected value for the Company as a result of the Business Combination, which was considered likely as of the valuation date in November 2021. The discount rate was based on a venture capital rate of return and the Company's mezzanine stage of development. In addition, we applied a discount for lack of marketability, which was estimated using the Black-Scholes option pricing model.

During the year ended December 31, 2021, the key inputs used in the valuation of the RSU Awards granted were as follows:

Expected time to transaction (in years)	0.09
Discount rate	20.0%
Expected volatility	50.0%
Risk-free interest rate	0.1%
Expected dividend yield	—%

The following table summarizes the Company's RSU Award activity:

	Number of Shares	Weighted Average Grant Date Fair Value (\$)
Unvested as of December 31, 2020.	—	\$ —
Granted	4,440,067	9.00
Unvested as of December 31, 2021.	4,440,067	9.00
Granted	9,117,155	2.71
Vested	(1,084,398)	7.47
Forfeited	(1,021,048)	6.27
Unvested as of December 31, 2022.	<u>11,451,776</u>	\$ 4.37

For the years ended December 31, 2022 and 2021, the Company recognized \$22.9 million and \$4.3 million, respectively, of share-based compensation expense related to RSU Awards. The grant date fair value of RSU Awards vested was \$8.1 million for the year ended December 31, 2022. As of December 31, 2022, the unrecognized compensation cost related to unvested RSU Awards was \$31.4 million which is expected to be recognized over a weighted-average period of 3.3 years.

Heliogen, Inc.
Notes to the Consolidated Financial Statements
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Note 12 — Share-based Compensation (cont.)

During the year ended December 31, 2022, in connection with the termination of certain former employees, we modified certain RSU Awards to accelerate the vesting period. This modification resulted in a reduction of total incremental cost totaling \$0.7 million.

Employee Stock Purchase Plan

Under the 2021 ESPP, eligible employees may elect to purchase the Company's common stock at the end of each offering period, which will generally be six months, at a 15% discount to the market price of the Company's common stock at the beginning or the end of each offering period on May 15 and November 15 of each year, whichever is lower, using funds deducted from their payroll during the offering period. Eligible employees can authorize payroll deductions of up to 15% of their eligible earnings, subject to certain limitations.

As of December 31, 2022, the number of shares reserved for issuance under the 2021 ESPP is 4.8 million shares of common stock, plus the number of shares of common stock that are automatically added to the shares authorized for issuance under the purchase plan on January 1 of each year, beginning on January 1, 2022 and ending on (and including) January 1, 2031. The number of shares added each calendar year will equal the lesser of (i) 1% of the total number of shares of common stock outstanding on December 31 of the preceding calendar year, (ii) 9.5 million shares, or (iii) a lesser number of shares than described under (i) or (ii) as determined by the Board.

For the year ended December 31, 2022, the Company recognized \$0.1 million of share-based compensation expense related to the 2021 ESPP. As of December 31, 2022, no shares have been issued under the 2021 ESPP.

Note 13 — Loss per Share

Basic and diluted loss per share ("EPS") were as follows:

<i>\$ in thousands, except share and per share data</i>	Year Ended December 31,	
	2022	2021
Numerator:		
Net loss	\$ (142,000)	\$ (137,408)
Denominator:		
Weighted-average common shares outstanding	188,653,528	11,970,550
Weighted-average impact of warrants ⁽¹⁾	1,536,529	—
Denominator for basic EPS – weighted-average shares	190,190,057	11,970,550
Effect of dilutive securities	—	—
Denominator for diluted EPS – weighted-average shares	190,190,057	11,970,550
EPS – Basic and Diluted	\$ (0.75)	\$ (11.48)

(1) Warrants that have a \$0.01 exercise price are assumed to be exercised when vested because common shares issued for little consideration upon exercise are included in outstanding shares for the purposes of computing basic and diluted EPS.

The following securities were excluded from the calculation of loss per share as their impact would be anti-dilutive:

	Year Ended December 31,	
	2022	2021
Stock options	31,203,045	40,828,158
Shares issuable related to the ESPP	601,632	—
Unvested restricted stock units	11,451,776	4,440,067
Restricted shares issued upon the early exercise of unvested stock options	59,770	481,301
Unvested warrants	2,399,472	—
Vested warrants	8,566,656	8,566,666

Heliogen, Inc.
Notes to the Consolidated Financial Statements
For the Years Ended December 31, 2022 and 2021

Note 14 — Related Party Transactions

Bill Gross, the former Chief Executive Officer of our Company, also serves as the chairman of the board of directors of Idealab, a California Corporation (“Idealab”). Idealab, a minority owner of Heliogen’s outstanding voting stock through its wholly-owned subsidiary, Idealab Holdings, LLC, is a party to a lease with the Company and provides various services through service agreements which include accounting, human resources, legal, information technology, marketing, public relations and certain other operational support and executive advisory services. Since the closing of the Business Combination on December 30, 2021, as discussed in Note 1 — Organization and Operations — Athena Business Combination, the reliance on Idealab for these services has reduced significantly as the Company increased headcount related to administrative functions. All expenses or amounts paid to Idealab pursuant to these agreements are reported within SG&A expense on the consolidated statements of operations and comprehensive loss.

In May 2021, Heliogen sub-leased a portion of its office space in Pasadena, California to Idealab for a term of seven years. Refer to Note 15 — Leases for additional information of our Pasadena, California office space lease. The sub-lease has an initial annual base rent of \$0.2 million and contains a 3% per annum escalation clause. The sub-lease is subject to termination by either party upon six months prior written notice. Concurrently with the parties’ entering into the sub-lease agreement, Idealab and Heliogen also entered into certain property management and shared facilities staffing agreements, which provide that Heliogen pays Idealab \$3 thousand per month for building management services and \$13 thousand per month for shared facilities staff and services (with proportional reimbursement of salaries). Such agreements are subject to termination right by either party with 90 days prior written notice.

The amounts charged to us or reimbursed by us under the agreements noted above for the years ended December 31, 2022 and 2021 were \$0.5 million and \$1.3 million, respectively. The Company recognized rental revenue of \$0.1 million and \$0.1 million from Idealab within other income, net on our consolidated statements of operations and comprehensive loss for years ending December 31, 2022 and 2021, respectively.

Note 15 — Leases

The Company has operating leases, primarily for real estate. There are no material residual value guarantees.

Pasadena, California Lease. On May 23, 2021, we executed a seven-year lease for office space in Pasadena, California (the “Pasadena Office Lease”). The Pasadena Office Lease includes a termination option under which the Company can terminate the lease for any reason and at no cost, with proper notice, at any time effective on or after May 31, 2026. A portion of the office space subject to the Pasadena Office Lease is being subleased to Idealab. Refer to Note 14 — Related Party Transactions for additional information on the Idealab sublease.

Long Beach, California Lease. Effective July 27, 2021, we executed a five-year lease for manufacturing space in Long Beach, California (the “Long Beach Lease”). The Long Beach Lease includes an option for the Company to renew for an additional five years, which we anticipate utilizing. As security for the Company’s faithful performance of its obligations under the Long Beach Lease, a commercial bank issued an unconditional and irrevocable \$1.5 million standby letter of credit payable to the lessor, which may be reduced after three years to \$1.0 million if certain conditions are met. The standby letter of credit is valid until cancelled or matured. The terms of the letter of credit are automatically extended for a term of one year at a time unless 60 days prior to the then current expiration date, the commercial bank sends the Company a notice that the letter of credit will not be extended. The Company intends to renew the standby letter of credit through November 30, 2026, after which it is no longer required under the agreement. No amounts have been drawn under the standby letter of credit.

Houston, Texas Lease. On January 1, 2022, we executed a 26 month lease for office space in Houston, Texas (the “Houston Office Lease”). The Houston Office Lease includes an option for the Company to renew for an additional two years.

Heliogen, Inc.
Notes to the Consolidated Financial Statements
For the Years Ended December 31, 2022 and 2021

Note 15 — Leases (cont.)

The following table provides information on the amounts of our right-of-use assets and liabilities included on our consolidated balances sheets:

<i>\$ in thousands</i>	Financial Statement Line	December 31,	
		2022	2021
Operating lease right-of-use assets . . .	Operating lease right-of-use assets	\$ 14,772	\$ 16,093
Operating lease liabilities, current . . .	Accrued expenses and other current liabilities	1,570	2,240
Operating lease liabilities, non-current	Operating lease liabilities, net of current portion	13,921	14,183

The following table summarizes the components of lease costs:

<i>\$ in thousands</i>	Year Ended December 31,	
	2022	2021
Operating lease cost	\$ 2,707	\$ 1,294
Sublease income	(124)	(85)
Total lease cost	<u>\$ 2,583</u>	<u>\$ 1,209</u>

The Company has variable and other related lease costs which were not considered material for the years ended December 31, 2022 and 2021.

The weighted-average remaining lease terms and discount rates for the Company's operating leases were as follows:

	December 31,	
	2022	2021
Weighted-average remaining lease term (years)	7.8	8.7
Weighted-average discount rate	6.9%	6.9%

As of December 31, 2022, the maturities of our future undiscounted cash flows associated with our operating lease liabilities were as follows:

<i>\$ in thousands</i>	
2023	\$ 2,587
2024	2,567
2025	2,624
2026	2,630
2027	2,652
Thereafter	7,157
Total future lease payments	<u>\$ 20,217</u>
Less: Imputed interest	<u>(4,726)</u>
Present value of future lease payments	<u>\$ 15,491</u>

Note 16 — Commitments and Contingencies

We are involved in various claims and lawsuits arising in the normal course of business, including proceedings involving tort and other general liability claims and other miscellaneous claims. We recognize a liability when we believe the loss is probable and reasonably estimable. We currently believe that the ultimate outcome of such lawsuits and proceedings will not, individually or in the aggregate, have a material effect on our consolidated financial statements as of and for the year ended December 31, 2022.

Heliogen, Inc.
Notes to the Consolidated Financial Statements
For the Years Ended December 31, 2022 and 2021

Note 16 — Commitments and Contingencies (cont.)

On August 30, 2021, the Company's predecessor, Athena, received a litigation demand letter (the "Class Vote Demand") on behalf of Athena's stockholder FWD LKNG GDD Irrevocable Trust. The Demand alleged that Athena violated Section 242(b)(2) of the Delaware General Corporation Law by not requiring separate class votes for holders of the Athena Class A and Class B common stock in connection with certain aspects of the business combination between Athena and Heliogen. According to the Class Vote Demand, a class vote was required under Section 242(b)(2) because consideration to the stockholders of Heliogen was to be paid in newly issued common stock, following elimination of the Class B common stock. The Company concluded that such separate class vote was advisable to prevent disruption to the proposed transaction with Heliogen, and to avoid the delay and expense of potential litigation and amended its Form S-4 Registration Statement to reflect that change. On January 20, 2022, the stockholders' counsel asserted entitlement to an award of attorneys' fees to reflect the benefit it purportedly obtained for all Athena stockholders. This matter was resolved in March 2022 with no material impact to our financial condition or results of operations.

Note 17 — Accumulated Other Comprehensive Loss

The components of accumulated other comprehensive loss ("AOCL") were as follows:

<i>\$ in thousands</i>	Changes in fair value of investment securities	Foreign currency translation adjustments	AOCL
Balance as of December 31, 2020.	\$ —	\$ —	\$ —
Other comprehensive income (loss) adjustments before reclassifications.	(17)	13	(4)
Net other comprehensive income (loss)	(17)	13	(4)
Balance as of December 31, 2021.	(17)	13	(4)
Other comprehensive loss adjustments before reclassifications. .	(449)	(297)	(746)
Amounts reclassified from AOCL	157	—	157
Net other comprehensive loss	(292)	(297)	(589)
Balance as of December 31, 2022.	\$ (309)	\$ (284)	\$ (593)

There were no tax impacts related to the Company's other comprehensive loss items as of December 31, 2022 and December 31, 2021.

Reclassifications out of AOCL by component were as follows:

<i>\$ in thousands</i>	Year Ended December 31,		Affected line item on the Consolidated Statements of Operations
	2022	2021	
Changes in fair value on investment securities:			
Reclassification of realized losses	\$ 157	\$ —	Other income (expense), net
Net changes in fair value on investment securities	157	—	

Heliogen, Inc.
Notes to the Consolidated Financial Statements
For the Years Ended December 31, 2022 and 2021

Note 18 — Fair Value of Financial Instruments

The Company's assets and liabilities measured at fair value on a recurring basis are summarized in the following table by fair value measurement level:

\$ in thousands	Level	December 31,	
		2022	2021
Assets:			
Investments, available-for-sale	1	\$ 97,504	\$ 32,332
Liabilities:			
Public Warrants ⁽¹⁾	1	\$ 625	\$ 14,167
Private Warrants ⁽¹⁾	2	17	396
Contingent consideration ⁽²⁾	3	353	2,009

(1) Included in warrant liabilities on the consolidated balance sheets.

(2) Included in other long-term liabilities on the consolidated balance sheets.

The following table summarizes the activities of our Level 3 fair value measurements:

<i>(\$ in thousands)</i>	Contingent Consideration	SAFE Instruments	Legacy Heliogen Preferred Stock Warrants
Balance as of December 31, 2020	\$ —	\$ —	\$ 46
Issuances ⁽¹⁾	—	83,411	—
Change in fair value	—	86,907	2,965
Acquisition	2,009	—	—
Conversions ⁽²⁾	—	(170,318)	(3,011)
Balance as of December 31, 2021	\$ 2,009	\$ —	\$ —
Change in fair value ⁽³⁾	(1,656)	—	—
Balance as of December 31, 2022	\$ 353	\$ —	\$ —

(1) Net of issuance costs.

(2) On December 30, 2021, immediately prior to the Business Combination, the SAFE instruments and Legacy Heliogen preferred stock warrants were converted into common stock.

(3) The changes in the fair value of the contingent consideration are reported in other income (expense), net on our consolidated statements of operations and comprehensive.

Private Warrants. The fair value of the Private Warrants approximates the fair value of the Public Warrants due to the existence of similar redemption provisions. As a result, the Company has determined that the fair value of the Private Warrants at a specific date would be similar to that of the Public Warrants, and thus is also determined by using the closing price of the Public Warrants, which was \$0.08 as of December 31, 2022.

Contingent Consideration. The contingent consideration was measured at fair value using a probability-weighted cash-flow method. The key inputs used in the valuation for the contingent consideration as of December 31, 2022 included the timing and probability of payment.

SAFE Instruments and Legacy Heliogen preferred stock warrants. The SAFE instruments and Legacy Heliogen preferred stock warrants were initially measured at fair value using a probability-weighted method considering two potential outcomes: a merger with a special purpose acquisition company exit scenario and a stay private scenario. On December 31, 2021, immediately prior to their conversion, the SAFE instruments and Legacy Heliogen preferred stock warrants were remeasured at fair value utilizing the income approach based on the Merger occurring on the valuation date. In addition, we applied a discount for lack of marketability, which was estimated using the Black-Scholes option pricing model.

Heliogen, Inc.
Notes to the Consolidated Financial Statements
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Note 18 — Fair Value of Financial Instruments (cont.)

The table below summarizes key inputs used in the valuation for the SAFE instruments and Legacy Heliogen preferred stock warrants at their time of conversion on December 30, 2021:

Expected volatility	50.0%
Risk-free interest rate	0.1%
Dividend yield.	—

Note 19 — Subsequent Events

Executive Officer Changes

On February 5, 2023, the Board terminated Bill Gross from his position as Chief Executive Officer of the Company, effective immediately. Mr. Gross resigned as a member of the Board as required under his employment agreement with the Company. Mr. Gross did not serve on any committees of the Board.

On February 5, 2023, the Board appointed Christiana Obiaya, previously our Chief Financial Officer, as Chief Executive Officer. The Board also appointed Ms. Obiaya as a director of the Company to fill the vacancy created by Mr. Gross's departure. On February 5, 2023, the Board also appointed Kelly Rosser, our Chief Accounting Officer, as Interim Chief Financial Officer.

The change in the executive team had no impact on our consolidated financial statements for the year ended December 31, 2022. The change in the executive team could potentially result in a reversal of previously recorded share-based compensation expense of up to \$13 million related to forfeited stock options in 2023.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosures

None.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and Interim Chief Financial Officer, evaluated, as of the end of the period covered by this Annual Report on Form 10-K, the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act). Based on that evaluation, and as a result of the material weaknesses described below, our Chief Executive Officer and Interim Chief Financial Officer concluded that, as of December 31, 2022, our disclosure controls and procedures were not effective.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Exchange Act Rules 13a-15(f) and 15d-15(f). Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP.

Management assessed the effectiveness of our internal control over financial reporting as of December 31, 2022 based on the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in Internal Control — Integrated Framework (2013). Based on our assessment, management concluded that, as of December 31, 2022, our internal control over financial reporting was not effective due to the material weaknesses identified in connection with the filing of the Annual Report on Form 10-K/A for the year ended December 31, 2021, as described below, which have not yet been remediated.

A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim financial statements will not be prevented or detected on a timely basis.

The material weaknesses are as follows:

- We did not design or maintain an effective control environment specific to the areas of financial reporting and our close process, including effective review of technical accounting matters (e.g., revenue recognition).
- We did not design or maintain an effective control environment to ensure proper segregation of duties, including separate review and approval of journal entries and access within our accounting system.

These material weaknesses resulted in the misstatement of our revenue, costs of revenue and provision for contract losses and in the restatement of the Company's financial statements for the period ended December 31, 2021. Additionally, the material weaknesses described above could result in a misstatement of account balances or disclosures that would result in a material misstatement of the annual or interim consolidated financial statements that would not be prevented or detected.

This Annual Report on Form 10-K does not include, and we are not required to include, an attestation report of our independent registered public accounting firm on the effectiveness of our internal control over financial reporting pursuant to Section 404(b) of the Sarbanes-Oxley Act of 2002 due to an exemption for "emerging growth company" as defined in the JOBS Act.

Remediation Plan

We are currently taking actions to remediate the deficiencies in our internal control over financial reporting and are implementing additional processes and controls designed to address the underlying root causes associated with the above-mentioned deficiencies. We are committed to remediating the deficiencies described above and have taken the following steps to address these deficiencies and improve our internal control over financial reporting:

- Throughout 2022, we added additional accounting resources, including a Chief Accounting Officer and additional full-time personnel. During the fourth quarter of 2022, these individuals continued to strengthen the review process, improve segregation of duties, provide additional oversight and support of the financial accounting system and assist in execution of designed internal controls.
- We engaged external experts to complement internal resources and to provide support related to more complex applications of GAAP, tax and internal controls. We will continue to utilize outside resources, as necessary, to supplement our internal team.
- We continued the implementation of incremental components of our company-wide enterprise resource planning system. This includes system configuration parameters that require segregation of journal entry review and approval. In 2023, we will continue to implement additional components of the enterprise resource planning system and other applications.
- We designed and implemented recurring accounting processes providing a more timely and detailed review of complex and non-routine areas.

These actions are designed to enable us to broaden the scope and quality of our internal review of underlying information related to financial reporting and to formalize and enhance our internal controls over financial reporting. We are committed to addressing the underlying causes of the material weaknesses timely. While we are undertaking efforts to remediate these material weaknesses, the material weaknesses will not be considered remediated until our remediation plan has been fully implemented, the applicable controls operate for a sufficient period of time, and we have concluded, through testing, that the newly implemented and enhanced controls are operating effectively.

Although the Company has made significant progress in remediating the aforementioned deficiencies as outlined above, the material weaknesses continued to exist as of December 31, 2022 as measures taken to address the material weaknesses had not been operating for a sufficient period of time to fully demonstrate they were operating effectively.

Changes in Internal Control over Financial Reporting

The Company had a change in the executive team and on February 5, 2023, our Chief Accounting Officer was appointed to Interim Chief Financial Officer and an Interim Controller was appointed. This change in personnel impacted the individuals responsible for the execution of controls related to the preparation of the financial statements for the period ended December 31, 2022. Other than in connection with the change in the executive team and executing upon the implementation of the remediation measures described above and the associated changes to our internal control over financial reporting, there were no changes in our internal control over financial reporting that occurred during the quarter ended December 31, 2022 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Inherent Limitations on Effectiveness of Controls

Management recognizes that a control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints and that management is required to apply its judgment in evaluating the benefits of possible controls and procedures relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud or error, if any, have been detected. These inherent limitations include the realities that judgments in decision making can be faulty, and that breakdowns can occur because of a simple error or mistake. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people, or by management override of the controls. The design of any system of controls also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential

future conditions; over time, controls may become inadequate because of changes in conditions, or the degree of compliance with policies or procedures may deteriorate. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

Item 9B. Other Information

Christiana Obiaya. Ms. Obiaya entered into an employment agreement with Heliogen on March 29, 2023. Pursuant to the terms of her employment agreement, Ms. Obiaya is entitled to an annual base salary of \$600,000, effective as of February 5, 2023. The employment agreement also provides for a discretionary annual bonus of up to 100% of Ms. Obiaya's then-current annual base salary, payable based upon the achievement of certain goals as determined by the Board and outlined in the Company's annual executive bonus plan. Ms. Obiaya is also entitled to a housing allowance for temporary housing expenses in the Los Angeles, California area, until the 12-month anniversary following the effective date of her employment agreement. Ms. Obiaya is also eligible to participate in the employee benefit plans generally available to our employees and maintained by Heliogen.

In addition, the employment agreement provides that Ms. Obiaya will receive an RSU award under the 2021 Plan covering 1,500,000 shares of Heliogen's common stock for the fiscal year 2023 annual equity grant. The RSU award will vest as to 6.25% on each quarterly vesting date following the date of grant, subject to Ms. Obiaya's continued service through each vesting date.

Upon a "qualifying termination" (defined in the employment agreement as a termination without "cause" or resignation for "good reason"), under the employment agreement, and subject to her execution of a release of claims, Ms. Obiaya will continue to receive, as severance, (i) 100% of her base salary, paid over the 12 months following such termination of employment in accordance with Heliogen's regular payroll practices, (ii) reimbursement for her COBRA premiums for up to 12 months following such termination of employment, and (iii) in the event the Board determines that the applicable annual bonus milestones have met, a pro rata bonus award based on the date of the qualifying termination.

Upon a qualifying termination that occurs within 12 months following the change in control (as defined in the 2021 Plan), Ms. Obiaya is entitled to receive the base salary severance, COBRA reimbursement, an amount equal to her target bonus for the year in which the qualifying termination occurs (in lieu of the pro rata bonus payment), and any equity award granted to Ms. Obiaya under the 2013 Plan or the 2021 Plan that is subject to time-based vesting will accelerate and become fully vested and exercisable, all subject to execution of the release of claims.

Thomas Doyle. Mr. Doyle entered into an employment agreement with Heliogen on March 29, 2023. Pursuant to the terms of his employment agreement, Mr. Doyle is entitled to an annual base salary of \$400,000. The employment agreement also provides for a discretionary annual bonus of up to 50% of Mr. Doyle's then-current annual base salary, payable based upon the achievement of certain goals as determined by the Board and outlined in the Company's annual executive bonus plan. Mr. Doyle is also eligible to participate in the employee benefit plans generally available to our employees and maintained by Heliogen.

Upon a "qualifying termination" (defined in the employment agreement as a termination without "cause" or resignation for "good reason"), under the employment agreement, and subject to his execution of a release of claims, Mr. Doyle will continue to receive, as severance, (i) 75% of his base salary, paid over the 9 months following such termination of employment in accordance with Heliogen's regular payroll practices, (ii) reimbursement for his COBRA premiums for up to 9 months following such termination of employment, and (iii) in the event the Board determines that the applicable annual bonus milestones have met, a pro rata bonus award based on the date of the qualifying termination.

Upon a qualifying termination that occurs within 12 months following the change in control (as defined in the 2021 Plan), Mr. Doyle is entitled to receive the base salary severance, COBRA reimbursement, an amount equal to his target bonus for the year in which the qualifying termination occurs (in lieu of the pro rata bonus payment), and any equity award granted to Mr. Doyle under the 2013 Plan or the 2021 Plan that is subject to time-based vesting will accelerate and become fully vested and exercisable, all subject to execution of the release of claims.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

Part III

Item 10. Directors, Executive Officers and Corporate Governance

Executive Officers and Directors

The following table sets forth the name, age and position of each of the directors and executive officers of Heliogen as of March 23, 2023:

Name	Age	Position
Executive Officers		
Christiana Obiaya ⁽¹⁾⁽⁵⁾	40	Chief Executive Officer; Director
Kelly Rosser ⁽¹⁾	47	Interim Chief Financial Officer
Thomas Doyle	61	Chief Commercial Officer
Andrew Lambert	51	Chief Production & Supply Chain Officer
Paul Gauche	51	Executive Vice President, Engineering
Non-Employee Directors		
Julie Kane ⁽⁴⁾	64	Chairperson of the Board
Stacey Abrams ⁽⁴⁾⁽⁵⁾	48	Director
Barbara Burger ⁽³⁾⁽⁵⁾⁽⁶⁾	62	Director
Robert Kavner ⁽²⁾⁽⁴⁾	79	Director
Roger Lazarus ⁽²⁾⁽³⁾⁽⁷⁾	64	Director
Phyllis W. Newhouse ⁽²⁾⁽³⁾	59	Director
Suntharesan Padmanathan ⁽⁵⁾	64	Director

- (1) On February 5, 2023, the Board appointed Christiana Obiaya, previously our Chief Financial Officer, as Chief Executive Officer. The Board also appointed Ms. Obiaya as a director of Heliogen and appointed Kelly Rosser, our Chief Accounting Officer, as Interim Chief Financial Officer.
- (2) Member of Heliogen's audit committee.
- (3) Member of Heliogen's compensation and human capital committee.
- (4) Member of Heliogen's nominating and corporate governance committee.
- (5) Member of Heliogen's corporate strategy committee.
- (6) On September 12, 2022, Barbara Burger was appointed to serve as a director of Heliogen.
- (7) On March 2, 2023, Roger Lazarus was appointed to serve as a director of Heliogen.

Executive Officers

Christiana Obiaya. On February 5, 2023, Ms. Obiaya was appointed to serve as Heliogen's Chief Executive Officer and a member of the Board, having previously served as the Chief Financial Officer since March 2021. Prior to joining Heliogen, Ms. Obiaya held roles as Chief Financial Officer and head of strategy for Bechtel Energy ("Bechtel") from 2017 to 2021 as well as various other leadership roles spanning finance, strategy, project development and investment, and project execution from 2010 to 2017. Prior to Bechtel, Ms. Obiaya worked on renewable energy projects in Kenya and India from 2008 to 2009. Ms. Obiaya began her career as an engineer, designing products and scaling up manufacturing processes at a multinational consumer goods company from 2004 to 2008. Ms. Obiaya also serves as a director of Tetra Tech, Inc. (NASDAQ: TTEK) since January 2023 and is a member of the audit and strategic planning and enterprise risk committees. Ms. Obiaya graduated from MIT with a B.S. in Chemical Engineering and an MBA from MIT Sloan School of Management. During her tenure, we believe Ms. Obiaya is qualified to serve on our Board because of her experience in leadership roles and perspective in corporate strategy.

Kelly Rosser. On February 5, 2023, Ms. Rosser was appointed to serve as Heliogen's Interim Chief Financial Officer, having served as Heliogen's Chief Accounting Officer since August 2022. Prior to joining Heliogen, Ms. Rosser served as Corporate Controller at Zenith Energy Management, LLC ("Zenith") from April 2019 to August 2022. Previously, Ms. Rosser was an independent consultant from September 2016 to April 2018 and served as Vice President, Chief Accounting Officer and Controller at Par Pacific Holdings, Inc. (NYSE: PARR) from May 2014 to September 2016. Ms. Rosser is a senior level finance executive and a Certified Public Accountant in the state of Texas with extensive exposure to the energy industry, including power generation, midstream, exploration and production, and refining companies. Ms. Rosser has an M.S. in Accounting and a B.B.A from Texas A&M University.

Thomas Doyle. Mr. Doyle has been Heliogen's Chief Commercial Officer since October 2021 and was Co-Head of Project Development from January 2021 to October 2021. Prior to joining Heliogen, Mr. Doyle served as an Executive Advisor to Morgan Stanley Energy Partners ("MSEP") from January 2020 to January 2021 and as Chief Executive Officer of Reterro, Inc. from June 2016 to December 2019. Mr. Doyle also held roles as Chief Executive Officer of NRG Renew from October 2009 through January 2016 and Executive Vice President of Commercial Execution at Brightsource Energy. Mr. Doyle also serves on the board of directors of one of MSEP's portfolio companies. Mr. Doyle holds an MBA and a B.S. in Mechanical Engineering from the University of Arizona.

Andrew Lambert. Mr. Lambert has been Heliogen's Chief Production and Supply Chain Officer since February 2022 and was previously Senior Vice President, Production and Supply Chain from April 2021 to January 2022. Prior to joining Heliogen, Mr. Lambert was Vice President, Quality Assurance and Build Reliability (October 2018 to April 2021) and Vice President of Production (March 2012 to October 2018) at SpaceX. Previously, Mr. Lambert served as Executive Vice President of Operations for Everest Limited Home Improvements from February 2011 to March 2012. Mr. Lambert also served in a number of roles at BMW (UK) Manufacturing Ltd. From August 2005 to January 2011, most recently as Manufacturing Director (Vice President) - MINI Assembly/Logistics. Mr. Lambert served nine years military service with the Royal Air Force, including attending the military college, RAF Halton, for three years, to study Aerospace Engineering, graduating in 1993 with a bachelors equivalent.

Paul Gauche. Paul Gauche, PhD has been Heliogen's Executive Vice President, Engineering since August 2022 and was previously Head of Engineering from December 2021 to July 2022 and Vice President, Heliogen Labs and Chief of Staff to the Chief Technology Officer from October 2020 to November 2021. Prior to joining Heliogen, Dr. Gauche was Manager of the DOE National Solar Thermal Test Facility and the associated CSP program at Sandia National Labs from 2017 through 2020. Dr. Gauche founded and directed the Solar Thermal Energy Research Group at Stellenbosch University where he obtained his PhD in Mechanical Engineering. Prior to that, Dr. Gauche worked in the semiconductor industry from 1999 to 2009.

Non-Employee Directors

Julie Kane. Ms. Kane has served as a member of our Board since December 2021 and as the chairperson of the Board since March 2023. Ms. Kane has also served as a director of SIGA Technologies, Inc. ("SIGA") since May 2019. She currently chairs SIGA's Compensation Committee and formerly chaired SIGA's Nominations and Corporate Governance Committee. She is also currently an independent consultant in the aviation industry. Ms. Kane is the former Senior Vice President, Chief Ethics and Compliance Officer, and Deputy General Counsel of PG&E Corporation (2015-2020). Prior to joining PG&E Corporation in 2015, Ms. Kane worked at Avon Products, Incorporated as Vice President and General Counsel of Avon North America and Corporate Legal Functions. Prior to joining Avon in 2013, Ms. Kane held a number of senior roles with Novartis Corporation and its affiliates over a 25-year period. Ms. Kane is a member of the board of directors of the Ethics Resource Center in Washington, D.C., and formerly served on the Board of Governors of the Commonwealth Club of California. Ms. Kane holds a B.A. in political science from Williams College and J.D. from the University of San Francisco School of Law. Ms. Kane is a member of the California state bar. Ms. Kane's decades of experience spanning several industries, including pharmaceuticals, chemicals and agribusiness, beauty, direct-selling and dual-fuel utilities, along with her experience in environmental, social and governance matters, provides our Board with valuable insight into many aspects of our business. We believe Ms. Kane is qualified to serve on our Board because her decades of experience spanning several industries, including pharmaceuticals, chemicals and agribusiness, beauty, direct-selling and dual-fuel utilities, along with her experience in environmental, social and governance matters, provides our Board with valuable insight into many aspects of our business.

Stacey Abrams. Ms. Abrams has served as a member of our Board since December 2021. Ms. Abrams has served as the Chief Executive Officer of Sage Works Production, Inc. since 2020. She co-founded Insomnia Consulting in 2006 to specialize in development, investment and consulting for complex infrastructure projects, including transportation, waste-by-rail transfer, energy, facilities and water. In addition, Ms. Abrams founded and served as executive director of the Southern Economic Advancement Project from March 2019 until December 2021. From 2007 to 2017, Ms. Abrams served as a State Representative of the Georgia General Assembly and as the minority leader from 2011 to 2017. She has been the chief executive officer of Sage Works, LLC since September 2002. She previously served as the chief executive officer of the Third Sector Development from August 1998 until March 2019. Ms. Abrams previously also co-founded and served as Senior Vice President of NOWaccount Network Corporation from 2010 to 2016. Ms. Abrams currently serves on the boards of directors of a number of organizations, including ShoulderUp Technology Acquisition

Corp., the National Democratic Institute for International Affairs and the Marguerite Casey Foundation. Ms. Abrams has a strong record on climate change, environmental justice and climate action. She has served on the advisory boards of World War Zero (founded by former Secretary of State John Kerry) and Climate Power 2020 (founded by John Podesta). Ms. Abrams received a B.A. in Interdisciplinary Studies from Spelman College, a Master of Public Affairs from the University of Texas Lyndon B. Johnson School of Public Affairs, and a J.D. from Yale University. We believe Ms. Abrams is qualified to serve on our Board because of her expertise in environmental justice and climate action and her leadership experience in both government and the private sector.

Barbara Burger. Barbara Burger, PhD has served as a member of our Board since September 2022. Dr. Burger was most recently the Vice President, Innovation at Chevron and President of Chevron Technology Ventures from June 2013 to April 2022. Previously, Dr. Burger held a number of management positions at Chevron across International Marketing, Chemicals, Technology Marketing, Lubricants, Ventures, and Innovation. Dr. Burger has also held a wide range of civic and industrial leadership governing board and advisory council positions including the MIT Energy Initiative, Houston Exponential, Houston Symphony Society, Oil and Gas Climate Initiative Climate Investment LLP, the National Renewable Energy Laboratory, Greentown Houston, Activate, and Rice University's Corporate Innovation Practice. Dr. Burger has spent most of her career focused on the big challenges in energy transition, equity, and access to education. She has been recently named to Emerald Technology Ventures Advisory Council and the Greentown Labs Board of Directors. Dr. Burger is an active alumnus of the University of Rochester where she serves on the Board of Trustees and chairs the River Campus Libraries National Council. She also established the Barbara J. Burger Endowed Scholarship in the Sciences and founded the Barbara J. Burger iZone, where students generate, refine, and communicate ideas for social, cultural, community and economic impact. At the California Institute of Technology, Dr. Burger supports graduate women in chemistry and serves on the Strategic Advisory Board for the Resnick Sustainability Institute. Dr. Burger holds a bachelor's degree in chemistry from the University of Rochester, a PhD degree in chemistry from the California Institute of Technology and an MBA degree in finance, with academic honors, from the University of California, Berkeley. We believe Dr. Burger is qualified to serve on our Board because of her experience as a corporate executive in addition to her demonstration of leadership in business, innovation, venture investment, and the energy transition.

Robert Kavner. Mr. Kavner has served as a member of our Board since December 2021. Since 1995, Mr. Kavner has been an independent venture capital investor focusing on investments in technology companies. From January 1996 through December 1998, Mr. Kavner served as President and Chief Executive Officer of On Command Corporation, a provider of on-demand video systems for the hospitality industry. From 1984 to 1995, Mr. Kavner held several senior management positions at AT&T, including senior vice president, Chief Financial Officer and Chief Executive Officer of Multimedia Products and Services Group and chairman of AT&T Venture Capital Group. Mr. Kavner also served as a member of AT&T's executive committee. Prior to joining AT&T, Mr. Kavner was a partner of PricewaterhouseCoopers. Mr. Kavner currently serves on the boards of directors of a number of privately-held companies, including several early stage companies. He has previously served on the board of directors of a number of public companies, including serving as chairman of Earthlink Networks, CitySearch, Overture, and Pandora Media, and as a member of the boards of Sun Microsystems, Philips Telecommunications, Fleet Bank of Boston, Tandem Computers, and Duracell International. Mr. Kavner received a B.B.A. from Adelphi University and attended the Advanced Management Program at the Amos Tuck School at Dartmouth College. We believe Mr. Kavner is qualified to serve on our Board because of his leadership experience, including his previous service on the boards of directors of a number of public companies, his experience working with a number of variety of technology companies and his expertise in finance and accounting.

Roger Lazarus. Mr. Lazarus was appointed to serve as a member of our Board on March 2, 2023. Mr. Lazarus is a recognized global business executive, with a proven track record of Board and C-suite experience and business unit leadership roles for a range of emerging and established businesses, as well as multi-country transaction advisory expertise. He is currently the Chief Financial Officer of Chain Bridge I, a NASDAQ listed special purpose acquisition company, and is also a venture partner to Marcy Venture Partners and its portfolio companies. Mr. Lazarus joined Ernst & Young LLP in Boston as a partner in 1997 advising on acquisitions and investments for corporate and private equity clients. During his 23-year career with Ernst & Young, he served in a variety of roles, including as the Chief Operating Officer ("COO") and Board member of Ernst & Young's Latin America North region, where he managed internal operations and oversaw financial and operating reporting for 13 countries, as a managing partner and COO of Ernst & Young Colombia, and as the managing partner of Ernst & Young's West Region Transactions service-line. Mr. Lazarus is a director and the chair of the Audit Committee and Compensation Committee of Latin America Logistic Properties S.R.L, a 3PL real estate developer in Costa Rica, Colombia and Peru. He is chair of the Audit

Committee of the Goldman Environmental Foundation, the sponsor of the annual Goldman Environmental Prize. Mr. Lazarus is a Chartered Accountant (ICAEW), holds a BA with honors in Economics from the University of York, England and completed the international certification of the Institute of Directors (London, England) in 2020. We believe Mr. Lazarus is qualified to serve on our Board because of his valuable financial and operational expertise across both developed and emerging markets.

Phyllis Newhouse. Ms. Newhouse has served as a member of our Board since December 2021. Ms. Newhouse is a serial entrepreneur and investor, retired military senior officer and mentor. Ms. Newhouse is the founder of XtremeSolutions, Inc., an Atlanta-based cybersecurity firm that offers service in both the federal and private sectors (“XSI”). Since founding XSI in June 2002, Ms. Newhouse has served as XSI’s Chief Executive Officer and has led the company in offering a wide range of IT expertise and provides industry leading, state-of-the-art information technology and cybersecurity services and solutions. Ms. Newhouse is also the founder and Chief Executive Officer of ShoulderUp Technology Acquisition Corp., a blank check company which completed its initial public offering in November 2021. Prior to founding XSI, Ms. Newhouse served as a member of the United States Army for more than 22 years, where she focused on national security issues and helped to establish the Cyber Espionage Task Force. Ms. Newhouse currently serves on the board of directors of Sabre GBL Inc. (NASDAQ: SABR), as well as for the Technology Association of Georgia and Business Executives for National Security. Ms. Newhouse is also the founder of ShoulderUp, a nonprofit organization dedicated to connecting and supporting women on their entrepreneurial journeys. Additionally, Ms. Newhouse serves on the executive board and is a member of the Women President Organization and serves on the board of Girls Inc., a nonprofit organization that encourages all girls to be “Strong, Smart, and Bold.” Ms. Newhouse is known as a pioneer in cybersecurity. She has received numerous awards as an industry thought leader. In 2017, Ms. Newhouse became the first woman to win an Ernst & Young (“EY”) Entrepreneur of The Year award in the technology category. She was admitted into the 2013 class of EY Entrepreneurial Winning Women, and in 2019 was inducted into the Enterprising Women hall of fame. Ms. Newhouse received her B.A. in Liberal Arts Science from Saint Leo College. We believe Ms. Newhouse is qualified to serve on our Board because of her significant knowledge of the cybersecurity and IT industries and experience as a director of publicly and privately-held companies.

Suntharesan Padmanathan. Mr. Padmanathan has served as a member of our Board since December 2021. Mr. Padmanathan is a seasoned engineering and energy expert with over 40 years of industry experience. Since January 2022 he has been the Vice Chairman and Chief Executive Officer of ACWA Power, having, in his prior roles as Head of Business Development from 2005 to 2007 and then as President & Chief Executive Officer from 2007 to January 2022, spearheaded its expansion from a startup in 2006 to a leading private developer, owner and operator of power generation and desalinated water production plants today including its emergence as the largest developer and owner of concentrated solar power with molten salt storage technology in the world. Prior to joining ACWA Power, Mr. Padmanathan was Vice President and Corporate Officer at Black and Veatch, where he was responsible for developing privately financed power, water and wastewater projects in over a dozen countries. Before that, Mr. Padmanathan was the Chief Executive of Black & Veatch Africa Limited and an Executive Director of Burrow Binnie International Ltd. Mr. Padmanathan began his career as an engineer at John Burrow and Partners Overseas. In addition to Mr. Padmanathan’s executive responsibilities at ACWA Power, he also serves as vice-chairman of its board of directors and as a member of the board of directors of several companies involved in power and water development across the globe, including BESIX, XLink Ltd and Desolenator BV. Mr. Padmanathan holds a degree in Engineering from the University of Manchester, United Kingdom. We believe Mr. Padmanathan is qualified to serve on our Board because of his significant knowledge of the renewable energy industry and his experience as an executive officer and member of the boards of directors of several companies involved in power and water development across the globe.

Family Relationships

There are no family relationships among any of our directors or executive officers.

Board Composition

Our business and affairs are organized under the direction of the Board. The Board consists of eight members. Julie Kane serves as Chairperson of the Board. The primary responsibilities of the Board are to provide oversight, strategic guidance, counseling and direction to management. The Board meets on a regular basis and additionally as required.

In accordance with the terms of the Certificate of Incorporation, the Board is divided into three classes, Class I, Class II and Class III, with only one class of directors being elected in each year and each class serving a three-year term.

- Class I consists of Christiana Obiaya, Phyllis Newhouse and Suntharesan Padmanathan, whose terms will expire at Heliogen's annual meeting of stockholders to be held in 2025;
- Class II consists of Stacey Abrams and Barbara Burger, whose terms will expire at Heliogen's annual meeting of stockholders to be held in 2023; and
- Class III consists of Robert Kavner, Julie Kane and Roger Lazarus whose terms will expire at Heliogen's annual meeting of stockholders to be held in 2024.

At each annual meeting of stockholders to be held after the initial classification, the successors to directors whose terms then expire will be elected to serve from the time of election and qualification until the third annual meeting following their election and until their successors are duly elected and qualified. This classification of the Board may have the effect of delaying or preventing changes in control or management. Our directors may be removed for cause by the affirmative vote of the holders of at least a majority of our voting stock.

Role of the Board in Risk Oversight

One of the key functions of the Board is informed oversight of our risk management process. The Board does not have a standing risk management committee, but rather administers this oversight function directly through the Board as a whole, as well as through various standing committees of the Board that address risks inherent in their respective areas of oversight. In particular, the Board is responsible for monitoring and assessing strategic risk exposure and our audit committee has the responsibility to consider and discuss our major financial risk exposures and the steps its management take to monitor and control such exposures, including guidelines and policies to govern the process by which risk assessment and management is undertaken. The audit committee also monitors compliance with legal and regulatory requirements. Our compensation and human capital committee assesses and monitors whether our compensation plans, policies and programs comply with applicable legal and regulatory requirements.

Board Committees

The Board established an audit committee, a compensation and human capital committee, a nominating and corporate governance committee and a corporate strategy committee. The Board adopted a charter for each of these committees, which complies with the applicable requirements of current NYSE Listing Rules. We intend to comply with future requirements to the extent they will be applicable to us. Copies of the charters for each committee are available on the investor relations portion of our website.

Audit Committee

Our audit committee consists of Robert Kavner, Phyllis Newhouse and Roger Lazarus. The Board has determined that each of the members of the audit committee satisfy the independence requirements of NYSE and Rule 10A-3 under the Exchange Act. Each member of the audit committee can read and understand fundamental financial statements in accordance with NYSE audit committee requirements. In arriving at this determination, the Board examined each audit committee member's scope of experience and the nature of their prior and/or current employment. Robert Kavner serves as the chair of the audit committee. The Board determined that Robert Kavner and Roger Lazarus each qualify as an audit committee financial expert within the meaning of SEC regulations and meets the financial sophistication requirements of NYSE listing rules. In making this determination, the Board considered each of Robert Kavner's and Roger Lazarus's formal education and previous experience in financial roles. Both our independent registered public accounting firm and management periodically will meet privately with our audit committee.

The functions of this committee include, among other things:

- evaluating the performance, independence and qualifications of our independent auditors and determining whether to retain our existing independent auditors or engage new independent auditors;
- reviewing our financial reporting processes and disclosure controls;
- reviewing and approving the engagement of our independent auditors and preapproval of audit services and any permissible non-audit services;

- reviewing the adequacy and effectiveness of our internal control policies and procedures, including the responsibilities, budget, staffing and effectiveness of our internal audit function;
- reviewing with the independent auditors the annual audit plan, including the scope of audit activities and all critical accounting policies and practices to be used by us;
- obtaining and reviewing at least annually a report by our independent auditors describing the independent auditors' internal quality control procedures and any material issues raised by the most recent internal quality-control review;
- monitoring the rotation of partners of our independent auditors on our engagement team as required by law;
- prior to engagement of any independent auditor, and at least annually thereafter, reviewing relationships that may reasonably be thought to bear on their independence, and assessing and otherwise taking the appropriate action to oversee the independence of our independent auditor;
- reviewing our annual and quarterly financial statements and reports, including the disclosures contained in "Management's Discussion and Analysis of Financial Condition and Results of Operations," and discussing the statements and reports with our independent auditors and management;
- reviewing with our independent auditors and management significant issues that arise regarding accounting principles and financial statement presentation and matters concerning the scope, adequacy and effectiveness of our financial controls and critical accounting policies;
- reviewing with management and our auditors any earnings announcements and other public announcements regarding material developments;
- establishing procedures for the receipt, retention and treatment of complaints received by Heliogen regarding financial controls, accounting, auditing or other matters;
- preparing the report that the SEC requires in our annual proxy statement;
- reviewing and providing oversight of any related party transactions in accordance with our related party transaction policy and reviewing and monitoring compliance with legal and regulatory responsibilities;
- reviewing our major financial risk exposures, including the guidelines and policies to govern the process by which risk assessment and risk management is implemented; and
- reviewing and evaluating on an annual basis the performance of the audit committee and the audit committee charter.

The composition and function of the audit committee comply with all applicable requirements of the Sarbanes-Oxley Act, SEC rules and regulations and NYSE listing rules. We will comply with future requirements to the extent they become applicable to us.

Compensation and Human Capital Committee

Our compensation and human capital committee consists of Phyllis Newhouse, Barbara Burger and Roger Lazarus. Ms. Newhouse serves as the chair of the compensation and human capital committee. The Board has determined that each of the members of the compensation and human capital committee is a non-employee director, as defined in Rule 16b-3 promulgated under the Exchange Act and satisfy the independence requirements of NYSE. The functions of the committee include, among other things:

- reviewing and approving the corporate objectives that pertain to the determination of executive compensation;
- reviewing and approving the compensation and other terms of employment of Heliogen's executive officers;
- reviewing and approving performance goals and objectives relevant to the compensation of Heliogen's executive officers and assessing their performance against these goals and objectives;

- making recommendations to the Board regarding the adoption or amendment of equity and cash incentive plans and approving amendments to such plans to the extent authorized by the Board;
- reviewing and assessing the independence of compensation consultants, legal counsel and other advisors as required by Section 10C of the Exchange Act;
- administering Heliogen's equity incentive plans, to the extent such authority is delegated by the Board;
- reviewing and approving the terms of any compensation plans, including salary, long-term incentives, bonuses, perquisites, equity incentives, severance arrangements, retirement benefits and other related benefits and benefit plans and any other material arrangements for Heliogen's executive officers;
- reviewing with management Heliogen's disclosures under the caption "Compensation Discussion and Analysis" in Heliogen's periodic reports or proxy statements to be filed with the SEC, to the extent such caption is included in any such report or proxy statement;
- reviewing the human capital management practices related to Heliogen's talent generally, including how Heliogen recruits, develops and retains people;
- preparing an annual report on executive compensation that the SEC requires in Heliogen's annual proxy statement; and
- reviewing and evaluating on an annual basis the performance of the compensation and human capital committee and recommending such changes as deemed necessary with the Board.

The composition and function of our compensation and human capital committee comply with all applicable requirements of the Sarbanes-Oxley Act, SEC rules and regulations and NYSE listing rules. We will comply with future requirements to the extent they become applicable to us.

Nominating and Corporate Governance Committee

Our nominating and corporate governance committee consists of Stacey Abrams, Julie Kane and Robert Kavner. Ms. Abrams serves as the chair of the nominating and corporate governance committee. The Board has determined that each of the members of Heliogen's nominating and corporate governance committee satisfy the independence requirements of NYSE. The functions of this committee include, among other things:

- identifying, reviewing and making recommendations of candidates to serve on the Board;
- evaluating the performance of the Board, committees of the Board and individual directors and determining whether continued service on the Board is appropriate;
- evaluating nominations by stockholders of candidates for election to the Board;
- evaluating the current size, composition and organization of the Board and its committees and making recommendations to the Board for approvals;
- developing a set of corporate governance policies and principles and recommending to the Board any changes to such policies and principles;
- reviewing issues and developments related to corporate governance and identifying and bringing to the attention of the Board current and emerging corporate governance trends; and
- reviewing periodically the nominating and corporate governance committee charter, structure and membership requirements and recommending any proposed changes to the Board, including undertaking an annual review of its own performance.

The composition and function of the nominating and corporate governance committee comply with all applicable requirements of the Sarbanes-Oxley Act, SEC rules and regulations and NYSE listing rules. We will comply with future requirements to the extent they become applicable to us.

Corporate Strategy Committee

Our corporate strategy committee consists of Christiana Obiaya, Barbara Burger, Suntharesan Padmanathan and Stacey Abrams. Barbara Burger serves as the chair of the corporate strategy committee. The functions of the committee include, among other things:

- reviewing and discussing periodically with the Chief Executive Officer and other management of the Company the execution and implementation of the Company's long-range strategic plan, including product and customer initiatives;
- reviewing and advising periodically regarding specific strategic initiatives of management and the risks and opportunities associated with any such initiatives, including risks and opportunities as they relate to the Company's customers and employees, the Company's products and technology, and the Company's brand and reputation; and
- reporting to the Board with respect to matters discussed by the Committee with management, and to ensure the Board is periodically apprised of the Company's progress with respect to implementation of any Board-approved strategy.

Delinquent Section 16(a) Reports

Section 16(a) of the Exchange Act requires our executive officers, directors and persons who beneficially own more than 10% of our common stock to file with the SEC reports of their ownership and changes in their ownership of our common stock. To our knowledge, based solely on review of the copies of such reports and amendments to such reports with respect to the year ended December 31, 2022 filed with the SEC, all required Section 16 reports under the Exchange Act for our directors, executive officers and beneficial owners of greater than 10% of our common stock were filed on a timely basis during the year ended December 31, 2022, except for one late Form 4 filing reporting one transaction each made by each of Paul Gauche, Suntharesan Padmanathan, Phyllis Newhouse, Robert Kavner, Julie Kane and Stacey Abrams.

Compensation and Human Capital Committee Interlocks and Insider Participation

None of the members of our compensation and human capital committee has ever been one of our executive officers or employees. None of our executive officers currently serve, or has served during the last completed fiscal year, on the compensation and human capital committee or board of directors of any other entity that has one or more executive officers that serve as a member of the Board or compensation and human capital committee.

Limitation on Liability and Indemnification of Directors and Officers

The Certificate of Incorporation eliminates our directors' liability for monetary damages to the fullest extent permitted by applicable law. The Delaware General Corporation Law ("DGCL") provides that directors of a corporation will not be personally liable for monetary damages for breach of their fiduciary duties as directors, except for liability:

- for any transaction from which the director derives an improper personal benefit;
- for any act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- for any unlawful payment of dividends or redemption of shares; or
- for any breach of a director's duty of loyalty to the corporation or its stockholders.

If the DGCL is amended to authorize corporate action further eliminating or limiting the personal liability of directors, then the liability of Heliogen's directors will be eliminated or limited to the fullest extent permitted by the DGCL, as so amended.

The Certificate of Incorporation requires Heliogen to indemnify and advance expenses to, to the fullest extent permitted by applicable law, its directors, officers and agents. Heliogen plans to maintain a directors' and officers' insurance policy pursuant to which Heliogen's directors and officers are insured against liability for actions taken in

their capacities as directors and officers. Finally, the Certificate of Incorporation prohibits any retroactive changes to the rights or protections or increase the liability of any director in effect at the time of the alleged occurrence of any act or omission to act giving rise to liability or indemnification.

In addition, Heliogen has entered into separate indemnification agreements with Heliogen's directors and officers. These agreements, among other things, require Heliogen to indemnify its directors and officers for certain expenses, including attorneys' fees, judgments, fines and settlement amounts incurred by a director or officer in any action or proceeding arising out of their services as one of Heliogen's directors or officers or any other company or enterprise to which the person provides services at Heliogen's request.

We believe these provisions in the Certificate of Incorporation are necessary to attract and retain qualified persons as directors and officers.

Code of Business Conduct and Ethics for Employees, Executive Officers and Directors

The Board has adopted a Code of Business Conduct and Ethics (the "Code of Conduct"), applicable to all of Heliogen's employees, executive officers and directors. The Code of Conduct is available on Heliogen's website at www.heliogen.com. Information contained on or accessible through Heliogen's website is not a part of this Annual Report on Form 10-K, and the inclusion of Heliogen's website address in this Annual Report on Form 10-K is an inactive textual reference only. The nominating and corporate governance committee of the Board is responsible for overseeing the Code of Conduct and must approve any waivers of the Code of Conduct for employees, executive officers and directors. Heliogen expects that any amendments to the Code of Conduct, or any waivers of its requirements granted to executive officers and directors, will be disclosed on its website rather than by filing a Current Report on Form 8-K.

Item 11. Executive Compensation

For the year ended December 31, 2022, Heliogen's named executive officers were:

- Bill Gross — Chief Executive Officer⁽¹⁾
- Christiana Obiaya — Chief Financial Officer⁽¹⁾
- Thomas Doyle — Chief Commercial Officer

(1) On February 5, 2023, the Board terminated Bill Gross from his position as Chief Executive Officer of Heliogen and appointed Christiana Obiaya, previously our Chief Financial Officer, as Chief Executive Officer.

Agreements With Our Named Executive Officers

Bill Gross. The Board terminated Mr. Gross from his position as Chief Executive Officer on February 5, 2023. Mr. Gross entered into an employment agreement with Heliogen in November 2021. Pursuant to the terms of his employment agreement, Mr. Gross was entitled to an initial annual base salary of \$275,000, which increased to \$400,000 effective as of December 30, 2021. The employment agreement also provided for a discretionary annual bonus of up to 100% of Mr. Gross's then-current annual base salary, payable based upon the achievement of certain milestones as determined by the Board pursuant to Heliogen's 2022 Executive Bonus Plan.

The employment agreement further provided that, unless provided otherwise, any equity award granted to Mr. Gross under the Legacy Heliogen 2013 Stock Incentive Plan (the "2013 Plan") or the Heliogen, Inc. 2021 Equity Incentive Plan (the "2021 Plan") that was subject to time-based vesting, to the extent such award was assumed, continued, or substituted by the surviving corporation in connection with a "change in control" (as defined in the applicable plan), and Mr. Gross continued to provide services to Heliogen or the successor corporation, would have accelerated and become fully vested and exercisable in the event of a "qualifying termination" (as defined in the executive employment agreement, including a termination without "cause" or resignation for "good reason" and execution of a release of claims) that occurred within 12 months following the change in control. Upon a qualifying termination that did not occur within 12 months following a change in control, under the employment agreement, Mr. Gross would have been eligible for accelerated vesting of his time-based equity awards that would have vested, had he remained in continuous service for an additional 12 months after the termination date. Under the terms of the employment agreement, after Mr. Gross's termination, he is required to reasonably cooperate with Heliogen in responding to reasonable requests in

connection with any disputes brought against Heliogen, and will be paid \$195 per hour for the time devoted to such matters. Mr. Gross was also eligible to participate in the employee benefit plans generally available to our employees and maintained by Heliogen.

Christiana Obiaya. Ms. Obiaya entered into an employment agreement with Heliogen on March 29, 2023. Pursuant to the terms of her employment agreement, Ms. Obiaya is entitled to an annual base salary of \$600,000, effective as of February 5, 2023. The employment agreement also provides for a discretionary annual bonus of up to 100% of Ms. Obiaya's then-current annual base salary, payable based upon the achievement of certain goals as determined by the Board and outlined in the Company's annual executive bonus plan. Ms. Obiaya is also entitled to a housing allowance for temporary housing expenses in the Los Angeles, California area, until the 12-month anniversary following the effective date of her employment agreement. Ms. Obiaya is also eligible to participate in the employee benefit plans generally available to our employees and maintained by Heliogen.

In addition, the employment agreement provides that Ms. Obiaya will receive an RSU award under the 2021 Plan covering 1,500,000 shares of Heliogen's common stock for the fiscal year 2023 annual equity grant. The RSU award will vest as to 6.25% on each quarterly vesting date following the date of grant, subject to Ms. Obiaya's continued service through each vesting date.

Upon a "qualifying termination" (defined in the employment agreement as a termination without "cause" or resignation for "good reason"), under the employment agreement, and subject to her execution of a release of claims, Ms. Obiaya will continue to receive, as severance, (i) 100% of her base salary, paid over the 12 months following such termination of employment in accordance with Heliogen's regular payroll practices, (ii) reimbursement for her COBRA premiums for up to 12 months following such termination of employment, and (iii) in the event the Board determines that the applicable annual bonus milestones have met, a pro rata bonus award based on the date of the qualifying termination.

Upon a qualifying termination that occurs within 12 months following the change in control (as defined in the 2021 Plan), Ms. Obiaya is entitled to receive the base salary severance, COBRA reimbursement, an amount equal to her target bonus for the year in which the qualifying termination occurs (in lieu of the pro rata bonus payment), and any equity award granted to Ms. Obiaya under the 2013 Plan or the 2021 Plan that is subject to time-based vesting will accelerate and become fully vested and exercisable, all subject to execution of the release of claims.

Thomas Doyle. Mr. Doyle entered into an employment agreement with Heliogen on March 29, 2023. Pursuant to the terms of his employment agreement, Mr. Doyle is entitled to an annual base salary of \$400,000. The employment agreement also provides for a discretionary annual bonus of up to 50% of Mr. Doyle's then-current annual base salary, payable based upon the achievement of certain goals as determined by the Board and outlined in the Company's annual executive bonus plan. Mr. Doyle is also eligible to participate in the employee benefit plans generally available to our employees and maintained by Heliogen.

Upon a "qualifying termination" (defined in the employment agreement as a termination without "cause" or resignation for "good reason"), under the employment agreement, and subject to his execution of a release of claims, Mr. Doyle will continue to receive, as severance, (i) 75% of his base salary, paid over the 9 months following such termination of employment in accordance with Heliogen's regular payroll practices, (ii) reimbursement for his COBRA premiums for up to 9 months following such termination of employment, and (iii) in the event the Board determines that the applicable annual bonus milestones have met, a pro rata bonus award based on the date of the qualifying termination.

Upon a qualifying termination that occurs within 12 months following the change in control (as defined in the 2021 Plan), Mr. Doyle is entitled to receive the base salary severance, COBRA reimbursement, an amount equal to his target bonus for the year in which the qualifying termination occurs (in lieu of the pro rata bonus payment), and any equity award granted to Mr. Doyle under the 2013 Plan or the 2021 Plan that is subject to time-based vesting will accelerate and become fully vested and exercisable, all subject to execution of the release of claims.

Other Compensation and Benefits

Benefits and Perquisites

Heliogen provides benefits to its executive officers on the same basis as is provided to all of its employees, including health, dental and vision insurance; life insurance; accidental death and dismemberment insurance; short-term and long-term disability insurance; flexible spending accounts; employee assistance program; and a work-from-home allowance.

Other than the director and officer insurance coverage Heliogen maintains for its directors and officers, Heliogen does not maintain any executive-specific health and welfare benefits or perquisites.

401(k) Plan

We maintain a 401(k) plan that provides eligible employees with an opportunity to save for retirement on a tax advantaged basis. Eligible employees are able to defer eligible compensation up to certain limits under the Internal Revenue Code of 1986, as amended (the “Code”), which are updated annually. Our 401(k) plan provides for a safe harbor employer matching contribution equal to 100% of the first 3% of eligible compensation and 50% of the next 2% of eligible compensation contributed to the plan by an employee. The 401(k) plan is intended to be qualified under Section 401(a) of the Code, with the related trust intended to be tax exempt under Section 501(a) of the Code. As a tax-qualified retirement plan, contributions to the 401(k) plan are deductible by us when made, and contributions and earnings on those amounts are not generally taxable to the employees until withdrawn or distributed from the 401(k) plan.

2022 Summary Compensation Table

The following table shows for the years ended December 31, 2022 and 2021, compensation awarded or paid to, or earned by, the named executive officers.

Name and Principal Position	Year	Salary (\$)	Bonus (\$)⁽³⁾	Stock Awards (\$)⁽⁴⁾	Option Awards (\$)⁽⁴⁾	Non-equity Incentive Plan Compensation (\$)⁽⁵⁾	All Other Compensation (\$)⁽⁶⁾	Total (\$)
Bill Gross ⁽¹⁾⁽²⁾	2022	\$ 398,558	\$ —	\$ —	\$ —	\$ 20,000	\$ 15,658	\$ 434,216
Chief Executive Officer	2021	266,866	—	—	36,752,913	—	50,000	37,069,779
Christiana Obiaya ⁽¹⁾	2022	398,558	100,000	—	—	10,000	13,194	521,752
Chief Financial Officer	2021	222,115	100,000	4,527,500	893,050	—	—	5,742,665
Thomas Doyle	2022	398,558	—	—	—	10,000	3,963	412,521
Chief Commercial Officer	2021	258,077	31,272	4,527,500	84,800	—	—	4,901,649

- (1) On February 5, 2023, the Board terminated Bill Gross from his position as Chief Executive Officer of Heliogen and appointed Christiana Obiaya, previously our Chief Financial Officer, as Chief Executive Officer.
- (2) From January 1, 2021 through November 29, 2021, Mr. Gross’ salary was paid by Idealab Studio, LLC (“Idealab”). Heliogen reimbursed Idealab for 100% of the cost of Mr. Gross’ services to Heliogen. On November 29, 2021, Mr. Gross entered into an employment agreement with Heliogen and Heliogen started paying Mr. Gross’s salary directly on that date.
- (3) Represents a discretionary bonus paid to Ms. Obiaya in January 2022 and July 2021 and a one-time bonus for relocation expenses paid to Mr. Doyle in 2021.
- (4) Amounts represent the aggregate grant date fair value of stock awards, which include restricted stock units (“RSU Award”) and stock options granted to our named executive officers, computed in accordance with ASC Topic 718. Assumptions used in calculating the grant date fair value are included in Note 12 — Share-based Compensation to our consolidated financial statements included in this Annual Report on Form 10-K for the year ended December 31, 2022. These amounts do not necessarily correspond to the actual value recognized or that may be recognized by the named executive officer.
- (5) Amounts represents the value of a performance-based bonus the named executive officers were entitled to under Heliogen’s 2022 Executive Bonus Plan (as defined below). The bonus was paid to Mr. Gross. Ms. Obiaya and Mr. Doyle elected to forego the bonus.
- (6) Represents matching 401(k) contributions made during 2022. During 2021, Mr. Gross received reimbursement of attorney’s fees incurred in connection with the negotiation of his executive employment agreement.

Narrative Disclosure to Summary Compensation Table

Base Salary

Base salary is set at a level that is intended to reflect the executive’s duties, authorities, contributions, prior experience and performance.

Cash Bonus Awards

Other than a discretionary cash bonus of \$100,000 paid to Ms. Obiaya in January 2022, Heliogen did not award the named executive officers any discretionary cash bonuses with respect to 2022.

Restricted Stock Unit Awards

On November 10, 2021, Legacy Heliogen's board of directors granted each of Ms. Obiaya and Mr. Doyle a RSU Award under the 2013 Plan. Each RSU Award covered 250,000 shares of Legacy Heliogen's common stock. In connection with the closing of the Business Combination, the RSU Awards were assumed by us and converted into RSU Awards covering 503,321 shares of our common stock. Pursuant to the terms of the RSU Award agreements, the RSU Awards will vest on the first date upon which both the "service-based requirement" and the "liquidity event requirement" are satisfied. The liquidity event requirement was satisfied upon the closing of the Business Combination. The service-based requirement provides that the RSU Awards will vest as to 6.25% on each quarterly vesting date following closing of the Business Combination, with the first installment vesting on March 15, 2022, subject to Ms. Obiaya's and Mr. Doyle's continued service through each vesting date.

No RSU Awards were granted to Mr. Gross, Ms. Obiaya or Mr. Doyle, during the year ended December 31, 2022.

Stock Option Awards

Heliogen's equity awards are designed to align the interests of employees and consultants, including our executive officers, with our interests and the interests of our stockholders. The Board or an authorized committee thereof is responsible for approving equity awards.

Historically, Heliogen has used stock options as an incentive for long-term compensation to its executive officers because stock options allow its executive officers to realize value from this form of equity compensation only if its stock price increases relative to the stock option's exercise price. Heliogen's executives generally are awarded an initial grant in the form of a stock option in connection with their commencement of employment with Heliogen. Additional grants may occur periodically in order to specifically incentivize executives with respect to achieving certain corporate goals or to reward executives for exceptional performance.

On January 23, 2021, Legacy Heliogen's board of directors granted Mr. Doyle a stock option to purchase 500,000 shares of Legacy Heliogen's common stock at an exercise price of \$0.35 per share under the 2013 Plan. In connection with the closing of the Business Combination, this stock option was assumed by us and converted into a stock option to purchase 1,006,642 shares of our common stock at an exercise price of \$0.18 per share. Mr. Doyle's stock option vested with respect to 25% of the shares subject to the stock option on January 19, 2022 and will continue to vest in 36 equal monthly installments thereafter, subject to his continued service through each vesting date.

On March 9, 2021, Legacy Heliogen's board of directors granted Ms. Obiaya a stock option to purchase 500,000 shares of Legacy Heliogen's common stock at an exercise price of \$0.59 per share under the 2013 Plan. In connection with the closing of the Business Combination, this stock option was assumed by us and converted into a stock option to purchase 1,006,642 shares of our common stock at an exercise price of \$0.30 per share. Ms. Obiaya's stock option vested with respect to 25% of the shares subject to the option on March 8, 2022 and will continue to vest in 36 equal monthly installments thereafter, subject to her continued service through each vesting date.

On November 10, 2021, Legacy Heliogen's board of directors granted Mr. Gross a stock option to purchase 5,023,000 shares of Legacy Heliogen's common stock at an exercise price of \$18.11 per share under the 2013 Plan. In connection with the closing of the Business Combination, this stock option was assumed by us and converted into a stock option to purchase 10,112,732 shares of our common stock at an exercise price of \$9.00 per share. The shares subject to Mr. Gross's stock option vest in 48 equal monthly installments measured from December 30, 2021, subject to his continued service through each vesting date. As described in more detail above under "— Agreements with Our Named Executive Officers — Bill Gross," certain of Mr. Gross's stock options, including the award described immediately above, and other equity awards are subject to accelerated vesting in certain termination and change in control scenarios.

No stock options were granted to Mr. Gross, Ms. Obiaya or Mr. Doyle, during the year ended December 31, 2022.

Non-equity Incentive Plan Compensation

Heliogen instituted a performance-based bonus program for fiscal year 2022 (the “2022 Executive Bonus Plan”). Under the 2022 Executive Bonus Plan, each named executive officer was eligible for an annual performance bonus based on the satisfaction of certain corporate performance metrics determined by the compensation and human capital committee. Each named executive officer was assigned a target performance bonus opportunity expressed as a percentage of their annual base salary, which for 2022 was 100% for Mr. Gross and 50% for both Ms. Obiaya and Mr. Doyle. For 2022, the compensation and human capital committee approved a cash annual performance-based bonus for each of Mr. Gross, Ms. Obiaya and Mr. Doyle equal to approximately 5% of their 2022 annual base salary multiplied by their respective target bonus percentage, based on the satisfaction of one performance metric at the target level. Ms. Obiaya and Mr. Doyle elected to voluntarily forego their bonuses under the 2022 Executive Bonus Plan that they would have otherwise been entitled to receive. The Company did not have a performance-based bonus program for 2021. The performance-based bonuses are reflected in the column of the Summary Compensation Table above entitled “Non-equity Incentive Plan Compensation.”

Outstanding Equity Awards at 2022 Year-End

The following table presents information regarding outstanding equity awards held by each named executive officer as of December 31, 2022.

Name	Option Awards				Stock Awards	
	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Option Exercise Price (\$)	Option Expiration Date	Number of Shares or Units That Have Not Vested (#) ⁽⁵⁾	Market Value of Shares or Units that Have Not Vested (\$) ⁽⁶⁾
Bill Gross	2,528,183	7,584,549 ⁽¹⁾	\$ 9.00	11/9/2031	—	—
	2,516,606	2,516,607 ⁽²⁾	\$ 0.18	12/20/2030	—	—
	4,209,710	—	\$ 0.09	12/5/2028	—	—
Christiana Obiaya	440,405	566,237 ⁽³⁾	\$ 0.30	3/8/2031	377,491	\$ 264,244
Thomas Doyle	391,194	483,801 ⁽⁴⁾	\$ 0.18	1/22/2031	377,491	\$ 264,244

- (1) Represents stock options that vest over four years in equal monthly installments following December 30, 2021, subject to Mr. Gross’s continued service through each vesting date. The stock options stopped vesting upon Mr. Gross’s termination on February 5, 2023.
- (2) Represents stock options that vest over four years in equal monthly installments following December 21, 2020, subject to Mr. Gross’s continued service through each vesting date. The stock options stopped vesting upon Mr. Gross’s termination on February 5, 2023.
- (3) Represents stock options that vest over four years, with 25% of the shares vested on March 8, 2022 and the remaining 75% of the shares vesting over three years in equal monthly installments thereafter, subject to Ms. Obiaya’s continued service through each vesting date.
- (4) Represents stock options that vest over four years, with 25% of the shares vested on January 19, 2022 and the remaining 75% of the shares vesting over three years in equal monthly installments thereafter, subject to Mr. Doyle’s continued service through each vesting date.
- (5) Represents RSU Awards that vest over four years in equal quarterly installments of 6.25% of the shares beginning on March 15, 2022, subject to the named executive officer’s continuous service with Heliogen.
- (6) Represents the market value of RSU Awards based on the closing price of Heliogen’s common stock of \$0.70 as of December 30, 2022, the last trading day of 2022.

Non-Employee Director Compensation

The following table presents the annual compensation earned during 2022 by the non-employee directors of Heliogen.

Director	Fees Earned or Paid in Cash (\$) ⁽¹⁾	Stock Awards (\$) ⁽²⁾	Total (\$)
Julie Kane	\$ 75,000	\$ 399,998	\$ 474,998
Stacey Abrams	55,000	399,998	454,998
Barbara Burger ⁽³⁾	17,344	200,000	217,344
David Crane ⁽⁴⁾	54,565	399,998	454,563
Robert Kavner	125,000	399,998	524,998
Phyllis Newhouse	60,516	399,998	460,514
Suntharesan Padmanathan	61,270	399,998	461,268
Roger Lazarus ⁽⁵⁾	—	—	—

- (1) Amounts represent the annual cash retainer paid to each director.
- (2) Amounts represent the aggregate grant date fair value of stock awards granted, computed in accordance with ASC Topic 718.
- (3) Barbara Burger was appointed to our Board effective September 12, 2022.
- (4) David Crane resigned from our Board effective September 5, 2022, including from the audit committee and the compensation and human capital committee of the Board. Upon his resignation, Mr. Crane forfeited a portion of these stock awards with a grant date fair value of \$355,557. The remaining stock awards were modified to vest upon his resignation with a modified fair value of \$19,213.
- (5) Roger Lazarus was appointed to our Board effective March 2, 2023. Mr. Lazarus did not receive any compensation during 2022.

Non-Employee Director Compensation Policy

Effective March 2, 2023, our Board adopted an amended and restated non-employee director compensation policy that is designed to align compensation with Heliogen's business objectives and the creation of stockholder value, while enabling Heliogen to attract, retain, incentivize and reward directors who contribute to the long-term success of Heliogen. Pursuant to this policy, each member of our Board who is not our employee is eligible to receive the following compensation for his or her service as a member of our Board:

- An initial equity grant equal to that number of restricted stock units that is the lesser of (i) the number of restricted stock units with a value of \$150,000 in the aggregate based on the closing price of our common stock on the effective date of the director's appointment and (ii) 75,000 restricted stock units, in either case, which vests ratably over a three-year period, with one-third vesting on each anniversary of the grant date, subject to the Board member's continued service on our Board; and
- An annual equity grant equal to that number of restricted stock units that is the lesser of (i) the number of restricted stock units with a value of \$150,000 in the aggregate based on the closing price of our common stock on the date of the annual meeting at which the grant is made and (ii) 75,000 restricted stock units, in either case, which fully vests on the earlier of (i) one year following the date of grant or (ii) the day before the next annual meeting following the applicable grant date, subject to the Board member's continued service on our Board.

All non-employee directors receive an annual cash retainer of \$50,000 for his or her service in that role. The non-executive chairperson of the board received an additional cash retainer of \$45,000 for his or her service in that role. The chairs of the audit committee, compensation and human capital committee, nominating and corporate governance committee and corporate strategy committee each receive cash retainers of \$20,000, for his or her respective committee service as chair. Members (other than chairs) of the audit committee, compensation and human capital committee, nominating and corporate governance committee and corporate strategy committee each receive cash retainers of \$10,000, for his or her respective committee service.

Our policy is to reimburse directors for reasonable and necessary out-of-pocket expenses incurred in connection with attending Board and committee meetings or performing other services in their capacities as directors.

The Board expects to review director compensation periodically to ensure that director compensation remains competitive such that Heliogen is able to recruit and retain qualified directors.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The following table sets forth information known to us regarding the beneficial ownership of the common stock as of March 23, 2023, by:

- each person who is known by us to be the beneficial owner of more than 5% of the outstanding shares of the common stock;
- each of our current named executive officers and directors; and
- all of our current executive officers and directors, as a group.

Beneficial ownership is determined according to the rules of the SEC, which generally provide that a person has beneficial ownership of a security if he, she or it possesses sole or shared voting or investment power over that security, including stock options and warrants that are currently exercisable or exercisable within 60 days.

The beneficial ownership percentages set forth in the table below are based on 195,775,938 shares of common stock issued and outstanding as of March 23, 2023. The following table does not reflect record or beneficial ownership of any warrants to purchase common stock. In computing the number of shares of capital stock beneficially owned by a person and the percentage ownership of such person, we deemed to be outstanding all shares of our capital stock subject to stock options held by the person that are currently exercisable or exercisable within 60 days of March 23, 2023 and issuable upon the vesting of RSUs held by the person within 60 days of March 23, 2023. However, we did not deem such shares of our capital stock outstanding for the purpose of computing the percentage ownership of any other person.

Unless otherwise noted in the footnotes to the following table, and subject to applicable community property laws, the persons and entities named in the table have sole voting and investment power with respect to their beneficially owned common stock.

Name of Beneficial Owner ⁽¹⁾	Beneficial Ownership	
	Shares	%
5% Stockholders		
Entities affiliated with Prime Movers Lab Fund I LP ⁽²⁾	23,945,777	12.2%
Nant Capital, LLC ⁽³⁾	25,657,986	13.1%
NeoTribe Ventures I, L.P. for itself and as nominee for NeoTribe Associates I, L.P. ⁽⁴⁾	10,509,954	5.4%
Idealab Holdings, LLC ⁽⁵⁾	15,341,231	7.8%
Directors and Named Executive Officers		
Bill Gross ⁽⁶⁾	27,014,420	13.2%
Christiana Obiaya ⁽⁷⁾	610,772	0.3%
Tom Doyle ⁽⁸⁾	536,029	0.3%
Julie Kane	13,468	—%
Stacey Abrams ⁽⁹⁾	28,468	—%
Barbara Burger	—	—%
Robert Kavner	13,468	—%
Roger Lazarus	—	—%
Phyllis Newhouse	4,065,457	2.1%
Suntharesan Padmanathan	13,468	—%
All directors and current executive officers as a group (12 persons) ⁽¹⁰⁾	33,171,887	16.0%

* Represents beneficial ownership of less than 1%.

(1) Unless otherwise noted, the business address of those listed in the table above is 130 West Union Street Pasadena, California 91103.

- (2) This information is as of December 31, 2022 and is based on a Schedule 13D filed with the SEC on February 13, 2023 by Prime Movers Lab Fund I LP (“PML”), Prime Movers Lab GP I LLC (“PML GP I”), Prime Movers Lab Fund II LP (“PML Fund II”), Prime Movers Lab GP II LLC (“PML GP II”), Heliogen PML SPV 1 LP (“Heliogen PML”) and Dakin Sloss. Consists of (i) 17,270,403 shares held by PML, (ii) 6,668,457 shares held by Heliogen PML, and (iii) 6,917 shares held by PML Fund II. PML GP I is the general partner of PML and PML GP II is the general partner of Heliogen PML and PML Fund II. Dakin Sloss is the manager of PML GP I and PML GP II and as a result may be deemed to have beneficial ownership of the shares held by PML and Heliogen PML. The address for each of the entities and individuals listed in this footnote is PO Box 12829, Jackson, WY 83002.
- (3) This information is as of December 31, 2022 and is based on a Schedule 13G filed with the SEC on February 23, 2022 by Nant Capital LLC (“Nant Capital”), California Capital Equity, LLC (“CalCap”) and Dr. Patrick Soon-Shiong. Nant Capital beneficially owns 24,646,323 shares of the Company’s common Stock. CalCap directly owns all of the equity interests of Nant Capital and Dr. Soon-Shiong directly owns all of the equity interests of CalCap. As a result, CalCap and Dr. Soon-Shiong may be deemed to beneficially own and share with Nant Capital the power to vote and direct the vote, and the power to dispose or direct the disposition of, the 24,646,323 shares beneficially owned by Nant Capital. Dr. Soon-Shiong also directly beneficially owns 1,011,663 shares of the Company’s common stock. As a result, Dr. Soon-Shiong may be deemed to beneficially own, in the aggregate, 25,657,986 shares of the Company’s common stock. The address of the principal business office of Nant Capital, LLC is 450 Duley Road, El Segundo, CA 90245.
- (4) This information is as of December 31, 2022 and is based on a Schedule 13G filed with the SEC on February 2, 2023. Consists of 10,102,381 shares of common stock held by NeoTribe Ventures I, L.P. (“NTV”) and 407,573 shares of common stock held by NeoTribe Associates I, L.P. (“NTA”). NeoTribe Partners I, LLC (“NTP”), the general partner of NTV and NTA, may be deemed to have sole power to vote and dispose of these shares, and Krishna Kolluri, the managing member of NTP, may be deemed to have sole power to vote and dispose of these shares. The address for each of the entities and individuals listed in this footnote is 2440 Sand Hill Road, Suite 302, Menlo Park, CA 94025.
- (5) This information is as of December 31, 2022 and is based on a Schedule 13D filed with the SEC on February 16, 2023 by Idealab Holdings, LLC, a wholly-owned subsidiary of Idealab, a California corporation. Idealab is managed by a board of directors consisting of Bill Gross, Marcia Goodstein, Renee LaBran and Bob Kavner, and no single person has voting or dispositive authority over the securities reported herein. As such, each of the foregoing entities and individuals may be deemed to share beneficial ownership of the securities reported herein. Each of them disclaims any such beneficial ownership. The address for each of the entities and individuals listed in this footnote is 130 West Union Street, Pasadena, CA 91103.
- (6) On February 5, 2023, the Board terminated Bill Gross from his position as Chief Executive Officer of Heliogen. This information is as of February 5, 2023 and is based on a Schedule 13D/A filed with the SEC on February 16, 2023 by Idealab Holdings, LLC, a wholly-owned subsidiary of Idealab, a California corporation. Includes 1,672,612 shares of common stock and 9,570,039 shares issuable for vested and exercisable options within 60 days of February 5, 2023, beneficially held by Mr. Gross and with respect to which Mr. Gross has sole voting and dispositive power. Also includes 16,175 shares of common stock held by Idealab Studio, LLC (“Idealab Studio”) and includes 414,363 shares of common stock held by The Gross Goodstein Living Trust, dated April 18, 2006 (“Gross Trust”), of which Mr. Gross and his wife are co-trustees and may be deemed to share voting and dispositive power. The Gross Trust owns a majority of the class of securities entitled to elect two directors to Idealab Studio’s board of managers. Mr. Gross is the chairman and chief executive officer of Idealab Studio. Also includes 15,341,231 shares of common stock held by Idealab Holdings, LLC (“Idealab Holdings”). Idealab Holdings is a wholly owned subsidiary of Idealab, a California corporation (“Idealab”). Idealab in its capacity as Managing Member of Idealab Holdings, by action of Idealab’s board of directors, had previously delegated Idealab’s power to manage and control the business and affairs of Idealab Holdings related to Idealab Holdings’ interest in the Issuer, including all voting and dispositive power with respect to the reported securities, to Renee LaBran, a director of Idealab. On February 13, 2023, Idealab’s board of directors revoked such delegation. Idealab is managed by a board of directors consisting of Bill Gross, Marcia Goodstein (Mr. Gross’s wife), Renee LaBran and Bob Kavner, and no single person has voting or dispositive authority over the securities reported herein. Mr. Gross may be deemed to share beneficial ownership of the securities held by Holdings. Each of the foregoing persons disclaims beneficial ownership of such securities except to the extent of his or her pecuniary interest therein.
- (7) Represents 503,321 shares issuable for vested and exercisable stock options within 60 days and 31,457 shares issuable upon vesting of RSUs within 60 days.
- (8) Represents 428,578 shares issuable for vested and exercisable stock options within 60 days and 31,457 shares issuable upon vesting of RSUs within 60 days.
- (9) Stacey Abrams has voting and/or investment control over the securities held by Brockington Hall, LLC (“Brockington”) and may be deemed to beneficially own the securities owned by Brockington.
- (10) Consists of (i) 22,130,028 shares beneficially owned by our current executive officers and directors, (ii) 10,928,652 shares issuable for vested and exercisable stock options within 60 days and (iii) 113,207 shares issuable upon vesting of RSUs within 60 days. Includes shares beneficially held by Dr. Gauche and Mr. Lambert, in addition to the shares held by the named executive officers and directors.

Equity Compensation Plan Information

The following table summarizes our equity compensation plan information as of December 31, 2022. Information is included for equity compensation plans approved by our stockholders. We do not have any equity compensation plans not approved by our stockholders.

Plan Category	(a)	(b)	(c) Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column (a))
Equity compensation plans approved by security holders			
2013 Stock Incentive Plan ⁽²⁾	34,296,313	\$ 3.10	—
2021 Equity Incentive Plan ⁽³⁾	8,358,508	—	10,584,816
2021 Employee Stock Purchase Plan ⁽⁴⁾	—	—	6,587,335
Equity compensation plans not approved by security holders	—	—	—
TOTAL	42,654,821	\$ 3.10	17,172,151

- (1) The weighted average exercise price is calculated based solely on outstanding stock options. It does not take into account the shares of our common stock underlying RSU Awards, which have no exercise price.
- (2) Following the adoption of the 2021 Plan, no additional equity awards have been or will be granted under the 2013 Plan.
- (3) Our 2021 Plan provides that on January 1 of each calendar year, starting on January 1, 2022 through January 1, 2031, the number of shares of common reserved for issuance thereunder is automatically increased by a number equal to (i) 4% of the total number of shares of our common stock outstanding on December 31 of the fiscal year before the date of such automatic increase, or (ii) a lesser number of shares as determined by the Board prior to the applicable January 1. On January 1, 2023, the number of shares of common stock available for issuance under our 2021 Plan increased by 7,716,978 shares pursuant to these provisions. This increase is not reflected in the table above.
- (4) Our 2021 ESPP provides that on January 1 of each calendar year, starting on January 1, 2022 through January 1, 2031, the number of shares of common reserved for issuance thereunder is automatically increased by a number equal to the lesser of (i) 1% of the total number of shares of our common stock outstanding on December 31 of the preceding calendar year, (ii) 9,507,330 shares, or (iii) a lesser number of shares than described under (i) or (ii) as determined by the Board. On January 1, 2023, the number of shares of common stock available for issuance under our 2021 ESPP increased by 1,929,245 shares pursuant to these provisions. This increase is not reflected in the table above.

Item 13. Certain Relationships and Related Transactions, and Director Independence

Certain Transactions with Related Parties

The following is a summary of transactions since January 1, 2021 to which we have been a party, in which the amount involved exceeded or will exceed the lesser of (x) \$120,000 or (y) 1% of the average of our total assets at December 31, 2022 and 2021, and in which any of our directors, executive officers or holders of more than 5% of our capital stock, or an affiliate or immediate family member thereof, had or will have a direct or indirect material interest other than compensation and other arrangements that are described the sections titled “Executive Compensation” and “Non-Employee Director Compensation.” We also describe below certain other transactions with our directors, former directors, executive officers and stockholders.

Athena Related Transactions and Agreements

Founder Shares

On December 28, 2020, the Sponsor paid \$25,000, or approximately \$0.003 per share, to cover certain Athena IPO costs in consideration for 9,816,667 shares of Athena Class B common stock, par value \$0.0001 (the “Founder Shares”). Up to 1,250,000 Founder Shares were subject to forfeiture by the Sponsor depending on the extent to which the underwriters’ over-allotment option was exercised. On May 3, 2021, the underwriters’ over-allotment option expired, not having been exercised, and accordingly, the 1,250,000 Founder Shares were forfeited.

The Sponsor agreed not to transfer, assign or sell any of its Founder Shares (i) with respect to 25% of such shares, until the closing of the Business Combination, (ii) with respect to 25% of the Founder Shares, until the closing price of Heliogen’s common stock exceeds \$12.00 for any 20 trading days within a 30-trading day period following the closing of the Business Combination, (iii) with respect to 25% of the Founder Shares, until the closing price of Heliogen’s common stock exceeds \$13.50 for any 20 trading days within a 30-trading day period following the closing of the Business Combination, and (iv) with respect to 25% of the Founder Shares, until the closing price of Heliogen’s common stock exceeds \$17.00 for any 20 trading days within a 30-trading day period following the closing of the Business Combination or earlier, in any case, if, following a Business Combination, Heliogen completes a liquidation, merger, capital stock exchange or other similar transaction that results in all of its stockholders having the right to exchange their shares of common stock for cash, securities or other property. Any permitted transferees would be subject to the same restrictions and other agreements of the Sponsor with respect to any Founder Shares.

Private Warrants

Simultaneously with the closing of Athena’s IPO, the Sponsor purchased an aggregate of 700,000 Private Placement Units at a price of \$10.00 per unit, for an aggregate purchase price of \$7,000,000, in a private placement. Each Private Placement Unit comprised one share of common stock and one-third of one warrant. Each whole private placement warrant is exercisable for one whole share of common stock at a price of \$11.50 per share, subject to adjustment. The Private Warrants will be non-redeemable and exercisable on a cashless basis so long as they are held by the Sponsor or its permitted transferees. If the Private Warrants are held by someone other than the Sponsor or its permitted transferees, the Private Warrants will be redeemable by Heliogen and exercisable by such holders on the same basis as the warrants included in the public units sold in Athena’s IPO.

Related Party Note and Advances

On January 8, 2021, Athena issued an unsecured promissory note to the Sponsor for an aggregate of up to \$300,000 to cover expenses related to Athena’s IPO. This loan was non-interest bearing and payable on the earlier of December 31, 2021 or the completion of Athena’s IPO. Athena did not draw down any amounts under the promissory note. The Sponsor and certain affiliates of the Sponsor have instead made payments for offering costs and expenses on behalf of Athena which is recorded as due to related party.

Heliogen Transactions and Agreements

Related Party Equity Financings

In January 2021, Heliogen issued a SAFE note to Heliogen PML SPV 1LP, whose limited partners may be affiliates of Prime Movers Lab Fund I LP, for an aggregate purchase price of approximately \$27.7 million.

Related Party Lease and Other Services

Idealab, a holder of more than 5% of Heliogen’s outstanding voting stock through its wholly owned subsidiary, Idealab Holdings, LLC, provides various services to Heliogen through a services agreement which includes leasing office space, accounting, human resources, legal, information technology, marketing, public relations, and certain other executive services. We are charged a fee for the specific services provided and these fees totaled \$0.5 million and \$1.3 million for the years ended December 31, 2022 and 2021, respectively.

In May 2021, Heliogen sub-leased a portion of its office space in Pasadena to Idealab for a term of seven years. The sub-lease has an initial annual base rent of \$0.2 million and contains a 3% per annum escalation clause. The sub-lease is subject to termination by either party upon six months prior written notice. Concurrently with the parties' entering into the sub-lease agreement, Idealab and Heliogen also entered into certain property management and shared facilities staffing agreements, which provide that Heliogen pays Idealab \$3 thousand per month for building management services and \$13 thousand per month for shared facilities staff and services (with proportional reimbursement of salaries). Such agreements are subject to termination right by either party with 90 days' prior written notice.

Related Party Services Agreement

In March 2023, Heliogen entered into an agreement with NantG Power, LLC, an affiliated sister-company to Nant Capital LLC (a holder of more than 5% of Heliogen's outstanding voting stock), to provide front-end concept design and R&D engineering services, as a precursor for NantG to purchase a commercial-scale calcination facility. We will be compensated up to \$5 million on a time and materials basis.

Related-Person Transactions Policy

Our Board adopted a written related-person transactions policy that sets forth our policies and procedures regarding the identification, review, consideration and oversight of related-person transactions. For purposes of our policy, a related-person transaction is a transaction, arrangement or relationship (or any series of similar transactions, arrangements or relationships) in which we and any related person are, were or will be participants, in which the amount involved exceeds \$120,000. Transactions involving compensation for services provided to us as an employee, consultant or director will not be considered related-person transactions under this policy.

Under the policy, a related person is any executive officer, director, nominee to become a director or a security holder known by us to beneficially own more than 5% of any class of our voting securities (a "significant stockholder"), including any of their immediate family members and affiliates, including entities controlled by such persons or such person has a 5% or greater beneficial ownership interest.

Each director and executive officer shall identify, and we shall request each significant stockholder to identify, any related-person transaction involving such director, executive officer or significant stockholder or his, her or its immediate family members and inform our audit committee pursuant to this policy before such related person may engage in the transaction.

In considering related-person transactions, our audit committee takes into account the relevant available facts and circumstances, which may include, but are not limited to:

- the risk, cost and benefits to us;
- the impact on a director's independence in the event the related person is a director, immediate family member of a director or an entity with which a director is affiliated;
- the terms of the transaction; and
- the availability of other sources for comparable services or products.

Our audit committee shall approve only those related-party transactions that, in light of known circumstances, are in, or are not inconsistent with, the best interests of the Company and our stockholders, as our audit committee determines in the good faith exercise of its discretion.

Director Independence

The Board determined that each of the directors on the Board other than Christiana Obiaya qualify as independent directors, as defined under the NYSE Listing Rules, and the Board consists of a majority of "independent directors," as defined under the rules of the SEC and NYSE listing rules relating to director independence requirements. In addition, we are subject to the rules of the SEC and NYSE relating to the membership, qualifications and operations of the audit committee, as discussed below.

Our independent directors meet in executive session without management present if circumstances warrant when the full Board convenes for a regularly scheduled meeting or a special meeting. The independent director at such executive sessions shall designate an independent director to preside over the executive session.

Item 14. Principal Accounting Fees and Services

The following table represents aggregate fees billed to the Company by its independent registered public accounting firms for the years ended December 31, 2022 and 2021. We did not incur any audit-related, tax or other fees with our independent registered public accounting firms for the years ended December 31, 2022 or 2021.

<i>\$ in thousands</i>	Year Ended December 31,	
	2022	2021
PricewaterhouseCoopers LLP	\$ 890	\$ —
BDO USA, LLP	1,086	1,184
Marcum LLP	—	196
Total audit fees ⁽¹⁾	<u>\$ 1,976</u>	<u>\$ 1,380</u>

- (1) “Audit fees” consist of fees in connection with the audit of the Company’s consolidated financial statements, audited financial statements presented in this Annual Report on Form 10-K, review of its quarterly financial statements presented in our quarterly reports on Form 10-Q and services that are normally provided by the Company’s independent registered public accounting firm in connection with statutory and regulatory filings or engagements for those fiscal years.

PricewaterhouseCoopers LLP

Effective June 2, 2022, our audit committee dismissed BDO USA, LLP (“BDO”) as the Company’s independent registered public accounting firm and appointed PricewaterhouseCoopers LLP (“PwC”) to audit our consolidated financial statements for the year ended December 31, 2022.

BDO USA, LLP

Following the closing of the Business Combination, BDO was appointed as our independent registered accounting firm for the audit as of and for the year ended December 31, 2021. BDO had audited the financial statements of Heliogen since November 5, 2020. The fees of BDO presented above are not necessarily representative of the fees billed by BDO for the Company as a public company, but are presented solely to provide our stockholders with a basis to understand our historical relationship with BDO. The fees for the year ended December 31, 2021 were not pre-approved by the audit committee as these services were approved prior to the Business Combination.

Marcum LLP

On December 30, 2021, our audit committee dismissed Marcum LLP (“Marcum”), Athena’s independent registered public accounting firm prior to the Business Combination, as the Company’s independent registered public accounting firm.

Part IV

Item 15. Exhibits and Financial Statement Schedules

(a) The following documents are filed as part of this report or incorporated by reference:

- (1) The consolidated financial statements of Heliogen listed on page 36 of this Annual Report on Form 10-K. The report of Heliogen's independent registered public accounting firms (PCAOB ID 238 and PCAOB ID 243) with respect to the above referenced financial statements are included in Item 8 of this Form 10-K. Their consents appear as Exhibit 23.1 and 23.2 of this Annual Report on Form 10-K.
- (2) All required Financial Statement Schedules are omitted because they are not applicable or the required information is shown in the financial statements or the accompanying notes.
- (3) The exhibits of Heliogen listed below under Item 15(b); all exhibits are incorporated herein by reference to a prior filing as indicated, unless designated by a *.

(b) Exhibits:

EXHIBIT INDEX

Exhibit Number	Description	Incorporated by Reference			
		Form	File No.	Exhibit	Filing Date
2.1†	Business Combination Agreement, dated as of July 6, 2021, by and among Athena Technology Acquisition Corp., HelioMax Merger Sub, Inc. and Heliogen, Inc.	8-K	001-40209	2.1	July 7, 2021
3.1	Second Amended and Restated Certificate of Incorporation of Heliogen, Inc.	8-K	001-40209	3.1	January 6, 2022
3.2	Second Amended and Restated Bylaws of Heliogen, Inc.	10-Q	001-40209	3.2	November 8, 2022
4.1	Specimen Common Stock Certificate of Heliogen, Inc.	8-K	001-40209	4.1	January 6, 2022
4.2	Form of Warrant Certificate of Heliogen, Inc.	S-1	001-40209	4.2	January 24, 2022
4.3	Warrant Agreement, dated March 16, 2021, by and between Athena Technology Acquisition Corp. and Continental Stock Transfer & Trust Company.	8-K	001-40209	4.1	March 22, 2021
4.4	Description of Securities registered under Section 12 of the Securities Exchange Act of 1934.	10-K	001-40209	4.4	March 31, 2022
10.1	Form of Subscription Agreement.	8-K	001-40209	10.3	July 7, 2021
10.2	Registration Rights and Lock-Up Agreement.	8-K	001-40209	10.5	January 6, 2022
10.3#	Form of Indemnification Agreement of Heliogen, Inc.	8-K	001-40209	10.6	January 6, 2022
10.4#	2013 Equity Incentive Plan.	S-4	333-258606	99.2	August 9, 2021
10.5#	2021 Equity Incentive Plan.	8-K	001-40209	10.8	January 6, 2022
10.6	2021 Employee Stock Purchase Plan.	8-K	001-40209	10.9	January 6, 2022
10.7#	Form of Stock Option Grant Package under 2013 Equity Incentive Plan.	S-8	001-40209	99.3	March 7, 2022
10.8#	Form of RSU Grant Package under 2013 Equity Incentive Plan.	S-8	001-40209	99.4	March 7, 2022
10.9#	Form of Stock Option Grant Package under 2021 Equity Incentive Plan.	8-K	001-40209	10.10	January 6, 2022
10.10#	Form of RSU Grant Package under 2021 Equity Incentive Plan.	8-K	001-40209	10.11	January 6, 2022

Exhibit Number	Description	Incorporated by Reference			
		Form	File No.	Exhibit	Filing Date
10.11	Registration Rights Agreement, dated March 16, 2021, by and among Athena Technology Acquisition Corp. and Athena Technology Sponsor LLC.	8-K	001-40209	10.3	March 22, 2021
10.12	Amendment to Registration Rights Agreement, dated March 16, 2021, by and among Athena Technology Acquisition Corp. and Athena Technology Sponsor LLC.	8-K	001-40209	10.15	January 6, 2022
10.13#	Executive Employment Agreement, dated November 19, 2021, by and between William T. “Bill” Gross and Heliogen, Inc.	S-4/A	333-258606	10.15	November 19, 2021
10.14*#	Executive Employment Agreement, dated March 29, 2023, by and between Heliogen, Inc. and Christie Obiaya.				
10.15*#	Executive Employment Agreement, dated March 29, 2023, by and between Heliogen, Inc. and Thomas Doyle.				
10.16*#	Non-Employee Director Compensation Policy dated March 2, 2023.				
10.17†	Collaboration Agreement-Australia, dated March 28, 2022, by and between Heliogen Holdings, Inc. and Woodside Energy Technologies Pty. Ltd.	10-Q	001-40209	10.1	May 23, 2022
10.18†***	Commercial-Scale Demonstration Agreement, dated March 28, 2022, by and between Heliogen, Inc. and Woodside Energy (USA) Inc.	10-Q	001-40209	10.2	May 23, 2022
10.19	Warrant to Purchase Class A Common Stock of Heliogen, Inc. in connection with Commercial-Scale Demonstration Agreement, dated March 28, 2022, by and between Heliogen, Inc. and Woodside Energy (USA) Inc.	10-Q	001-40209	10.3	May 23, 2022
10.20	Warrant to Purchase Class A Common Stock of Heliogen, Inc. in connection with Collaboration Agreement, dated March 28, 2022, by and between Heliogen, Inc. and Woodside Energy (USA) Inc.	10-Q	001-40209	10.4	May 23, 2022
21.1	List of Subsidiaries	10-K	001-40209	21.1	March 31, 2022
23.1*	Consent of PricewaterhouseCoopers LLP, independent registered public accounting firm.				
23.2*	Consent of BDO USA, LLP, independent registered public accounting firm.				
24.1*	Power of Attorney (included on signature page).				
31.1*	Certification of Principal Executive Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				
31.2*	Certification of Principal Financial Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				
32.1**	Certification of Principal Executive Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				

Exhibit Number	Description	Incorporated by Reference			
		Form	File No.	Exhibit	Filing Date
32.2**	Certification of Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				
101.INS*	Inline XBRL Instance Document				
101.CAL*	Inline XBRL Taxonomy Extension Calculation Linkbase Document				
101.SCH*	Inline XBRL Taxonomy Extension Schema Document.				
101.DEF*	Inline XBRL Taxonomy Extension Definition Linkbase Document				
101.LAB*	Inline XBRL Taxonomy Extension Labels Linkbase Document				
101.PRE*	Inline XBRL Taxonomy Extension Presentation Linkbase Document				
104*	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101).				

* Filed herewith.

** Furnished herewith and not deemed to be “filed” for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), and shall not be deemed to be incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Exchange Act (whether made before or after the date of this Annual Report on Form 10-K), irrespective of any general incorporation language contained in such filing.

*** Certain portions of this exhibit (indicated by asterisks) have been excluded pursuant to Item 601(b)(10) of Regulation S-K because they are both not material and are the type that the Registrant treats as private or confidential.

† Certain of the exhibits and schedules to this Exhibit have been omitted in accordance with Regulation S-K Item 601. The Company agrees to furnish a copy of all omitted exhibits and schedules to the SEC upon its request.

Indicates management contract or compensatory plan, contract or arrangement.

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized on March 29, 2023.

Heliogen, Inc.

By: /s/ Christiana Obiaya

Christiana Obiaya

Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Christiana Obiaya and Kelly Rosser, and each of them, his or her true and lawful attorneys-in-fact and agents, each with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange 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 and necessary to be done, as fully for all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that each of said attorneys-in-fact and agents, 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 Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on March 29, 2023.

<u>Signature</u>	<u>Position</u>
<u>/s/ Christiana Obiaya</u> Christiana Obiaya	Chief Executive Officer <i>(Principal Executive Officer)</i>
<u>/s/ Kelly Rosser</u> Kelly Rosser	Interim Chief Financial Officer <i>(Principal Financial and Accounting Officer)</i>
<u>/s/ Julie M. Kane</u> Julie M. Kane	Chairperson of the Board of Directors
<u>/s/ Stacey Abrams</u> Stacey Abrams	Director
<u>/s/ Barbara J. Burger</u> Barbara J. Burger	Director
<u>/s/ Robert Kavner</u> Robert Kavner	Director
<u>/s/ Roger Lazarus</u> Roger Lazarus	Director
<u>/s/ Phyllis W. Newhouse</u> Phyllis W. Newhouse	Director
<u>/s/ Suntharesan Padmanathan</u> Suntharesan Padmanathan	Director