
**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
FORM 10-K**

(Mark One)

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 001-39525



ESS Tech, Inc.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

26440 SW Parkway Ave., Bldg. 83

Wilsonville, Oregon

(Address of Principal Executive Offices)

98-1550150

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

97070

(Zip Code)

(855) 423-9920

Registrant's telephone number, including area code

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	GWH	New York Stock Exchange
Warrants, each whole warrant exercisable for one share of common stock at an exercise price of \$11.50	GWH.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, a smaller reporting company, or an emerging growth company. See the definitions of “large accelerated filer,” “accelerated filer,” “smaller reporting company,” and “emerging growth company” in Rule 12b-2 of the Exchange Act.

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

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 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.

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

The aggregate market value of the voting and non-voting common stock held by non-affiliates of the registrant as of the last business day of the registrant’s most recently completed second fiscal quarter, June 30, 2022, was approximately \$250 million based on the closing sales price of our common stock on the New York Stock Exchange on June 30, 2022 of \$2.81. Shares of the registrant’s common stock held by each executive officer, director, and holder of 10% or more of the outstanding common stock have been excluded because such persons may be deemed affiliates. This calculation does not reflect a determination that certain persons are affiliates of the registrant for any other purpose.

As of February 24, 2023, 154,307,976 shares of common stock, par value \$0.0001 per share, were issued and outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant’s definitive proxy statement relating to the 2023 Annual Meeting of Stockholders are incorporated herein by reference in Part III of this Annual Report on Form 10-K to the extent stated herein. Such proxy statement will be filed with the Securities and Exchange Commission within 120 days of the registrant’s fiscal year ended December 31, 2022.

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CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K, including, without limitation, statements in “Part II—*Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations*,” includes 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”). These forward-looking statements can be identified by the use of forward-looking terminology, including the words “believes,” “estimates,” “anticipates,” “expects,” “intends,” “plans,” “possible,” “may,” “might,” “will,” “potential,” “projects,” “predicts,” “continue,” “could,” “would” or “should,” or, in each case, their negative or other variations or comparable terminology. These words and similar expressions may identify forward-looking statements, but the absence of these words does not mean that a statement is not forward-looking. These forward-looking statements, which are subject to risks, uncertainties and assumptions about us, may include projections of our future financial performance, our anticipated growth strategies and anticipated trends in our business.

These statements are based on management’s current expectations, but actual results may differ materially due to various factors, risks, and uncertainties, including, but not limited to:

- our financial and business performance, including financial projections and business metrics;
- changes in our strategy, future operations, financial position, estimated revenues and losses, projected costs, prospects and plans;
- the implementation, market acceptance and success of our technology implementation and business model;
- our ability to scale in a cost-effective manner;
- developments and projections relating to our competitors and industry;
- the impact of the ongoing COVID-19 pandemic, the Russia-Ukraine conflict, geopolitical tensions involving China, and similar macroeconomic events, including global supply chain challenges, foreign currency fluctuations, elevated inflation and interest rates and monetary policy changes, upon our and our customers’, contractors’, suppliers’ and partners’ respective businesses;
- our expectations regarding our ability to obtain and maintain intellectual property protection and not infringe on the rights of others;
- our future capital requirements and sources and uses of cash;
- our ability to obtain funding for our operations;
- our business, expansion plans and opportunities;
- our relationships with third-parties, including our customers, contractors, and suppliers;
- issues related to the shipment, installation, and operation of our products;
- issues related to contract execution, including customer acceptance of our products;
- our ability to recognize the benefits of strategic partnerships;
- the outcome of any known and unknown litigation and regulatory proceedings;
- our ability to successfully deploy the proceeds from the Business Combination (as defined herein);
- expectations regarding the time during which we will be an emerging growth company under the Jumpstart Our Business Startups Act (“JOBS Act”); and
- other risks and uncertainties discussed in “*Part I—Item 1A. Risk Factors*” and elsewhere in this report.

The forward-looking statements contained in this Annual Report on Form 10-K are based on our current expectations and beliefs concerning future developments and their potential effects on us. There can be no assurance that future developments affecting us will be those that we have anticipated. These forward-looking statements are made as of the date of this Annual Report on Form 10-K and involve a number of risks, uncertainties (some of which are beyond our control) and other assumptions that may cause actual results or performance to be materially different from those expressed or implied by these forward-looking statements. These risks and uncertainties include, but are not limited to, those factors described in “*Part I—Item 1A. Risk Factors*.” Should one or more of these risks or uncertainties materialize, or should any of our assumptions prove incorrect, actual results may vary in material respects from those projected in these forward-looking statements. We undertake no obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, except as may be required under applicable securities laws. These risks and others described in “*Part I—Item 1A. Risk Factors*” may not be exhaustive.

By their nature, forward-looking statements involve risks and uncertainties because they relate to events and depend on circumstances that may or may not occur in the future. We caution you that forward-looking statements are not guarantees of future performance and that our actual results of operations, financial condition and liquidity, and developments in the industry in which we operate may differ materially from those made in or suggested by the forward-looking statements contained in this Annual Report on Form 10-K. In addition, even if our results or operations, financial condition and liquidity, and developments in the industry in which we operate are consistent with the forward-looking statements contained in this Annual Report on Form 10-K, those results or developments may not be indicative of results or developments in subsequent periods.

PART I

ITEM 1. BUSINESS

Unless the context otherwise requires, all references in this section to “ESS,” “we,” “us,” “our,” or the “Company” refer to ESS Tech, Inc. and its subsidiaries.

Business Combination

On October 8, 2021 (the “Closing Date”), ACON S2 Acquisition Corp. (“STWO”), a publicly traded special purpose acquisition company, consummated a merger pursuant to the Agreement and Plan of Merger, dated May 6, 2021 (the “Merger Agreement”), by and among STWO, SCharge Merger Sub, Inc., a Delaware corporation and wholly owned direct subsidiary of STWO (“Merger Sub”), and ESS Tech, Inc., a Delaware corporation (“Legacy ESS”) following the approval at a special meeting of the stockholders of STWO held on October 5, 2021.

Pursuant to the terms of the Merger Agreement, STWO deregistered by way of continuation under the Cayman Islands Companies Act (2021 Revision) and registered as a corporation in the State of Delaware under Part XII of the Delaware General Corporation Law, and a business combination between STWO and Legacy ESS was effected through the merger of Merger Sub with and into Legacy ESS, with Legacy ESS surviving as a wholly owned subsidiary of STWO (together with the other transactions described in the Merger Agreement, the “Business Combination”). On the Closing Date, STWO changed its name from “ACON S2 Acquisition Corp” to “ESS Tech, Inc.” (the “Company” or “ESS”), and our common stock and Public Warrants (as defined herein) began trading on the NYSE under the ticker symbols “GWH” and “GWH.W,” respectively.

Business Overview

ESS is a long-duration energy storage company specializing in iron flow battery technology. We design and produce long-duration batteries predominantly using earth-abundant materials that we believe can be cycled over 20,000 times without capacity fade. Because we designed our batteries to operate using an electrolyte of primarily salt, iron and water, they are non-toxic and substantially recyclable. Our batteries provide flexibility to grid operators and energy assurance for commercial and industrial customers. Our technology addresses energy delivery, duration and cycle life in a single battery platform that compares favorably to lithium ion batteries, the most widely deployed alternative technology. Using our second-generation S200 iron flow battery technology, we are developing two products, the Energy Warehouse and the Energy Center, each of which is able to provide reliable, safe, long-duration energy storage. As of December 31, 2022, we had a limited number of second-generation products fully deployed for which we recognized revenue. We have shipped and were in the process of installing and commissioning additional second-generation Energy Warehouse at December 31, 2022. With each battery deployed, we will further our mission to accelerate the transition to a zero-carbon energy future with increased grid reliability.

Our batteries are non-flammable, non-toxic, do not have explosion risk and can operate in temperatures ranging from -5°C to 50°C without requiring heating or cooling systems. This allows our energy storage products to be located in sites where lithium-ion batteries cannot be placed due to fire, chemical or explosion risks. In addition, our batteries are environmentally sustainable, predominantly utilizing easily sourced materials and recyclable components.

Our batteries and technology can be purchased with an extended ten-year warranty which is backed by investment-grade, ten-year warranty and project insurance policies from Munich Re, a leading provider of reinsurance, primary insurance and insurance-related risk solutions, which stands behind the performance of our energy storage products. To our knowledge, we are the first long-duration energy storage company to receive this type of insurance, which provides a warranty backstop for our proprietary flow battery technology, supporting our performance obligations regardless of project size or location and de-risking the technology for our customers. We have also collaborated with Munich Re to develop separate project financing coverage for our customers. This project financing coverage provides warranty continuity insurance in the event of our insolvency, providing long-term assurance of project performance to our customers and their investors and lenders. Bonding and surety capital is provided through OneBeacon Insurance Group (“OneBeacon”) as well as qualification from the U.S. Export-Import Bank, which provides additional product assurance. We believe each of these elements allows us to increase our total addressable market, as potential customers have reduced technology risk, financing risk and importing risk.

We believe that as we scale up our production, our battery technology will be priced competitively. When comparing products on a lifetime levelized cost of storage (“LCOS”) basis, which is the total cost of the investment in an electricity storage technology divided by its cumulative delivered electricity, we expect our batteries to be less expensive on a LCOS basis than lithium-ion alternatives for storage durations greater than four hours, which we believe is the operational maximum for lithium-ion technologies. Our cost advantage increases as the storage duration extends beyond four hours because of the scalable nature of our technology.

Energy storage solutions of various sizes and durations must be installed throughout global electrical grids to enable decarbonization in line with global climate objectives. Our energy storage products are intended to supply long-duration power across this expanding spectrum of use cases. As described below in the subsection entitled “—Our *Technology and Products*,” we believe our energy storage products will be capable of addressing customer needs across multiple use cases and markets. We are an early mover in long-duration energy storage and we believe we will enable more rapid implementation of renewable energy while also improving grid stability. The safety, flexibility and durability of our energy storage products enable customers to use them in nearly any location globally. Examples of use cases range from localized energy storage at commercial and industrial sites to grid-scale use cases, such as peaker plant replacement and grid stabilization.

Our Technology and Products

Our long-duration iron flow batteries are the product of nearly 50 years of scientific advancement. In the 1970’s, researchers first developed the concept of iron flow batteries. Despite realizing the battery’s promising ability to store energy, these researchers found that the reaction between the positive and negative sides created hydroxide formations that clogged the electrodes and reduced the activity of the electrolytes. Hydroxide formation caused rapid degradation in early iron flow batteries after only a few cycles. Unable to prevent the hydroxide from forming, these scientists were forced to abandon their work.

After years of neglect, our founders, Craig Evans and Dr. Julia Song, began advancing this technology in 2011 and formed Legacy ESS. Building upon this promising concept, our team has significantly enhanced the technology, improved round-trip efficiency and developed an innovative and patented solution to the hydroxide build-up problem. Our proprietary solution to eliminate the hydroxide formation is known as the Proton Pump, and it works by utilizing hydrogen generated by side reactions on the negative electrode. The Proton Pump converts the hydrogen back into protons in the positive electrolyte. This process eliminates the hydroxide and stabilizes the pH level of the system. The Proton Pump allows the electrolyte to be used for the 20,000 cycle-design without capacity fade.

Our iron flow batteries store energy by converting electrical energy into chemical energy. Each battery module is made up of one or more cells and each of these cells are made up of a negative electrode and a positive electrode, and these two electrodes are separated by a porous separator. On the positive side (positive electrode) of the battery during charge, ferrous iron (Fe+2) is oxidized into ferric iron (Fe+3) and on the negative side (negative electrode) of the battery, ferrous iron is reduced to iron metal. The porous separator is used to minimize the positive and the negative electrolyte from mixing, which helps improve the coulombic efficiency of the battery. The positive and negative electrolytes are stored separately in tanks outside of the battery and this electrolyte is constantly pumped in and out of the battery while in operation. To convert the chemical energy back to electrical energy, the reaction is reversed; on the positive side of the battery, ferric iron is reduced to ferrous iron and on the negative side, metallic iron is oxidized into ferrous iron. During these charge and discharge cycles the pH of the positive and negative electrolyte can change dramatically. The Proton Pump ensures that the electrolyte pH remains stable and clear of any hydroxides.

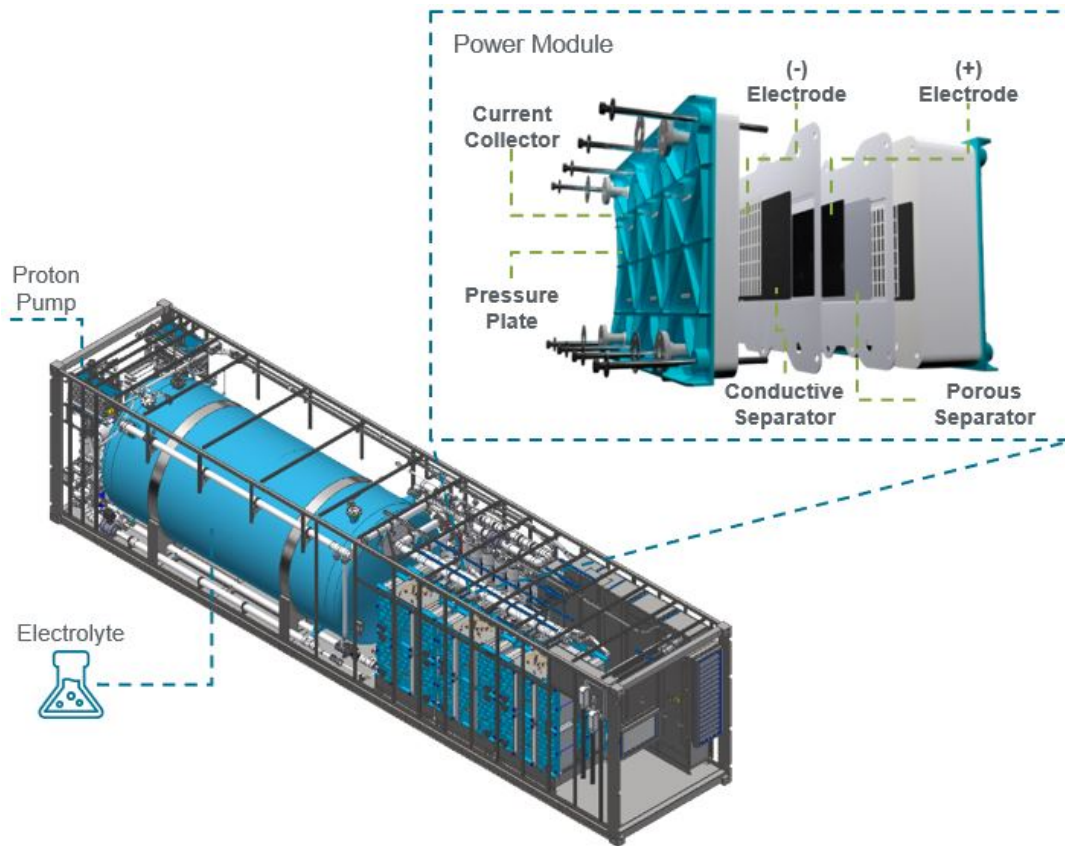
Our iron flow batteries store energy by charging positive and negative electrolyte tanks that are separated by a membrane. In order to release energy, we generate a reaction between the tanks via the membrane. The power generated is a factor of the membrane size, while the duration of storage we can offer is a factor of the tank sizes and the addition of electrolytes to the tank. The duration of stored energy can be independently varied from the power. We can increase the size of the electrolyte tanks at a relatively low cost, and the electrolyte, consisting of iron, potassium or sodium chloride and water, is extremely inexpensive. This allows for very low marginal costs of energy, making our technology attractive for long-duration energy storage.

Using our iron flow battery technology, we are developing two products, each of which is able to provide reliable, safe, long-duration energy storage. Our first energy storage product, the Energy Warehouse, is our “behind-the-meter” solution (referring to solutions that are located on the customers’ premise, behind the service demarcation with the utility) that offers energy storage ranging from 50 kilowatt (“kW”) to 90 kW and four to 12-hour duration. A 50 kW system, when used for eight hours of storage, can power the equivalent of 20 homes with a total output of 400 kilowatt-hours (“kWh”). Energy Warehouses are deployed in shipping container units, allowing for a fully turnkey system that can be installed easily at nearly any customer’s site. Potential use cases for Energy Warehouses include microgrids, peaker plant replacement on a small-scale and commercial and industrial (“C&I”) demand. For customers who require additional energy storage capacity, multiple units can be added to the same system. The first generation of our Energy Warehouse was deployed in 2015. Since then, all of our first-generation units have been returned to us except for two where the prototype trials continue. As of December 31, 2022, we had a limited number of second-generation products fully deployed for which we recognized revenue and were in the process of installing and commissioning additional second-generation Energy Warehouse units that had shipped.

Our second, larger scale energy storage product, the Energy Center, is a “front-of-the-meter” solution, meaning that it is designed for use in front of the service demarcation with the utility. Energy Center solutions are designed specifically for utilities, independent power producers (“IPPs”) and large C&I consumers. The Energy Center offers a fully customizable configuration range and is installed to meet our customers’ power, energy and duration needs. The Energy Center’s modular design allows the product to scale to meet IPP and utility-scale applications, including large renewable-plus-storage projects and standalone energy storage projects. The modular design of the Energy Center also allows for it to be flexibly configured to meet varying power and energy capacity needs and deployment in a variety of settings.

For both of our energy storage products, the intellectual property and points of differentiation are contained within the Proton Pump, power module and electrolyte. These components are protected by trade secrets, patents (both granted and in process) and years of research. The remainder of the Energy Warehouse and the Energy Center are intentionally designed to be easily produced. By using standard pumps and equipment and easily fabricated enclosures, our energy storage products can be assembled almost anywhere and produced at an efficient cost.

ESS’ Critical Technology



Customers

Our current and potential customers include utilities, IPPs and C&I end users. Our potential customers are interested in several use cases including solar shifting, peak shaving, price arbitrage, utility ancillary services and microgrids.

We intend to serve customers in both behind-the-meter and front-of-the-meter markets. In behind-the-meter applications, customers will use our energy storage products to reduce energy costs, integrate with renewable energy solutions to achieve corporate sustainability goals, and to enhance their energy resiliency. Behind-the-meter customers may include microgrids and small-scale C&I customers.

Front-of-the-meter customers, in contrast, are primarily utilities experiencing high rates of renewable energy penetration and requiring energy storage to help balance the grid, and IPPs who can leverage energy storage to improve the economics of renewable energy projects. These customers use our energy storage products to store energy on a utility scale that they can then utilize or sell to their customers when needed. Over time, we expect our front-of-the-meter customer base to expand to include additional types of energy suppliers. Current customers of ours include large utility companies. We also plan to sell products to IPPs.

We have designed the Energy Warehouse and Energy Center to address the needs of these two distinct markets. The Energy Warehouse is intended for behind-the-meter use owing to its small size and convenient turnkey packaging. The Energy Center can be used by larger customers in both the behind-the-meter and front-of-the-meter markets.

Suppliers

Our batteries are made predominantly of earth-abundant, non-toxic materials. These materials are considerably less expensive than rare earth metals that make up other batteries and as a result make up a low percentage of the total costs for our batteries. Because these materials are widely available, there are multiple suppliers for each input. In addition, we use limited high cost materials such as platinum in our manufacturing. While supply chain disruptions have impacted the ability of some of our suppliers to deliver certain components of our batteries to us in a timely manner as described in the section entitled “*Part I—Item 1A. Risk Factors—Risks Related to Our Technology, Products and Manufacturing—We depend on third-party suppliers for the development and supply of key raw materials and components for our energy storage products. We also depend on vendors for the shipping of our energy storage products. Continued delays in our supply chain and shipments could further harm our ability to manufacture and commercialize our energy storage products.*” the mechanical elements and control systems of our batteries are comprised of commercially available equipment that can be supplied by multiple manufacturers.

Partnerships

- *Munich Re*: Our batteries and technology can be purchased with a ten-year warranty which is backed by investment-grade, ten-year warranty and project insurance policies from Munich Re, a leading provider of reinsurance, primary insurance and insurance-related risk solutions, which stands behind the performance of our energy storage products. To our knowledge, we are the first long-duration energy storage company to receive this type of insurance, which provides a warranty backstop for our proprietary flow battery technology, supporting our performance obligations regardless of project size or location and de-risking the technology for our customers. We have also collaborated with Munich Re to develop separate project financing coverage for our customers. This project financing coverage provides warranty continuity insurance in the event of our insolvency, providing long-term assurance of project performance to our customers and their investors and lenders.
- *OneBeacon Insurance*: Through OneBeacon, we offer growing project surety capacity and corporate bonding options to our customers.
- *Export-Import Bank of the United States*: The Export-Import Bank of the United States (“EXIM”) is the official export credit agency of the United States. EXIM equips U.S. businesses with the financing tools necessary to compete for global sales when the private sector lenders are unable or unwilling to provide financing. Our energy storage products are qualified by EXIM and can provide financing for qualified overseas buyers.

Research & Development

Since January 1, 2019, we have invested approximately \$122 million on improving our technology and bringing our energy storage products to market. Our research and development efforts are conducted in Oregon and supported by our approximately 65 research and development employees.

We aim to be a leader in the long-duration energy storage market, and in order to do so, it is essential to continue our ongoing research and development activities. We have a research and development roadmap for additional breakthroughs to extend our technology advantages further. Expanding our technological capabilities to alternate chemistries and technologies is also a long-term goal of our research and development team.

Intellectual Property

Intellectual property is an integral differentiator for our business, and we rely upon a combination of patents, copyrights and trade secrets to protect our proprietary technology. We believe that we have enforceable intellectual property protection over all critical design elements as well as the key enabling technologies for iron flow batteries. We have developed a significant patent portfolio. We have over 175 patents that are granted or in the pipeline and an undisclosed number of trade secrets and identified patents. Without taking into account any possible patent term adjustments or extensions, the earliest these patents will begin to expire is 2028. We continually review our efforts to assess the existence and patentability of new intellectual, proprietary technology. We intend to leverage our iron flow expertise to drive innovation and are pursuing additional technological advancements.

Competition

The energy storage industry is highly competitive. The declining cost of renewable energy, the decrease in battery costs, improving battery technologies, and public financial support in the form of grants and tax incentives are shifting customer demands causing the industry to evolve and expand. The main competitive factors in the energy storage market include, but

are not limited to, safety and reliability, duration, performance and uptime, operational flexibility, asset life length and cyclability, ease of integration, operability in extreme temperatures, environmental sustainability, historical track record, and field-proven technology.

With the rising demand for clean electric power solutions with lower greenhouse gas emissions, there has been a transition to renewable energy sources and increasing penetration of distributed energy infrastructure. The proliferation of intermittent generating resources has created new challenges to electric grid stability, and thus an opportunity for an increased role for long-duration energy storage solutions. Climate change will also result in more unpredictable weather events including extreme temperatures, hurricanes and wildfires. Our technology can operate efficiently and effectively in these extreme weather conditions. Our key competitors include different energy storage technologies such as lithium-ion batteries, lithium metal batteries, vanadium or zinc bromine batteries, sodium sulfur batteries, compressed air, hydrogen, fuel cell and pumped-storage hydropower. Key competitors in the traditional lithium-ion space include Contemporary Amperex Technology Co. Limited, Energy Vault, LG Chem, Ltd., Samsung Electronics Co., Ltd., Sungrow Power Supply Co., Ltd., and Tesla, Inc. Key competitors in the non-lithium-ion space include CellCube, CMBlu Energy AG, Enerox GmbH, Eos Energy Enterprises, Inc., Highview Power PTY Ltd., Honeywell UOP, Hydrostor, Lockheed Martin, Malta Inc., Redflow, and VoltStorage GmbH. Many of our competitors have substantially greater financial, marketing, personnel and other resources than we do. Although we are small compared to our competitors, we believe we are well-positioned to compete with them in the market supported by our innovative iron flow battery technology, strategic partnerships and premier leadership team with a proven track record of success.

New technologies may enter the market that may have additional or superior advantages to our offerings. We believe there is significant government support available for energy storage technologies, and a variety of newer and emerging companies have announced plans to develop 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 offerings. We intend to continuously improve our product offerings and maintain robust research and development efforts in order to stay ahead of existing and emerging competitors.

Government Regulations and Compliance

We operate in the heavily regulated energy sector. As such, there are 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. Renewable energy is a priority for both the Biden administration and for many state and local governments across the country.

On the federal level, tax credits are currently in place that incentivize the deployment of renewable energy and battery storage. Battery storage projects storing energy from renewable energy sources are eligible for investment tax credits that allow project developers to monetize and sell the tax credits they experience from the creation of their projects. Additionally, battery storage is eligible for accelerated depreciation via the federal government's Modified Accelerated Cost Recovery System. Both policies provide tax and financing advantages for battery storage projects. They lower the capital requirements for renewable energy projects to be developed and open a new source of funding for these projects.

State incentives have also driven growth in the deployment of renewable energy and energy storage. States with high Renewable Portfolio Standards, for example, have seen greater deployment of renewables than states with similar renewable resources that lack such requirements. In many states, including Texas, Oklahoma and California, the RPS-driven deployment of intermittent renewables is straining the electric grid and thus driving demand for energy storage.

Incentives for renewable energy and grid upgrades in Australia may drive growth for battery and energy storage as well. The Australian Government's Powering Australia plan includes an investment of AU\$20 billion by 2030 for upgrades to the electricity grid to support more renewable power. At the state level, the government of Victoria has pledged to legislate Australia's largest renewable energy storage targets: 2.6 gigawatts of renewable energy storage capacity by 2030 and 6.3 gigawatts of storage by 2035. New South Wales has also recognized the critical need for energy storage, calling for the procurement of 2 GW of long-duration energy storage in its Electricity Infrastructure Roadmap.

All of these governmental programs supporting demand for our products are complex and political in nature, and therefore are subject to repeal, amendment, and interpretation in ways less supportive of our growth.

In addition to benefiting from governmental laws and regulations supporting energy storage, we are subject to federal, state and local requirements on the environment, health, safety and employment. Our manufacturing process is subject to environmental regulations, and our products are subject to regulations addressing safety and reliability. We are also subject to the requirements of the Occupational Safety and Health Act, local wage regulations and rigorous health and safety regulations in the State of Oregon.

Human Capital Management

We pride ourselves on our clean, innovative technology and our employees are dedicated to our strategic mission to deliver reliable, resilient and safe renewable energy storage solutions to communities worldwide. Approximately half of our employees are involved in product manufacturing in order to refine and grow our operations. As of December 31, 2022, we employed 271 full-time employees, based primarily in our headquarters in Wilsonville, Oregon.

In order to achieve our mission to create a reliable, resilient, and safe renewable energy future, we are committed to investing in our employees and building a respectful and diverse work environment. We provide equal employment opportunities to all persons regardless of race, age, color, gender, sexual orientation, national origin, physical or mental disability, religion, or any other characteristic protected by federal, state, or local law. Our employees are key to our success as a company, and we are committed to attracting, developing and retaining the best talent. Many of our employees are highly skilled in technical areas related to energy storage, and our philosophy is to both develop talent from within as well as strategically hire qualified individuals with the skills, experience and industry knowledge necessary to contribute to the growth and success of ESS. We also supplement our workforce with consultants or independent contractors as necessary. In order to retain top talent, we have designed our compensation program to provide employees with competitive compensation and benefits consistent with positions, skill levels, experience, knowledge, and geographic location. We are also continuously working to improve our recruiting, retention and development processes as our operations grow.

Executive management assists our board of directors in its oversight of human capital management including with respect to corporate culture, diversity and inclusion, recruiting, retention, attrition, talent management, career development and progression, succession and employee relations.

The success of our business is connected to the well-being of our team members. Accordingly, we are committed to the health, safety and wellness of our team members worldwide. In response to the COVID-19 pandemic, we implemented changes in our operations that we determined were in the best interest of our team members, our customers and partners, and the communities in which we operate.

Available Information

Our internet address is essinc.com. We will file or furnish periodic reports and amendments thereto, including our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K (and amendments to those reports), proxy and information statements and other information filed or furnished pursuant to Sections 13(a) and 15(d) of the Exchange Act with the SEC. The SEC maintains a website that contains reports, proxy and information statement, and other information regarding issuers that file electronically, which may be accessed through the SEC at <http://www.sec.gov>. Our reports, amendments thereto, proxy statements and other information are also made available, free of charge, on our investor relations website at investors.essinc.com as soon as reasonably practicable after we electronically file or furnish such information with the SEC. The information contained on the websites referenced in this Annual Report on Form 10-K is not incorporated by reference into this filing. Further, our references to website URLs are intended to be inactive textual references only. All statements made in any of our securities filings, including all forward-looking statements or information, are made as of the date of the document in which the statement is included, and we do not assume or undertake any obligation to update any of those statements or documents unless we are required to do so by law.

ITEM 1A. RISK FACTORS

Investing in our securities involves a high degree of risk. Before making an investment decision, you should consider carefully the risks and uncertainties described below, together with all of the other information in this Annual Report on Form 10-K, including our consolidated financial statements and related notes thereto included elsewhere in this Annual Report on Form 10-K and in our other filings with the Securities and Exchange Commission (“SEC”). Our business, operating results, financial condition or prospects could also be harmed by risks and uncertainties not currently known to us or that we currently do not believe are material. If any of the risks actually occur, our business, operating results, financial condition and prospects could be adversely affected. In that event, the market price of our common stock could decline, and you could lose part or all of your investment. References to “we,” “our,” or “us” generally refer to ESS, unless otherwise specified.

Summary Risk Factors

Our business is subject to numerous risks and uncertainties. The following is a summary of the principal risks we face:

- We face significant barriers in our attempts to produce our energy storage products, our energy storage products are still under development, and we may not be able to successfully develop our energy storage products at commercial scale. If we cannot successfully overcome those barriers, our business will be negatively impacted and could fail;

- As deployment of our energy storage products increases, we will incur corresponding warranty obligations. For earlier versions of second-generation energy storage products, our warranty obligations may be significant. If we are unable to develop our energy storage products for successful operation in the field and manage our warranty costs, our business and ability to generate revenue and achieve profitability could fail;
- We are in the early stage of commercialization. In addition, certain aspects of our technology have not been fully field tested. If we are unable to develop our business and effectively commercialize our energy storage products as anticipated, we may not be able to generate significant revenues or achieve profitability;
- We depend on third-party suppliers for the development and supply of key raw materials and components for our energy storage products. We have experienced significant disruptions to key supply chains, shipping times, manufacturing times, and associated costs;
- Continued delays in our supply chain or the inability to procure needed raw materials and components could further harm our ability to manufacture and commercialize our energy storage products;
- We have experienced and may experience delays in the future, disruptions, or quality control problems in our manufacturing operations;
- Our ability to expand depends on our ability to hire, train and retain an adequate number of manufacturing employees, in particular employees with the appropriate level of knowledge, background and skills;
- We may not be able to perform under our contracts or to realize the benefits of our agreements with strategic partners;
- We have experienced disruptions related to COVID-19, which continue to cause uncertainty;
- We may be unable to adequately control the costs associated with our operations and the components necessary to build our energy storage products, and if we are unable to reduce our cost structure and effectively scale our operations in the future, our ability to become profitable may be impaired;
- We rely on complex machinery for our operations, and the production of our iron flow batteries involves a significant degree of risk and uncertainty in terms of operational performance and costs;
- Our expectations for future operating and financial results and market growth rely in large part upon assumptions and analyses developed by us. If these assumptions or analyses prove to be incorrect, our actual operating results may be materially different from our anticipated results;
- We have a history of losses and have to deliver significant business growth to achieve sustained, long-term profitability and long-term commercial success;
- Our warranty insurance provided by Munich Re is important to many potential customers. Should we be unable to maintain our relationship with Munich Re and be unable to find a similar replacement, demand for our products may suffer;
- Failure to deliver the benefits offered by our technology, or the emergence of improvements to competing technologies, could reduce demand for our energy storage products and harm our business;
- Our plans are dependent on the development of a market acceptance of our products;
- We may face regulatory challenges to or limitations on our ability to sell our Energy Centers and Energy Warehouses directly in certain markets. Expanding operations internationally could expose us to additional risks;
- If we fail to protect, or incur significant costs in defending, our intellectual property and other proprietary rights, then our business and results of operations could be materially harmed; and
- As we endeavor to expand our business, we will incur significant costs and expenses, which could outpace our cash reserves. Unfavorable conditions or disruptions in the capital and credit markets may adversely impact business conditions and the availability of credit.

The following risk factors apply to our business and operations. These risk factors are not exhaustive, and investors are encouraged to perform their own investigation with respect to our business, financial condition and prospects. We may face additional risks and uncertainties that are not presently known to us, or that we currently deem immaterial, which may also impair our business. The following discussion should be read in conjunction with the consolidated financial statements and notes to the consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

Risks Related to Our Technology, Products and Manufacturing

We face significant barriers in our attempts to produce our energy storage products, our energy storage products are still under development, and we may not be able to successfully develop our energy storage products at commercial scale. If we cannot successfully overcome those barriers, our business will be negatively impacted and could fail.

Producing long-duration iron flow batteries that meet the requirements for wide adoption by commercial and utility-scale energy storage applications is a difficult undertaking. We are still in the early stage of commercialization and face significant challenges in completing the development of our containerized energy storage products and in producing our energy storage products in commercial volumes. Some of the development challenges that could prevent the introduction of our iron flow batteries include difficulties with (i) increasing manufacturing capacity to produce the volume of cells needed for our energy storage products, (ii) installing and optimizing higher volume manufacturing equipment, (iii) packaging our batteries to ensure adequate cycle life, (iv) cost reduction, (v) qualifying new vendors, (vi) expanding supply chain capacity, (vii) the completion of rigorous and challenging battery safety testing required by our customers or partners, including but not limited to, performance, life and abuse testing and (viii) the development of the final manufacturing processes and specifications.

Our Energy Warehouses are still in the development stage. As of December 31, 2022, we have limited deployment of second-generation S200 iron flow batteries and there may be significant yield, cost, performance and manufacturing process challenges to be solved prior to commercial production and use. We are likely to encounter further engineering challenges as we increase the capacity and efficiency of our batteries. If we are not able to overcome these barriers in developing and producing our iron flow batteries, our business could fail.

Our second-generation energy storage products S200 batteries are manufactured on our first-generation (“Gen I”) automation line. The Gen I automation line requires qualified labor to inspect the parts to ensure proper assembly. We have already experienced various issues related to the scaling up of the manufacturing process, and the lack of qualified labor to inspect our assemblies may further slow our production and impact our production costs and schedule. We have commissioned a new, more sophisticated, automation line, but it has not yet started commercial operations and any technical issues or delays in ramping its use may impact our production costs and product quality. If we experience delivery or installation delays under our customer contracts, we could experience order cancellations and lose business as well as face lawsuits seeking liquidated damages.

Even if we complete development and achieve volume production of our iron flow batteries, if the cost, performance characteristics or other specifications of the batteries fall short of our targets, our sales, product pricing and margins would likely be adversely affected.

We are in the early stage of commercialization. In addition, certain aspects of our technology have not been fully field tested. If we are unable to develop our business and effectively commercialize our energy storage products as anticipated, we may not be able to generate significant revenues or achieve profitability.

The growth and development of our operations will depend on the successful commercialization and market acceptance of our energy storage products and our ability to manufacture products at scale while timely meeting customers’ demands. There is no certainty that, once shipped, our products will operate over the long term as expected, and we may not be able to generate sufficient customer confidence in our latest designs and ongoing product improvements or to perform under our contracts with customers. There are inherent uncertainties in our ability to predict future demand for our energy storage products and, as a consequence, we may have inadequate production capacity to meet demand, or alternatively, have excess available capacity. Our inability to predict the extent of customer adoption of our proprietary technologies in the already-established traditional energy storage market makes it difficult to evaluate our future prospects.

As of December 31, 2022, we have limited second-generation products fully deployed. We began shipping our second-generation Energy Warehouses in the third quarter of 2021 and we are continuing to commission and test units. We have experienced various quality and performance issues with units that have been installed and although we have worked to repair or replace any known issues, our inability to address these or potential new issues effectively may have cost and warranty implications and may affect the acceptance of our products in the market. In addition, although we believe our iron flow battery technology is field tested and ready for sale, there are no assurances that our proprietary technologies, such as our Proton Pump, will operate as expected and with consistency. We have also experienced grid compatibility and other site integration issues that are not within our control, which has required and will continue to require an adjustment of our power electronics on a site-by-site basis. Our Energy Center product is still being developed and has not been completely designed or produced. In addition, certain operational characteristics of our Energy Warehouse or Energy Center products with S200 batteries have never been witnessed in the field. If our batteries are damaged during shipment, we may be required to repair or replace such units depending on the conditions for in-field serviceability. As we deploy our Energy Warehouse or Energy Center products with S200 batteries, we may discover further aspects of our technology that

require improvement. Any of these issues could delay existing contracts and new sales, result in order cancellations, result in significant warranty obligations, and negatively impact the market's acceptance of our technology. If we experience significant delays, order cancellations, warranty claims, or if we fail to develop and install our energy storage products in accordance with contract specifications, then our operating results and financial condition could be adversely affected. In addition, there is no assurance that if we alter or change our energy storage products in the future, that the demand for these new products will develop, which could adversely affect our business and revenues. If our energy storage products are not deemed desirable and suitable for purchase and we are unable to establish a customer base, we may not be able to generate significant revenues or attain profitability.

We depend on third-party suppliers for the development and supply of key raw materials and components for our energy storage products. We also depend on vendors for the shipping of our energy storage products. Continued delays in our supply chain and shipments could further harm our ability to manufacture and commercialize our energy storage products.

We depend on third-party suppliers for the development and supply of key raw materials and components for our energy storage products, including power module components (e.g., bipolar plates, frames, end plates and separators), shipping containers, chemicals and electronic components. We will need to maintain and significantly grow our access to key raw materials and control our related costs. We use various raw materials and components to construct our energy storage products, including polypropylene, iron and potassium chloride, that are critical to our manufacturing process. We also rely on third-party suppliers for injected molded parts and power electronics which undergo a qualification process that takes four to 12 months.

The cost of components for our iron flow batteries, whether manufactured by our suppliers or by us, depends in part upon the prices and availability of raw materials. In recent periods, we have seen an increase in costs for a wide range of materials and components and such increases may continue, particularly if the high rates of inflation seen in 2022 persist. Additionally, supply chain disruptions and access to materials have impacted and continue to impact our vendors and suppliers' ability to deliver materials and components to us in a timely manner. We have experienced significant disruptions to key supply chains, shipping times, shipping availability, manufacturing times, and increases in associated costs, both with respect to the sourcing of supplies and the delivery of our products. We have experienced and continue to experience delays to deliveries, vendor quality issues, as well as increases in our supply costs of many of our key components, including polypropylene, resin, power electronics, circuit board components and shipping containers. We expect such delays and cost increases to continue in 2023. The Chinese government has previously pursued and may reinstate 'zero COVID' policies, imposing lock downs that have adversely affected and may continue to adversely affect supply chains, which may further exacerbate these issues. We experienced delays in the delivery and installation of our semiautomated production line that was delivered in the second quarter of 2022 and our automated production line that was made operational in the fourth quarter of 2022 due to similar supply chain issues. If these issues persist, including any delays on additional manufacturing automation equipment that we require, they may further delay our ability to produce our products and to recognize additional revenue, particularly for our larger scale Energy Center products (see also "Part II. Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Components of Results of Operations—Revenue").

We expect prices for these materials to continue to increase in the near term and then to fluctuate over time. Available supply for these materials may also be unstable, depending on market conditions and global demand for these materials, including as a result of increased global production of batteries and energy storage products. For example, our Proton Pump is manufactured with certain raw materials, which not only include precious and non-precious metals but also carbon, graphite and thermoplastics, the prices of which have historically fluctuated on a cyclical basis and depend on a variety of factors over which we have no control. We have also experienced increased prices and/or inconsistent quality and supply of other electrical components and power module components including frames, end plates and separators. Any reduced availability of these materials may impact our access to cells and any further increases in their prices may reduce our profitability if we cannot recoup the increased costs through increased prices for our products. In addition, we utilize shipping containers to house our iron flow batteries within our Energy Warehouses and Energy Centers. Shipping delays caused by various economic, weather and COVID-19 pandemic effects have created a shortage in shipping containers and other supply chain delays. We have limited visibility into these supply chain disruptions and increased shipping container costs. Given that our energy storage products rely on the availability of shipping containers, such shortages may reduce our profitability if we are not able to pass the increased costs to our customers. Moreover, any such attempts to increase product prices may be difficult to achieve and even if achieved, may harm our brand, prospects and operating results.

In addition, the conflict between Russia and Ukraine has led to disruption, instability and volatility in the global markets and certain industries and may also lead to further disruptions, particularly if the conflict were to escalate further, that could negatively impact our operations and our supply chain. The U.S. government and other governments have already imposed severe sanctions and export controls against Russia and Russian interests and may yet impose additional sanctions and

controls. The impact of these measures, as well as potential responses to them by Russia, is currently unknown and they could adversely affect our business, supply chain, partners or customers.

We depend on third-party vendors for the shipping of our energy storage products. Recent conditions have also created disruptions in the logistics sector making it more challenging to find trucks to ship our products. Given current conditions, the shipping of our product to customers internationally in a timely and cost-effective manner may also prove challenging. The failure to deliver our products in a timely fashion or within budget may also harm our brand, prospects and operating results.

We do not know whether we will be able to maintain long-term supply relationships with our critical suppliers, or secure new long-term supply relationships on terms that will allow us to achieve our objectives, if at all.

We continually evaluate new suppliers, and we are currently qualifying several new suppliers. However, there are a limited number of suppliers for some of the key components of our products and we have, to date, fully qualified only a very limited number of such suppliers. Therefore, we have limited flexibility in changing suppliers. In addition, we have had issues with inconsistent quality and supply of other key power module components. We do not know whether we will be able to maintain long-term supply relationships with our critical suppliers, or secure new long-term supply relationships on terms that will allow us to achieve our objectives, if at all. A supplier's failure to develop and supply components in a timely manner, to supply components that meet our quality, quantity or cost requirements or our technical specifications, to support our warranty claims, or our inability to obtain alternative sources of these components on a timely basis or on terms acceptable to us, could each harm our ability to manufacture and commercialize our energy storage products. In addition, to the extent the processes that our suppliers use to manufacture components are proprietary, we may be unable to obtain comparable components from alternative suppliers, all of which could harm our business, financial condition and results of operations.

In the long term, we intend to supplement certain components from our suppliers by manufacturing them ourselves, which we believe will be more efficient, manufacturable at greater volumes and cost-effective than currently available components. However, our efforts to develop and manufacture such components have required and may require significant investments, and there can be no assurance that we will be able to accomplish this in the timeframes that we have planned or at all. If we are unable to do so, we may have to curtail our iron flow battery and energy storage product production or procure additional raw materials and components from suppliers at potentially greater costs, either of which may harm our business and operating results.

We have experienced in the past, and may experience in the future, delays, disruptions, or quality control problems in our manufacturing operations.

Our manufacturing and testing processes require significant technological and production process expertise and modification to support our projected business objectives. We have already experienced various issues related to the scaling up of the manufacturing process and while we seek to prevent the reoccurrence of such issues, there can be no assurance that such issues will not reoccur in the future. In addition, any change in our processes could cause one or more production errors, requiring a temporary suspension or delay in our production line until the errors can be researched, identified, and properly addressed and rectified. This may occur particularly as we introduce new products, modify our engineering and production techniques, and/or expand our capacity. In addition, our failure to maintain appropriate quality assurance processes could result in increased product failures, loss of customers, increased warranty reserves, increased production, and logistical costs and delays. Any of these developments could lead to current and potential customers cancelling or postponing their purchases of our products, which could have a material adverse effect on our business, financial condition and results of operations.

The COVID-19 pandemic has caused significant uncertainty in the United States and global economies as well as the markets we serve and could adversely affect our business, financial condition and results of operations.

There are no assurances that the COVID-19 pandemic has run its course. New cases, fueled by new variants and mutant strains as well as by waning immunity among persons already vaccinated and an increase in fatigue or skepticism with respect to initial or booster vaccinations, may continue to surge in certain parts of the world, which may result in authorities reimplementing measures to contain the virus, including travel bans and restrictions, quarantines, shelter-in-place orders, and business limitations and shutdowns. The Chinese government has previously pursued and may reinstate 'zero COVID' policies, imposing lock downs that have adversely affected and may continue to adversely affect supply chains, which potentially may have an impact on the global economy but possibly on our business as well. We remain unable to accurately predict the full impact that COVID-19 will have on our results of operations, financial condition, liquidity and cash flows due to numerous uncertainties, including the duration and severity of the pandemic and containment measures. Our compliance with containment and mitigation measures materially impacted our day-to-day operations, and there can be

no guaranty that a resurgence of the pandemic will not disrupt our business and operations or impair our ability to implement our business plan successfully.

In addition, as government support measures designed to mitigate the impact of the COVID-19 pandemic are phased out, we may experience an extended global economic downturn which could affect demand for our products and services and impact our results and financial condition. For example, we may be unable to collect receivables from certain customers. Also, a decrease in orders in a given period could negatively affect our revenues in future periods, particularly if experienced on a sustained basis. A resurgence of the pandemic may also have the effect of heightening many of the other risks described in these “*Risk Factors*”, particularly those risks associated with our customers and supply chain.

We may be unable to adequately control the costs associated with our operations and the components necessary to build our energy storage products, and if we are unable to reduce our cost structure and effectively scale our operations in the future, our ability to become profitable may be impaired.

Our ability to become profitable in the future will not only depend on our ability to successfully market our iron flow batteries, Energy Centers and Energy Warehouses, but also to control costs to manufacture our iron flow batteries, Energy Centers, and Energy Warehouses. If we are unsuccessful in our cost-reduction plans or if we experience design or manufacturing defects or other failures of our S200 battery as a result of these design changes, we could incur significant manufacturing and re-engineering costs. In addition, we will require significant capital to further develop and grow our business and expect to incur significant expenses, including those relating to research and development, raw material procurement, leases, sales and distribution as we build our brand and market our products, and general and administrative costs as we scale our operations. If we are unable to cost-efficiently design, manufacture, market, sell and distribute our energy storage products, our margins, profitability and prospects would be materially and adversely affected.

In addition, our Proton Pump is manufactured with certain raw materials, such as platinum, the prices of which have historically fluctuated on a cyclical basis and depend on a variety of factors over which we have no control. Substantial increases in the prices of raw materials would increase our operating costs and could adversely affect our profitability. The price of oil likewise fluctuates on a cyclical basis and has recently been subject to sustained cost pressure given current geopolitical events, which in turn may affect the cost of making, distributing and transporting our products. If we are unable to pass any such increased costs to our customers, this could have a material adverse effect on our business, financial condition and results of operations.

In order to achieve our business plan, we must continue to reduce the manufacturing and development costs for our iron flow batteries, Energy Centers and Energy Warehouses to expand our market. Additionally, certain of our existing customer contracts were entered into based on projections regarding cost reductions that assume continued advances in our manufacturing and services processes that we may be unable to realize. The cost of components and raw materials, for example, have been increasing and could continue to increase in the future, offsetting any successes in reducing our manufacturing costs. Any such increases could slow our growth and cause our financial results and operational metrics to suffer. In addition, we may face increases in our other expenses including increases in wages or other labor costs as well as installation, marketing, sales or related costs. In order to expand into new markets (especially markets in which the price of electricity from the grid is lower), we will need to continue to reduce our costs. Increases in any of these costs or our failure to achieve projected cost reductions could adversely affect our results of operations and financial condition and harm our business and prospects. If we are unable to reduce our cost structure in the future, we may not be able to achieve profitability, which could have a material adverse effect on our business and our prospects.

Further, we have not yet produced iron flow batteries, Energy Warehouses or Energy Centers at volume and our expected cost advantage for the production of these products at scale, compared to conventional lithium-ion cells, will require us to achieve rates of throughput, use of electricity and consumables, yield, and rates of automation demonstrated for mature battery, battery material, and manufacturing processes, that we have not yet achieved. If we are unable to achieve these targeted rates, our business will be adversely impacted.

In addition, customers may also have specific site requirements and interface technology, which has caused, and in the future may continue to cause, delays with respect to delivery and installation and consequently our ability to recognize revenue.

We rely on complex machinery for our operations and the production of our iron flow batteries involves a significant degree of risk and uncertainty in terms of operational performance and costs.

We rely heavily on complex machinery for our operations and the production of our iron flow batteries, and this equipment has not yet been used before for the large-scale manufacturing of iron flow batteries. The work required to integrate this equipment into the production of our iron flow batteries is time intensive and requires us to work closely with the equipment provider to ensure that it works properly for our unique iron flow battery technology. This integration work will

involve a significant degree of uncertainty and risk and may result in a delay in the scaling up of production or result in additional cost to our iron flow batteries.

Our manufacturing facilities will require large-scale machinery, particularly for the automated production line. Such machinery is likely to suffer unexpected malfunctions from time to time and will require repairs and spare parts to resume operations, which may not be available when needed. Unexpected malfunctions of our production equipment may significantly affect the intended operational efficiency or yield. Some examples would be inadequate bonding of the battery cells resulting in overboard or internal leakage, damage to the separator, or cracked bipolar or monopolar plates. In addition, because this equipment has never been used to build iron flow batteries, the operational performance and costs associated with this equipment can be difficult to predict and may be influenced by factors outside of our control, such as, but not limited to, failures by suppliers to deliver necessary components of our energy storage products in a timely manner and at prices and volumes acceptable to us, environmental hazards and remediation, difficulty or delays in obtaining governmental permits, damages or defects in systems, industrial accidents, fires, seismic activity and other natural disasters.

Operational problems with our manufacturing equipment could result in the personal injury to or death of workers, the loss of production equipment, damage to manufacturing facilities, monetary losses, delays and unanticipated fluctuations in production. In addition, operational problems may result in environmental damage, administrative fines, increased insurance costs and potential legal liabilities. All of these operational problems could have a material adverse effect on our business, cash flows, financial condition or results of operations.

Our future success depends in part on our ability to increase our production capacity, and we may not be able to do so in a cost-effective manner. If we elect to expand our production capacity by constructing one or more new manufacturing facilities, we may encounter challenges relating to the construction, management and operation of such facilities.

In order to grow our business, we will need to increase our production capacity. For example, our current manufacturing capacity may not be sufficient to meet our planned production targets and we are currently seeking to expand our capacity. Our ability to plan, construct and equip additional manufacturing facilities is subject to significant risks and uncertainties, including but not limited to the following:

- The expansion or construction of any manufacturing facilities will be subject to the risks inherent in the development and construction of new facilities, including risks of delays and cost overruns as a result of factors outside our control, which may include delays in government approvals, burdensome permitting conditions, and delays in the delivery or installation of manufacturing equipment and subsystems that we manufacture or obtain from suppliers, similar to or more severe than what we have experienced recently.
- In order for us to expand internationally, we anticipate entering into strategic partnerships, joint venture and licensing agreements that allow us to add manufacturing capability outside of the United States. Adding manufacturing capacity in any international location will subject us to new laws and regulations including those pertaining to labor and employment, environmental and export / import. In addition, any such expansion brings with it the risk of managing larger scale foreign operations.
- We may be unable to achieve the production throughput necessary to achieve our target annualized production run rate at our current and future manufacturing facilities.
- Manufacturing equipment may take longer and cost more to engineer and build than expected, and may not operate as required to meet our production plans.
- We may depend on third-party relationships in the development and operation of additional production capacity, which may subject us to the risk that such third parties do not fulfill their obligations to us under our arrangements with them.
- We may be unable to attract or retain qualified personnel.

If we are unable to expand our manufacturing facilities, we may be unable to further scale our business, which would negatively affect our results of operations and financial condition. We cannot provide any assurances that we would be able to successfully establish or operate an additional manufacturing facility in a timely or profitable manner, or at all, or within any expected budget for such a project. The construction of any such facility would require significant capital expenditures and result in significantly increased fixed costs. If we are unable to transition manufacturing operations to any such new facility in a cost-efficient and timely manner, then we may experience disruptions in operations, which could negatively impact our business and financial results. Further, if the demand for our products decreases or if we do not produce the expected output after any such new facility is operational, we may not be able to spread a significant amount of our fixed

costs over the production volume, thereby increasing our per product fixed cost, which would have a negative impact on our business, financial condition and results of operations.

In addition, if any of our partners suffer from capacity constraints, deployment delays, work stoppages or any other reduction in output, we may be unable to meet our delivery schedule, which could result in lost revenue and deployment delays that could harm our business and customer relationships. If the demand for our iron flow batteries, Energy Centers and Energy Warehouses or our production output decreases or does not rise as expected, we may not be able to spread a significant amount of our fixed costs over the production volume, resulting in a greater than expected per unit fixed cost, which would have a negative impact on our financial condition and our results of operations.

Our ability to expand our manufacturing capacity would also greatly depend on our ability to hire, train and retain an adequate number of manufacturing employees, in particular employees with the appropriate level of knowledge, background and skills. Should we be unable to hire, train, or retain such employees, our business and financial results could be negatively impacted.

We have in the past and may be compelled in the future to undertake product recalls or take other actions, which could adversely affect our business, prospects, operating results, reputation and financial condition.

We have in the past and may be compelled in the future to undertake product recalls. For example, in the past, we had to recall our Gen I battery modules due to vendors not properly manufacturing the parts to our specifications and we have also had to replace, and continue to expect to replace, certain components of our Gen II battery modules delivered to customers to date. Any quality issues can result in single module failures or can result in a cascade of numerous failures. Failures in the field can result in a single module replacement or may result in a total recall depending on the severity or contamination to the remainder of the system.

Any product recall in the future may result in adverse publicity, damage our reputation and adversely affect our business, financial condition and results of operations. In the future, we may, voluntarily or involuntarily, initiate a recall if any of our Energy Warehouses, Energy Centers, iron flow batteries, Proton Pump or components prove to be defective or noncompliant with applicable safety standards. Such recalls, whether caused by systems or components engineered or manufactured by us or our suppliers, would involve significant expense and diversion of management's attention and other resources, which could adversely affect our brand image in our target market and our business, financial condition and results of operations.

If required maintenance is performed incorrectly or if maintenance requirements exceed our current expectations, this could adversely affect our reputation, prospects, business, financial condition and results of operations.

Our energy storage products require periodic maintenance, such as the cleaning or replacement of air filters, inspection and re-torquing of electrical or mechanical fasteners, and the replenishment of hydrogen. These maintenance items are typically scheduled on a quarterly basis but may vary depending on how the customer uses the product. We currently rely on our customers that do not have service agreements with us or that perform maintenance that is not covered by such agreements to follow our product operations and maintenance manuals. If our customers or third parties retained by our customers fail to maintain or perform any required maintenance incorrectly, this may damage or adversely affect the performance of our energy storage products, which could adversely affect our reputation, prospects, business, financial condition and results of operations. Furthermore, there is risk of harm to persons or property if individuals performing maintenance do not follow applicable maintenance or safety protocols. Any such injury would likely lead to adverse publicity and potentially a safety recall. Any such adverse publicity could adversely affect our reputation, prospects, business, financial condition and results of operations.

In addition, for customers that have purchased maintenance services from us, unforeseen issues may arise that may require maintenance beyond what we currently expect. We have no experience providing maintenance on a large scale and since our existing and potential customers are geographically dispersed, if any recurring or significant one-off maintenance is required, this could increase our costs.

Our relationship with SBE, an affiliate of SoftBank Group Corp., is subject to various risks which could adversely affect our business and future prospects. There are no assurances that we will be able to commercialize iron flow batteries from our joint development relationship with SBE. In addition, SBE has no obligation to order any energy storage products from us under the framework agreement, including at any price point.

In April 2021, we signed a framework agreement with SBE to supply our energy storage products to SBE in support of its market activities. Under this agreement, we have made various commitments to meet SBE's potential need for our energy storage products and are obligated to reserve a certain percentage of our manufacturing capacity to meet SBE's future needs, subject to periodic reviews of its firm and anticipated orders, which may negate those capacity reservations if no firm demand is realized. However, SBE is under no obligation to place any firm orders with us at any price point, and any

future orders may be subject to future pricing or other commercial or technical negotiations, which we may not be able to satisfy, resulting in a diminished potential value of this relationship to us. To date, no orders have been placed under the framework agreement.

SBE, and any other business partners in the future, may have economic, business or legal interests or goals that are inconsistent with our goals. Any disagreements with SBE or other future business partners may impede our ability to maximize the benefits of these partnerships and slow the commercialization of our iron-flow batteries. Future commercial or strategic counterparties may require us, among other things, to pay certain costs or to make certain capital investments or to seek their consent to take certain actions. In addition, if SBE is unable or unwilling to meet its economic or other obligations under our partnership arrangements, we may be required to fulfill those obligations alone. These factors could result in a material adverse effect on our business and financial results.

The execution of our strategy to expand into new markets through strategic partnerships, joint ventures and licensing arrangements is in a very early stage and is also subject to various risks which could adversely affect our business and future prospects.

We may enter into strategic partnerships, joint ventures and licensing arrangements to expand our business and enter into new markets. However, there is no assurance that we will be able to consummate any such arrangements as contemplated to commercialize our energy storage products. There is no assurance that we will be able to realize the benefits of any such arrangements even if we do enter into such strategic partnerships, joint ventures and licensing arrangements. For example, we entered into a strategic partnership with Energy Storage Industries Asia Pacific (“ESI”) in August 2022 and into a framework agreement with Sacramento Municipal Utility District (“SMUD”) in September 2022. Under the terms of our agreement with ESI, we commenced delivery of Energy Warehouse systems to ESI in 2022 and will continue deliveries in 2023 and 2024 to fulfill their current 70-system order. Concurrently, ESI is expected to construct a manufacturing facility in Queensland, Australia, equipped to conduct final assembly of our systems from 2024 onward. However, either party may be unable to comply with its delivery, payment, or other obligations under the agreement, as applicable. Moreover, ESI may be unable to complete construction of the manufacturing facility or cancel or decline to place future orders of our product. In addition, SMUD has placed only one order under our agreement and is under no obligation to place additional orders with us. Any of these situations may result in diminished potential value of these types of relationships to us.

Any future strategic partnerships, joint ventures or licensing arrangements may require us, among other things, to pay certain costs, make certain capital investments or to seek the partner’s consent to take certain actions. In addition, if a partner is unable or unwilling to meet its economic or other obligations under the respective arrangements, we may be required to either fulfill those obligations alone to ensure the ongoing success of, or to dissolve and liquidate, the partnership, joint venture or licensing arrangement. These factors could result in a material adverse effect on our business, prospects and financial results.

Risks Related to Our Business and Industry

Our expectations for future operating and financial results and market growth rely in large part upon assumptions and analyses developed by us. If these assumptions or analyses prove to be incorrect, our actual operating results may be materially different from our anticipated results.

We operate in rapidly changing and competitive markets and our expectations for future performance are subject to the risks and assumptions made by management with respect to our industry. Operating results are difficult to predict because they generally depend on our assessment of the timing of adoption of our technology and energy storage products, which is uncertain. Expectations for future performance are also subject to significant economic, competitive, industry and other uncertainties and contingencies, all of which are difficult or impossible to predict and many of which are beyond our control, and subsequent developments may affect such expectations. As discussed further elsewhere in this Annual Report on Form 10-K, any future sales and related future cash flows may not be realized in full or at all. Furthermore, our planned expansion into new revenue streams such as franchising opportunities for our energy storage products may never be realized or achieve commercial success, whether because of lack of market adoption of our energy storage products, competition or otherwise. Important factors that may affect the actual results and cause our operating and financial results and market growth expectations to not be achieved include risks and uncertainties relating to our business, industry performance, the regulatory environment, general business and economic conditions and other factors described under the section entitled “*Cautionary Note Regarding Forward-Looking Statements*” in this Annual Report on Form 10-K.

In addition, expectations for future performance also reflect assumptions that are subject to change and do not reflect revised prospects for our business, changes in general business or economic conditions or any other transaction or event that has occurred or that may occur and that was not previously anticipated. In addition, long-term expectations by their nature become less predictive with each successive year. There can be no assurance that our future financial condition or results of operations will be consistent with our expectations or with the expectations of investors or securities research

analysts, which may cause the market price of our common stock to decline. If actual results differ materially from our expectations, we may be required to make adjustments in our business operations that may have a material adverse effect on our financial condition and results of operations.

We have a history of losses and have to deliver significant business growth to achieve sustained, long-term profitability and long-term commercial success.

We have had net losses on a U.S. GAAP basis in each fiscal year since our inception. For the years ended December 31, 2022 and 2021, we had \$78.0 million and \$477.1 million in net losses, respectively. In order to achieve profitability as well as long-term commercial success, we must continue to execute our plan to expand our business, which will require us to deliver on our existing global sales pipeline in a timely manner, increase our production capacity, reduce our manufacturing and warranty costs, competitively price and grow demand for our products, and seize new market opportunities by leveraging our proprietary technology and our manufacturing processes for novel solutions and new products. Failure to do one or more of these things could prevent us from achieving sustained, long-term profitability.

As we transition from our research and development phase and into a full commercial phase, we expect, based on our sales pipeline, to grow revenues. However, our revenue may not grow as expected for a number of reasons, many of which are outside of our control, including a decline in global demand for iron flow battery storage products, increased competition, or our failure to continue to capitalize on growth opportunities. If we are not able to generate and grow revenue and raise the capital necessary to support our operations, we may be unable to continue as a going concern.

Our energy storage products are still under development, and there is no assurance nonbinding pre-orders or framework agreements will be converted into binding orders or that orders will be completed.

Our business model is focused on building relationships with large customers. To date, we have engaged in limited marketing activities and we have only a limited number of contracts with customers. Our energy storage products are still subject to ongoing development and until the time that the design and development of our energy storage products is complete and is commercially available for purchase, and until we are able to scale up our marketing function to support sales, there will be uncertainty as to customer demand for our energy storage products. In particular, demand for our energy storage products by independent energy developers will depend upon a bankability determination by institutional sources of project finance capital and that determination may be difficult to obtain. The potentially long wait from the time an order is made until the time our energy storage products are delivered, and any delays beyond expected wait times, could also impact user decisions on whether to ultimately make a purchase. There is no assurance that nonbinding pre-orders or framework agreements will be converted into binding orders or sales. Even if we are able to obtain binding orders, customers may limit their volume of purchases initially as they assess our products and whether to make a broader transition to our energy storage products. This may be a long process and will depend on the safety, reliability, efficiency and quality of our energy storage products, as well as the support and service that we offer. It will also depend on factors outside of our control, such as general market conditions, that could impact customer buying decisions. As a result, there is significant uncertainty regarding demand for our energy storage products and the pace and levels of growth that we will be able to achieve.

In addition, some of the Energy Warehouse units we have shipped to date have not met the specifications set forth in the purchase contracts for such units, resulting in additional installation time and costs in order to receive customer acceptance of such units. If we are unable to meet contractual performance specifications of our units, customers may bring claims against us or choose to cancel or postpone orders, which would adversely affect our business, financial condition and results of operations.

Our warranty insurance provided by Munich Re is important to many potential customers. Should we be unable to maintain our relationship with Munich Re and be unable to find a similar replacement, demand for our products may suffer.

Our business is substantially dependent on our relationship with Munich Re. Our warranty insurance provided by Munich Re is important to many potential customers, and such warranty insurance is a bespoke product not widely offered by multiple insurers. There is no assurance that we will be able to maintain our relationship with Munich Re. If Munich Re terminates or significantly alters its relationship with us in a manner that is adverse to our company, our business would be materially adversely affected. Similarly, if we are unable to maintain our relationship with Munich Re, or if our arrangement with Munich Re is modified so that the economic terms become less favorable to us, we may be unable to find a similar replacement warranty insurance and our business would be materially adversely affected.

Failure to deliver the benefits offered by our technology, or the emergence of improvements to competing technologies, could reduce demand for our energy storage products and harm our business.

We believe that, compared to lithium-ion batteries, our energy storage solutions offer significant benefits, including using widely available, low-cost materials with no rare mineral components, being substantially recyclable at end-of-life, having an approximately 25-year product design life, and having a wide thermal operating range that eliminates the need for fire suppression and heating (except where otherwise required by applicable law), ventilation and air conditioning equipment, which would otherwise be required for use with lithium-ion batteries.

However, if our manufacturing costs increase, or if our or our customers' expectations regarding the operation, performance, maintenance and disposal of our energy storage products are not realized, then we could have difficulty marketing our energy storage products as a superior alternative to already-established technologies. This would also impact the market reputation and adoptability of our energy storage products.

We also currently market our energy storage products as having superior design cyclability to other energy storage solutions on the market. However, in general, flow batteries have suffered challenges running multiple cycles over their lifetime without experiencing degradation in storage capacity and, in particular, earlier iterations of our iron flow batteries, specifically our first-generation units, have failed at cycling reliably in the past. All of our first-generation units (except for two where the prototype trials continue) have been returned to us and so the continuing risk of product failure on our first generation units is limited. However, there is no assurance that our second-generation units will not fail or have issues cycling in the future if our technology does not operate as expected. If our technology is inadequate or our energy storage solutions fail to operate as expected or designed, our warranty costs may be significant and current and potential customers may choose to cancel or postpone orders or seek alternative solutions for their energy storage needs, which would adversely affect our business, financial condition and results of operations.

In addition, developments of existing and new technologies could improve the cost and usability profile of such alternative technologies, reducing any relative benefits currently offered by our energy storage products, which would negatively impact the likelihood of our energy storage products gaining market acceptance.

Our plans are dependent on the development of market acceptance of our products.

Our plans are dependent upon market acceptance of our products. Iron flow batteries represent an emerging market, and we cannot be sure that potential customers will accept iron flow batteries as a replacement for traditional power sources. In particular, traditional lithium-ion batteries, which are already produced on a large global scale and have widespread market acceptance, offer higher power density and round-trip efficiency than our iron flow batteries. If customers were to place greater value on power density and round-trip efficiency over what we believe to be the numerous other advantages of our technology, then we could have difficulty positioning our iron flow batteries as a viable alternative to traditional lithium-ion batteries and our business would suffer.

As is typical in a rapidly evolving industry, demand and market acceptance for recently introduced products and services are subject to a high level of uncertainty and risk. It is difficult to predict with certainty the size of the energy storage market and its growth rate. The development of a market for our products may be affected by many factors that are out of our control, including:

- the cost competitiveness of our products including availability and output expectations and total cost of ownership;
- the future costs associated with renewable energies;
- perceived complexity and novelty of our technology and customer reluctance to try a new product;
- the market for energy storage solutions and government policies that affect those markets;
- government incentives, mandates or other programs favoring zero carbon energy sources;
- local permitting and environmental requirements;
- customer preference for lithium-ion based technologies, including but not limited to the power density offered by lithium-ion batteries; and
- the emergence of newer, more competitive technologies and products.

If a sufficient market fails to develop or develops more slowly than we anticipate, we may be unable to recover the losses we will have incurred in the development of our products, and we may never achieve profitability.

Our future growth and success depend on our ability to sell effectively to large customers.

Many of our potential customers are electric utilities, and C&I businesses that tend to be large enterprises. Therefore, our future success will depend on our ability to effectively sell and deliver our products to such large customers. Sales to these end-customers involve risks that may not be present (or that are present to a lesser extent) with sales to smaller customers. These risks include, but are not limited to, (i) increased purchasing power and leverage held by large customers in negotiating contractual arrangements with us and (ii) longer sales cycles and the associated risk that substantial time and resources may be spent on a potential end customer that elects not to purchase our solutions.

Large organizations often undertake a significant evaluation process that results in a lengthy sales cycle. In addition, product purchases by large organizations are frequently subject to budget constraints, multiple approvals and unanticipated administrative, processing and other delays. Finally, large organizations typically have longer implementation cycles, require greater product functionality and scalability, require a broader range of services, demand that vendors take on a larger share of risks, require acceptance provisions that can lead to a delay in revenue recognition and expect greater payment flexibility. All of these factors can add further risk to business conducted with these potential customers.

We operate in highly competitive energy industries and there is increasing competition. Many of our competitors and potential competitors have substantially greater financial, marketing, personnel and other resources than we do and if we do not compete effectively, our competitive positioning and our operating results will be harmed.

The energy storage markets in which we intend to compete continue to evolve and are highly competitive. Many of our current and potential competitors are large entities at a more advanced stage in development and commercialization than we are and in some cases have substantially greater financial, marketing, personnel and other resources, to increase their market share. Our key competitors include different energy storage technologies such as lithium-ion batteries, lithium metal batteries, vanadium or zinc bromine batteries, sodium sulfur batteries, compressed air, hydrogen, fuel cell and pumped-storage hydropower. If our competitors continue to penetrate the energy storage market, our prospects for gaining market share will be diminished.

We expect competition in energy storage technology to intensify due to a regulatory push for lower-carbon energy sources, including intermittent sources such as wind and solar, continuing globalization, and consolidation in the energy industry. Developments in alternative technologies or improvements in energy storage technology made by competitors may materially adversely affect the sales, pricing and gross margins of our products.

Some of our current and potential competitors have longer operating histories and greater financial, technical, marketing and other resources than we do. These factors may allow our competitors to respond more quickly or efficiently than we can to new or emerging technologies. These competitors may engage in more extensive research and development efforts, undertake more far-reaching marketing campaigns and adopt more aggressive pricing policies, which may allow them to more effectively compete for new energy storage projects and customers.

Our project awards and sales pipeline may not convert to contracts, which may have a material adverse effect on our revenue and cash flows.

We expect a significant portion of the business that we will seek in the foreseeable future will be awarded through competitive bidding against other energy storage technologies and other forms of power generation. The competitive bidding process involves substantial costs and a number of risks, including the significant cost and managerial time to prepare bids and proposals for contracts that may not be awarded to us and our failure to accurately estimate the resources and costs that will be required to fulfill any contract we win. In addition, following a contract award, we may encounter significant expense, delay or contract modifications or award revocation as a result of our competitors protesting or challenging contracts awarded to us in competitive bidding. Our failure to compete effectively in this procurement environment could adversely affect our revenue and/or profitability.

Some of the project awards we receive and orders we accept from customers require certain conditions or contingencies (such as permitting, interconnection, financing or regulatory approval) to be satisfied, some of which are outside of our control. Certain awards are cancellable or revocable at any time prior to contract execution. The time periods from receipt of an award to execution of a contract, or receipt of a contract to installation may vary widely and are determined by a number of factors, including the terms of the award, governmental policies or regulations that go into effect after the award, the terms of the customer contract and the customer's site requirements. These same or similar conditions and contingencies may be required by financiers in order to draw on financing to complete a project. If these conditions or contingencies are not satisfied, or changes in laws affecting project awards occur, or awards are revoked or cancelled, project awards may not convert to contracts, and installations may be delayed or canceled. This could have an adverse impact on our revenue and cash flow and our ability to complete construction of a project.

Our contracted sales are subject to the risk of termination by the contracting party.

The majority of our commercial contracts contain provisions which allow the customer to terminate an agreement if certain conditions are not met or for extended force majeure (which could include inability to perform due to COVID-19). We have issued several force majeure notices to customers as a result of delays caused by COVID-19 and future COVID-19 delays could further impact such agreements, or the applicable agreements' termination provisions and result in the termination of such agreements. Our customers are also subject to force majeure events and may issue such notices to us. In addition, certain of our contracts can be terminated by the customer simply for convenience. We have experienced in the past, and may experience in the future, order cancellations, which could have an adverse impact on our revenues, longer term potential and market reputation, which would have an even greater impact on our ability to achieve future sales.

We may not be able to accurately estimate the future supply and demand for our products and services, which could result in a variety of inefficiencies in our business and hinder our ability to generate revenue. If we fail to accurately predict our manufacturing requirements, we could incur additional costs or experience delays.

We are a company with a limited operating history. As we continue the transition from research and development activities to commercial production and sales, it is difficult to predict our future revenues and appropriately budget for our expenses, and we may have limited insight into trends that may emerge and affect our business. We anticipate being required to provide expectations of our demand to our current and future suppliers prior to the scheduled delivery of products to potential customers. Currently, there is no historical basis for making judgments on the demand for our products and services or our ability to develop, manufacture, and deliver iron flow batteries, or our profitability in the future. If we overestimate our requirements, our suppliers may have excess inventory, which indirectly would increase our costs. If we underestimate our manufacturing requirements, our suppliers may have inadequate inventory or capacity, which could interrupt manufacturing of our products and result in delays in shipments and revenues. In addition, lead times for materials and components that our suppliers order may vary significantly and depend on factors such as the specific supplier, contract terms and demand for each component at a given time. If we fail to order sufficient quantities of product components in a timely manner, the delivery of batteries to our potential customers could be delayed, which would harm our business, financial condition and results of operations.

If we fail to manage our growth effectively, we may be unable to execute our business plan, maintain high levels of customer service, or adequately address competitive challenges.

We have experienced significant growth in customer contracts in recent periods and intend to continue to expand our business significantly within existing and new markets. This growth has placed, and any future growth may place, a significant strain on our management, operational, and financial infrastructure. In particular, we will be required to expand, train, and manage our growing employee base and scale and otherwise improve our information technology ("IT") infrastructure in tandem with that headcount growth. Our management will also be required to maintain and expand our relationships with customers, suppliers, and other third parties and attract new customers and suppliers, as well as manage multiple geographic locations.

Our current and planned operations, personnel, customer support, IT, information systems, and other systems and procedures might be inadequate to support future growth and may require us to make additional unanticipated investment in our infrastructure. Our success and ability to scale our business will depend, in part, on our ability to manage these changes in a cost-effective and efficient manner. If we cannot manage our growth, then we may be unable to take advantage of market opportunities, execute our business strategies, or respond to competitive pressures. This could also result in declines in quality or customer satisfaction, increased costs, difficulties in introducing new offerings, or other operational difficulties. Any failure to effectively manage growth could adversely impact our business and reputation.

We have signed product sales contracts and have entered into service agreements with customers. If we do not meet the obligations under these agreements or if our estimates of the projected useful life of our energy storage products are inaccurate, our business and financial results could be adversely affected.

We have entered into service agreements with certain customers for our energy storage products with terms of up to 25 years. Under the provisions of these contracts, we will provide services to maintain, monitor, and repair our energy storage products to meet minimum operating levels. While we have conducted tests to determine the overall life of our energy storage products, we have not run certain of our energy storage products over their projected useful life or in all potential conditions prior to large scale commercialization. As a result, we cannot be sure that these energy storage products will last to their expected useful life or perform as anticipated in all conditions, which could result in warranty claims, performance penalties, maintenance, on-going servicing and battery module replacement costs and/or a negative perception of our energy storage products.

Further, the occurrence of chronic defects or other chronic performance problems with respect to our deployed energy storage products could result in loss of customers, legal claims, including warranty and service agreement claims, or diversion of our resources, including through increased service and warranty expenses or financial concessions, and increased insurance costs. The costs incurred in correcting any material defects in our deployed energy storage products may be substantial and could adversely affect our business, financial condition, and results of operations.

Failure to adhere to contractual support warranty and services obligations may adversely affect our relationships with our customers and adversely affect our business, financial condition, and results of operations.

Our customers depend on our support organization to resolve performance issues relating to our energy storage products. Any failure to maintain high-quality support services, or a market perception that we do not maintain high-quality and highly responsive customer support, could adversely affect our reputation, our ability to sell our energy storage products to existing and prospective customers, and our business, financial condition and results of operations.

Our ability to proceed with projects under development and complete construction of projects on schedule and within budget are subject to contractual, technology, operating and commodity risks as well as market conditions that may affect our operating results.

Our ability to proceed with projects under development and complete construction of projects on schedule and within budget may be adversely affected by escalating costs and lead times for materials and components, tariffs, labor and regulatory compliance, inability to obtain necessary permits, interconnections or other approvals on acceptable terms or on schedule and by other factors. If any development project or construction is not completed, is delayed or is subject to cost overruns, we could become obligated to make delay or termination payments or become obligated for other damages under contracts, experience diminished returns or write off all or a portion of our capitalized costs in the project. Each of these events could have an adverse effect on our business, financial condition and results of operations. We currently face and will continue to face significant competition, including from products using other energy sources that may be lower priced or have preferred environmental characteristics.

We compete on the basis of our energy storage products' reliability, efficiency, environmental sustainability and cost. Technological advances in alternative energy products, improvements in the electric grid or other sources of power generation, or new battery technologies or market entrants may negatively affect the development or sale of some or all of our energy storage products or make our energy storage products less economically attractive, non-competitive or obsolete prior to or after commercialization. Significant decreases in the price of alternative technologies, or significant increases in the price of the materials we use to build our energy storage products could have a material adverse effect on our business because other generation sources could be more economically attractive to consumers than our energy storage products.

We invest significantly in research and development, and to the extent our research and development investments are not directed efficiently or do not result in material enhancements to our products and technologies, our business and results of operations would be harmed.

A key element of our strategy is to invest significantly in our research and development efforts to enhance the features, functionality, performance and ease of use of our products and technologies to address additional applications that will broaden the appeal of our products and technologies and facilitate their broad use. Research and development projects can be technically challenging and expensive. As a result of the nature of research and development cycles, there will be delays between the time we incur expenses associated with research and development activities and the time we are able to offer compelling enhancements to our products and technologies and generate revenue, if any, from those activities. If we expend a significant amount of resources on research and development efforts that do not lead to the successful introduction of new products, functionality or improvements that are competitive in our current or future markets, our business and results of operations will suffer.

The loss of one or more members of our senior management team, other key personnel or our failure to attract and retain qualified personnel may adversely affect our business and our ability to achieve our anticipated level of growth.

We depend on the continued services of our senior management team and other key personnel, each of whom would be difficult to replace. The loss of any such personnel, or the inability to effectively transition to their successors, could have a material adverse effect on our business and our ability to implement our business strategy. All of our employees, including our senior management, are free to terminate their employment relationships with us at any time. Any changes to our senior management team, including hires or departures, could cause disruption to our business and have a negative impact on operating performance, while these operational areas are in transition.

Additionally, our ability to attract qualified personnel, including senior management and key technical personnel, is critical to the execution of our growth strategy. Competition in the labor market, including for qualified senior management personnel and highly skilled individuals with technical expertise, is extremely intense. We face and are likely to continue to face challenges identifying, hiring, and retaining qualified personnel in all areas of our business, and we can provide no

assurance that we will find suitable successors as transitions occur. In addition, integrating new employees into our team, and key personnel in particular, could prove disruptive to our operations, require substantial resources and management attention, and ultimately prove unsuccessful. Our failure to attract and retain qualified personnel in all areas of our business, including senior management and other key technical personnel, could limit or delay our strategic efforts, which could have a material adverse effect on our business, financial condition and results of operations.

We are highly dependent on the services of Craig Evans, our President and Co-Founder, and Dr. Julia Song, our Chief Technology Officer and Co-Founder, who are married to each other. The separation or divorce of the couple in the future could adversely affect our business.

We are highly dependent on the services of Craig Evans, our President and Co-Founder, and Dr. Julia Song, our Chief Technology Officer and Co-Founder, who are married to each other. If Mr. Evans or Dr. Song were to discontinue their service to us due to death, disability or any other reason, or if they were to become separated or divorced or could otherwise not amicably work with each other, we would be significantly disadvantaged. Alternatively, their work performance may not be satisfactory if they become preoccupied with issues relating to their personal situation. In these cases, our business could be materially harmed.

Our results of operations may fluctuate from quarter to quarter, which could make our future performance difficult to predict and could cause our results of operations for a particular period to fall below expectations, resulting in a decline in the price of our common stock.

Our products take many months to manufacture and prepare for delivery and any revenue in future periods may fluctuate based on underlying customer arrangements. Further, we expect our arrangements may have multiple deliverables and performance obligations and the amount and timing of recognizing revenue for those different performance obligations may vary which could cause our revenue to fluctuate. Our revenues also depend on a number of other factors, some of which are beyond our control, including the impact of supply chain issues (see also “—Risks Related to Our Technology, Products and Manufacturing—We depend on third-party suppliers for the development and supply of key raw materials and components for our energy storage products. We also depend on vendors for the shipping of our energy storage products. Continued delays in our supply chain and shipments could further harm our ability to manufacture and commercialize our energy storage products.”). As a result, our quarterly results of operations are difficult to predict and may fluctuate significantly in the future.

We will initially depend on revenue generated from a single product and in the foreseeable future will be significantly dependent on a limited number of products.

We will initially depend on revenue generated initially from our Energy Warehouses and later on, our Energy Centers, and in the foreseeable future will continue to be significantly dependent on a limited number of products. Given that for the foreseeable future our business will depend on a limited number of products, to the extent our products are not well-received by the market, our sales volume, business, financial condition and results of operations would be materially and adversely affected.

Our cost reduction strategy may not succeed or may be significantly delayed, which may result in our inability to achieve profitability.

Our ability to successfully implement our overall business strategy relies on our ability to reduce development and manufacturing costs in the future. Our cost reduction strategy is based on the assumption that increases in production will result in economies of scale. In addition, our cost reduction strategy relies on advancements in our manufacturing process, global competitive sourcing, engineering design, reducing the cost of capital and technology improvements (including stack life and projected power output). Its successful implementation also depends on a number of factors, some of which are beyond our control, including the impact of inflation and the timely delivery of key supplies at reasonable prices. For example, our current supply imbalance may result in additional costs that exceed our current expectations. There is no assurance that our cost reduction strategy will be successful and failure to achieve our cost reduction targets could have a material adverse effect on our business, financial condition and results of operations.

Our planned expansion into new geographic markets or new product lines or services could subject us to additional business, financial, and competitive risks.

We have entered into contracts and other agreements to sell our products in a number of different geographic markets, including the United States, Europe (European Union (EU) and non-EU), and Australia. We have in the past, and may in the future, evaluate opportunities to expand into new geographic markets and introduce new product offerings and services that are a natural extension of our existing business. We also may from time to time engage in acquisitions of businesses or product lines with the potential to strengthen our market position, enable us to enter attractive markets, expand our technological capabilities, or provide synergy opportunities.

Our success operating in these new geographic or product markets, or in operating any acquired business, will depend on a number of factors, including our ability to develop solutions to address the requirements of the electric utility industry, renewable energy project developers and owners, and C&I end users, our timely qualification and certification of new products, our ability to manage increased manufacturing capacity and production, and our ability to identify and integrate any acquired businesses.

Further, any additional markets that we may enter could have different characteristics from the markets in which we currently sell products, and our success will depend on our ability to adapt properly to these differences. These differences may include regulatory requirements, including tax laws, trade laws, foreign direct investment review regimes, labor regulations, tariffs, export quotas, customs duties, or other trade restrictions, limited or unfavorable intellectual property protection, international, political or economic conditions, restrictions on the repatriation of earnings, longer sales cycles, warranty expectations, product return policies and cost, performance and compatibility requirements. In addition, expanding into new geographic markets will increase our exposure to presently existing and new risks, such as fluctuations in the value of foreign currencies and difficulties and increased expenses in complying with United States and foreign laws, regulations and trade standards, including the Foreign Corrupt Practices Act of 1977, as amended (the “FCPA”).

Failure to develop and introduce new products successfully into the market, to successfully integrate acquired businesses or to otherwise manage the risks and challenges associated with our potential expansion into new product and geographic markets, could adversely affect our revenues and our ability to sustain profitability.

Our business and operations may be adversely affected by outbreaks of contagious diseases and other adverse public health developments.

Any outbreaks of contagious diseases and other adverse public health developments in countries where we and our suppliers operate, could have a material and adverse effect on our business, financial condition and results of operations. These effects could include disruptions to or restrictions on our employees’ ability to travel, as well as temporary closures of our facilities or the facilities of our customers, suppliers, or other vendors in our supply chain. For example, the COVID-19 pandemic continues to adversely affect the economies and financial markets of many countries, resulting in an economic downturn that could affect demand for our products or our ability to obtain financing for our business or projects.

The outbreak of a pandemic may impact the health of our team members, directors or customers, reduce the availability of our workforce or those of companies with which we do business, or otherwise cause human impacts that may negatively impact our business. Any of these events, which may result in disruptions to our supply chain or customer demand, could materially and adversely affect our business and our financial results. The extent to which such a pandemic would impact our business and our financial results would depend on future developments, which are highly uncertain and cannot be predicted. Such developments may include the geographic spread of the pandemic, the severity of the disease, the duration of the outbreak, the actions that may be taken by various governmental authorities in response to the outbreak, such as quarantine or “shelter-in-place” orders and business closures imposed by various states within the United States, and the impact on the U.S. or global economy.

In the event of a resurgence of the COVID-19 pandemic or the outbreak of a new pandemic, there can be no assurance that any of our facilities will remain open (in full or in part), that our employees that are required to work remotely will subsequently return to the office or that our other operations will continue at full or limited capacity. If we again have to shut down production either due to a worsening of the COVID-19 pandemic or the outbreak of a new pandemic, particularly if there were an outbreak in one of our facilities, our project schedules and associated financing could be adversely affected. An extended period of remote working by our employees could strain our technology resources and introduce operational risks, including heightened cybersecurity risk. Further, we have experienced, and may continue to experience, increased costs and expenses, including as a result of (i) conducting periodic “fitness-for-duty” assessments for employees, including symptom checks and providing personal protective equipment, (ii) the expansion of benefits to our employees, including the provision of additional time off for employees who have contracted COVID-19 or are required to be quarantined or who are unable to obtain childcare to return to work, (iii) implementing increased health and safety protocols at all of our facilities, including increased cleaning and sanitization of workspaces, restricting visitor access, mandating social distancing guidelines and increasing the availability of sanitization products, and (iv) the increased cost of personal protective equipment. Taken together, these material impacts to our business caused us to issue several Force Majeure notices for customers anticipating shipments of our product and may result in additional delays in fulfilling customer orders. Although we believe our business is currently considered an “essential” business in our operating markets, if any of the applicable exceptions or exemptions are curtailed or revoked in the future, or any of these exemptions or exceptions do not extend to any of our key suppliers, our business, financial condition and results of operations could be adversely impacted.

While we attempted to continue business development activities during the COVID-19 pandemic, state and local shutdowns, shelter-in-place orders and travel restrictions impeded our ability to meet with customers and solicit new

business, and certain bids and solicitations in which we typically participate were postponed. In addition, our supply chain is heavily dependent on key materials domestically and internationally, including from China, which has seen a dramatic surge in cases following the Chinese government's decision to relax its 'zero COVID' policy. We have seen significant disruptions to key supply chains, shipping times, shipping availability, manufacturing times, and associated costs, both with respect to the sourcing of supplies and the delivery of our products. These disruptions, delays, and increased costs can have a material impact to our business, operations, and financial condition and as a result, at this time, it is impossible to predict the overall impact of COVID-19 or of any other pandemic on our business, liquidity, capital resources, supply chain and financial results or its effect on clean energy demand, capital budgets of our customers, or demand for our products.

Additionally, while we have continued to prioritize the health and safety of our team members and customers as we continue to operate during the pandemic, we face an increased risk of litigation related to our operating environments. Even after the COVID-19 pandemic has subsided, we may continue to experience adverse impacts to our business as a result of any economic recession that has occurred or may occur in the future because of the pandemic, or because the pandemic worsens again. Additional public health crises could also emerge in the future, including other pandemics or epidemics.

Any such public health crisis could pose further risks to us and could also have a material adverse effect on our business, results of operations and financial position.

We have identified material weaknesses in our internal control over financial reporting, and may identify additional material weaknesses in the future that may cause us to fail to meet our reporting obligations or result in material misstatements of our financial statements. If we fail to remediate any material weaknesses or if we otherwise fail to establish and maintain effective control over financial reporting, our ability to accurately and timely report our financial results could be adversely affected.

As a public company, we are required to comply with the SEC's rules implementing Sections 302 and 404 of the Sarbanes-Oxley Act of 2002 (the "Sarbanes-Oxley Act"), which requires management to certify financial and other information in our quarterly and annual reports and to provide an annual management report on the effectiveness of controls over financial reporting (see "Part II—Item 9A. Controls and Procedures"). When evaluating our internal control over financial reporting, we may identify material weaknesses that we may not be able to remediate in time to meet the applicable deadline for compliance with the requirements of Section 404. If we are unable to identify and remediate material weaknesses, it could result in material misstatements to our annual or interim financial statements that might not be prevented or detected on a timely basis or result in delayed filings of required periodic reports. If we are unable to assert that our internal control over financial reporting is effective, investors may lose confidence in the accuracy and completeness of our financial reports, the market price of our common stock could be adversely affected and we could become subject to litigation or investigations by the NYSE, the SEC, or other regulatory authorities, which could require additional financial and management resources (see also "—We may face litigation and other risks as a result of material weaknesses in our internal control over financial reporting.").

In connection with the audits of the financial statements of Legacy ESS for the years ending December 31, 2019 and 2020, we identified material weaknesses for Legacy ESS due to several deficiencies that were identified in the operation effectiveness of controls over (1) the identification and review of technical issues associated research and development, raw materials purchase commitments and equity process which resulted in adjustments to restate the 2019 and correct the 2020 financial statements; and (2) the review and analysis of certain transactions within Legacy ESS' financial statement close process. 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 financial statements will not be prevented or detected on a timely basis.

In addition, in preparing STWO's unaudited condensed consolidated financial statements as of and for the quarterly period ended September 30, 2021, our management concluded that our control around the interpretation and accounting for certain complex features of the Class A ordinary shares and warrants issued by STWO was not effectively designed or maintained. This material weakness resulted in the restatement of STWO's balance sheet as of September 21, 2020, its annual financial statements for the period ended December 31, 2020 and its interim financial statements for the quarters ended September 30, 2020, March 31, 2021 and June 30, 2021.

Our management has concluded that these material weaknesses in Legacy ESS' internal control over financial reporting were due to the fact that, at the time, Legacy ESS was a private company with limited resources and did not have the necessary business processes and related internal controls formally designed and implemented coupled with the appropriate resources with the appropriate level of experience and technical expertise to oversee our business processes and controls. Our management has concluded that the material weaknesses in STWO's internal control over financial reporting involved difficulty identifying and appropriately applying complex accounting standards and requirements relating to equity and warrants issued in connection with STWO's initial public offering.

We determined that we remediated the material weakness for Legacy ESS related to the identification and review of technical issues associated with research and development, raw materials purchase commitments and equity processes which resulted in adjustments to restate the 2019 financial statements and correct the 2020 financial statements and the material weakness related to STWO as of December 31, 2021. The second material weakness for Legacy ESS related to the operating effectiveness of controls over the review and analysis of certain transactions within ESS' financial statement close process remains unremediated as of December 31, 2021 and 2022. Therefore, our principal executive officer and principal financial officer have concluded that the Company's disclosure controls and procedures were not effective as of December 31, 2021 and 2022.

We are implementing measures designed to strengthen our accounting function and improve our internal control over financial reporting to remediate this material weakness, including the following: (i) implementing new controls, processes and technologies to improve our internal control over financial reporting; (ii) formalizing our processes and internal control documentation and strengthening supervisory reviews by our management; and (iii) hiring additional qualified finance and accounting professionals to accommodate the expansion of our business.

While we are working to remediate the material weakness as quickly and efficiently as possible, we cannot at this time, provide an estimate of the timeframe we expect in connection with implementing our plan to remediate the material weakness. These remediation measures may be time consuming, costly, and might place significant demands on our financial and operational resources. We cannot provide any assurances that the measures that we have taken and are planning to take will be sufficient to successfully remediate our existing material weakness or prevent future material weaknesses from occurring. We also cannot assure you that we have identified all of our existing material weaknesses.

Although we review and evaluate our internal control systems on a regular basis, we cannot provide any assurances that the measures that we have taken and are planning to take will be sufficient to prevent future material weaknesses and control deficiencies from occurring. We also cannot assure you that we have identified all of our existing material weaknesses. 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 our business and stock price.

We may face litigation and other risks as a result of material weaknesses in our internal control over financial reporting.

On April 12, 2021, the staff of the SEC issued a public statement entitled "Staff Statement on Accounting and Reporting Considerations for Warrants issued by Special Purpose Acquisition Companies" (the "SEC Staff Statement"). Following the issuance of the SEC Staff Statement, after consultation with Marcum LLP ("Marcum"), STWO's independent registered public accounting firm, our management and the audit committee of our board of directors (the "Audit Committee") concluded that it was appropriate to restate the previously issued audited financial statements of STWO as of December 31, 2020 and for the period from STWO's inception through December 31, 2020.

In preparing STWO's unaudited condensed consolidated financial statements as of and for the quarterly period ended September 30, 2021, we re-evaluated STWO's application of ASC 480-10-S99-3A to its accounting classification of its outstanding Class A ordinary shares, par value \$0.0001 per share (the "STWO Public Shares"), issued as part of the units sold in STWO's initial public offering on September 21, 2020. Historically, a portion of the STWO Public Shares was classified as permanent equity to maintain shareholders' equity greater than \$5 million on the basis that STWO would not redeem the STWO Public Shares in an amount that would cause its net tangible assets to be less than \$5,000,001, as described in STWO's memorandum and articles of association (the "Charter"). Pursuant to such reevaluation, our management determined that the STWO Public Shares included certain provisions that require classification of all of the Public Shares as temporary equity regardless of the net tangible assets redemption limitation contained in the Charter. In addition, in connection with the change in presentation for the STWO Public Shares, we determined we should restate STWO's earnings per share calculation to allocate income and losses shared pro rata between the two classes of shares. This presentation contemplates a business combination as the most likely outcome, in which case, both classes of shares share pro rata in the income and losses of STWO.

Therefore, on November 22, 2021, our management and the Audit Committee concluded that STWO's previously issued (i) audited balance sheet as of September 21, 2020, as previously restated in STWO's Annual Report on Form 10-K, as amended, for the fiscal year ended December 31, 2020, filed with the SEC on May 13, 2021 (the "2020 Form 10-K/A No. 1"); (ii) audited financial statements included in the 2020 Form 10-K/A No. 1; (iii) unaudited interim financial statements included in the Form 10-Q for the quarterly period ended September 30, 2020 as previously restated in the 2020 Form 10-K/A No. 1; (iv) unaudited interim financial statements included in STWO's Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2021, filed with the SEC on May 13, 2021; and (v) unaudited interim financial statements included in STWO's Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2021, filed with

the SEC on August 11, 2021 (collectively, the “Affected Periods”), should be restated to report all STWO Public Shares as temporary equity and should no longer be relied upon.

As such, we restated STWO’s financial statements for the Affected Periods in our second amended annual report on Form 10-K/A filed with the SEC on December 3, 2021, our first amended quarterly report on Form 10-Q/A for the period ended March 31, 2021 and our first amended quarterly report on Form 10-Q/A for the period ended June 30, 2021, each filed with the SEC on December 6, 2021, and our Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2021, filed with the SEC on November 22, 2021.

As part of the restatements, we identified material weaknesses in our internal controls over financial reporting. As a result of these material weaknesses, the restatements, the change in accounting for the warrants, the reclassification of STWO Public Shares, and other matters raised or that may in the future be raised by the SEC, we face potential for litigation or other disputes which may include, among others, claims invoking the federal and state securities laws, contractual claims or other claims arising from the restatements and material weaknesses in our internal control over financial reporting and the preparation of our financial statements. As of the date of this Annual Report on Form 10-K, we have no knowledge of any such litigation or dispute. However, we can provide no assurance that such litigation or dispute will not arise in the future. Any such litigation or dispute, whether successful or not, could have a material adverse effect on our business, results of operations and financial condition.

As deployment of our energy storage products increases, we will undertake corresponding warranty obligations. For earlier versions of second-generation energy storage products, our warranty obligations may be significant. If we are unable to develop our energy storage products for successful operation in the field and manage our warranty costs, our business and ability to generate revenue and achieve profitability could fail.

We have experienced quality issues in the field and our products may contain undetected errors or defects, especially when first introduced or when new generations of products are released. Errors, defects, or poor performance can arise due to design flaws, defects in raw materials or components or manufacturing difficulties, which can affect the quality of our products. Any actual or perceived errors, defects, or poor performance in our products could result in the replacement or recall of our products, shipment delays, rejection of our products, damage to our reputation, lost revenue, diversion of our engineering personnel from our product development efforts, and increases in customer service and support costs, all of which could have a material adverse effect on our business, financial condition, and results of operations.

Furthermore, defective components may give rise to warranty, indemnity, or product liability claims against us that exceed any revenue or profit we receive from the affected products. Our product generally comes with an initial one-year manufacturing warranty, based on the use case of the customer and normal system degradation expected from such use case. We also offer customers an extended performance warranty at an additional cost to the customer. For extended warranties, this may require system augmentation or battery replacements, which would be provided at no additional charge beyond the price of the extended warranty paid by such customer.

While we have accrued reserves for warranty claims, our estimated warranty costs for previously sold products may change to the extent future products are not compatible with earlier generation products under warranty. Our warranty accruals are based on various assumptions, which are based on a short operating history. As a result, these assumptions could prove to be materially different from the actual performance of our systems, causing us to incur substantial unanticipated expense to repair or replace defective products in the future or to compensate customers for defective products. Our failure to accurately predict future claims could result in unexpected volatility in, and have a material adverse effect on, our financial condition.

We will extend product warranties for our energy storage products, which products are complex and could contain defects and may not operate at expected performance levels, which could impact sales and market adoption of our energy storage products, affect our operating results or result in claims against us.

We develop complex and evolving energy storage products and we continue to advance the capabilities of our battery technology, product design and associated manufacturing processes. Our energy storage products are designed primarily to serve the behind-the-meter and front-of-the-meter markets. Our core technology components are incorporated into energy storage products that serve both types of customers.

We will provide an insurance-backed warranty on our energy storage products. We also will provide certain warranties with respect to the energy storage systems we sell, including on their installation, operations and maintenance, and for components not manufactured by us, we generally pass through to our customers the applicable manufacturers’ warranties. As part of our energy storage system contracts, we may provide the customer with performance guarantees that warrant that the underlying system will meet or exceed the minimum energy storage requirements specified in the contract. Under these performance guarantees, we bear the risk of electricity production or other performance shortfalls, even if they result

from failures in components from third-party manufacturers. These risks are exacerbated in the event such manufacturers cease operations or fail to honor their warranties.

We are still gaining field operating experience with respect to our energy storage products, and despite experience gained from trials, and pilot testing, and initial deployments performed by us, our partners and our suppliers, issues may continue to be found in existing or new energy storage products, for example, the flow issue that we identified during the second quarter of 2022 in certain battery modules that were manufactured and shipped to date. The occurrence of such issues or other defects could also cause us to incur significant warranty, support and repair costs in excess of our estimates, could divert the attention of our engineering personnel from our product development efforts, and could harm our relationships with our customers. Our customers could also seek and obtain damages from us for their losses.

Defects or performance problems in our products could result in loss of customers, reputational damage, and decreased revenue, and we may face warranty, indemnity, and product liability claims that may arise from defective products.

We may become subject to product liability claims, even those without merit due to product tampering or operation and maintenance in violation of operating manuals, which could harm our business, financial condition and results of operations. We face inherent risk of exposure to claims in the event our batteries do not perform as expected or malfunction resulting in personal injury or death. Our risks in this area are particularly pronounced given our S200 batteries have not yet been commercially tested at scale or mass produced. Although we seek to limit our liability, a product liability claim brought against us, even if unsuccessful, would likely be time consuming, could be costly to defend, and may hurt our reputation in the marketplace. A successful product liability claim against us could require us to pay a substantial monetary award. Moreover, a product liability claim could generate substantial negative publicity about our batteries and business and inhibit or prevent commercialization of other future battery candidates, which would have a material adverse effect on our brand, business, prospects and operating results. Any insurance coverage might not be sufficient to cover all potential product liability claims. Any lawsuit seeking significant monetary damages either in excess of our coverage, or outside of our coverage, may have a material adverse effect on our reputation, business and financial condition. We may not be able to secure additional product liability insurance coverage on commercially acceptable terms or at reasonable costs when needed, particularly if we do face liability for our products and are forced to make a claim under our policy.

In addition, as we grow our manufacturing volume, the chance of manufacturing defects could increase. We may be unable to correct manufacturing defects or other failures of our battery modules and the products in which they are incorporated, including the Energy Warehouse and Energy Center, in a manner satisfactory to our customers, which could adversely affect customer satisfaction, market acceptance and our business reputation.

Third parties might attempt to gain unauthorized access to our network or seek to compromise our products and services.

Our business is dependent on the security and efficacy of our networks and computer and data management systems. For example, our Energy Warehouses are connected to and controlled and monitored by our centralized remote monitoring service, and we rely on our internal computer networks for many of the systems we use to operate our business generally. From time to time, we may face attempts by others to gain unauthorized access through the Internet or otherwise or to introduce malicious software to our IT systems. We or our products may be a target of computer hackers, organizations or malicious attackers who attempt to:

- gain access to our network or Energy Warehouses or networks of our customers;
- steal proprietary information related to our business, products, employees, and customers; or
- interrupt our systems or those of our customers.

From time to time, we encounter attempts at gaining unauthorized access to our network and we routinely run intrusion checks. While we seek to detect and investigate unauthorized attempts and attacks against our network and products of which we become aware, and to prevent their recurrence where practicable through changes to our internal processes and tools and/or changes to our products, we remain potentially vulnerable to additional known or unknown threats. In addition to intentional security breaches, the integrity and confidentiality of company and customer data and our intellectual property may be compromised as a result of human error, product defects, or technological failures. Different geographic markets may have different regulations regarding data protection, raising potential compliance risks. We utilize third-party contractors to perform certain functions for us, and they face security risks similar to us. Further, retaliatory acts by Russia in response to Western sanctions could include cyber attacks that could disrupt the economy more generally or that could also impact our operations directly or indirectly.

Any failure or perceived failure by us or our service providers to prevent information security breaches or other incidents or system disruptions, or any compromise of security that results in or is perceived or reported to result in unauthorized access to, or loss, theft, alteration, release or transfer of, our information, or any personal information, confidential

information, or other data could result in loss or theft of proprietary or sensitive data and intellectual property, could harm our reputation and competitive position and could expose us to legal claims, regulatory investigations and proceedings, and fines, penalties, and other liability. Any such actual or perceived security breach, incident or system disruption could also divert the efforts of our personnel, and could require us to incur significant costs and operational consequences in connection with investigating, remediating, eliminating and putting in place additional tools, devices, policies, and other measures designed to prevent actual or perceived security breaches and other incidents and system disruptions, and in, for example, rebuilding internal systems, reduced inventory value, providing modifications to our products and services, defending against claims and litigation, responding to regulatory inquiries or actions, paying damages, or taking other remedial steps with respect to third parties. Moreover, we could be required or otherwise find it appropriate to expend significant capital and other resources to respond to, notify third parties of, and otherwise address the incident or breach and its root cause, and to notify individuals, regulatory authorities and others of security breaches involving certain types of data.

Further, we cannot assure that any limitations of liability provisions in our current or future contracts that may be applicable would be enforceable or adequate or would otherwise protect us from any liabilities or damages with respect to any particular claim relating to a security breach or other security-related matter. We also cannot be sure that our existing insurance coverage will continue to be available on acceptable terms or will be available in sufficient amounts to cover claims related to a security breach or incident, or that the insurer will not deny coverage as to any future claim. The successful assertion of 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 have a material adverse effect on our business, including our financial condition, operating results, and reputation.

The failure or breach of our IT systems could affect our sales and operations.

The availability and effectiveness of our energy storage products and our ability to conduct our business and operations, depend on the continued operation of IT and communications systems, some of which we have yet to develop or otherwise obtain the ability to use. Systems used in our business will be vulnerable to damage or interruption. Such systems could also be subject to break-ins, sabotage and intentional acts of vandalism, as well as disruptions and security incidents as a result of non-technical issues, including intentional or inadvertent acts or omissions by employees, service providers, or others. We expect to face significant challenges with respect to information security and maintaining the security and integrity of our systems and other systems used in our business, as well as with respect to the data stored on or processed by these systems. We also anticipate storing and otherwise processing confidential business information of ourselves and third parties, as well as personal information and other data. Advances in technology, an increased level of sophistication and expertise of hackers, and new discoveries in the field of cryptography can result in a compromise or breach of the systems used in our business or of security measures used in our business to protect confidential information, personal information, and other data. We may be a target for attacks by state-sponsored actors and others designed to disrupt our operations or to attempt to gain access to our systems or to data that is processed or maintained in our business.

We use outsourced service providers to help provide certain services. For example, we utilize email and collaboration tools, and other third-party services and service providers that store or otherwise process information, including personal information and confidential business information, on our behalf. Any such outsourced service providers face similar security and system disruption risks as us. We are at risk for interruptions, outages and breaches of our and our outsourced vendors' and service providers' operational systems and security systems, our products' and services' integrated software and technology, and customer data that we or our third-party service providers process. These may be caused by, among other causes, physical theft, viruses or other malicious code, denial or degradation of service attacks, ransomware, social engineering schemes, and insider theft or misuse. While we take steps to review security protections of services provided to us, there can be no guarantee that a failure or breach of such systems will not occur or be perceived to occur. If such failures were to occur, we may not be able to sufficiently recover to avoid the loss of data or any adverse impact on our operations that are dependent on such IT systems. This could result in lost sales as we may not be able to meet the demands for our product, and other harm to our business and results of operations. Further, some of the systems used in our business will not be fully redundant, and our disaster recovery planning cannot account for all eventualities. Any security breaches or incidents or other damage to or disruptions to any data centers or other systems used in our business could result in lengthy interruptions in our service and may adversely affect our business, prospects, financial condition and operating results.

Furthermore, because our IT systems are essential for the exchange of information both internally and in communicating with third parties, including our suppliers and manufacturers, security breaches or incidents could lead to unauthorized acquisition or unauthorized release of sensitive, confidential or personal data or information, improper use of our systems, or unauthorized access, use, disclosure, modification or destruction of information or defective products. Our IT systems also help us produce financial information. Any disruption, security breach, or incident could impact our ability to produce timely and accurate financial information needed for compliance, audit, and reporting purposes. If any such security

breaches or incidents were to continue, our operations and ability to communicate both internally and with third parties may be negatively impacted.

Significant capital and other resources may be required in efforts to protect against security breaches, incidents, and system disruptions, or to alleviate problems caused by actual or suspected security breaches and other incidents and system disruptions. The resources required may increase over time as the methods used by hackers and others engaged in online criminal activities and otherwise seeking to obtain unauthorized access to systems or data, and to disrupt systems, are increasingly sophisticated and constantly evolving. In addition, laws, regulations, government guidance, and industry standards and practices in the United States and elsewhere are rapidly evolving to combat these threats. We may face increased compliance burdens regarding such requirements with regulators and customers regarding our products and services and also incur additional costs for oversight and monitoring of our supply chain. We also cannot be certain that these systems, networks, and other infrastructure or technology upon which we rely, including those of our third-party suppliers or service providers, will be effectively implemented, maintained or expanded as planned, or will be free from bugs, defects, errors, vulnerabilities, viruses, or malicious code. We may be required to expend significant resources to make corrections or to remediate issues that are identified or to find alternative sources. Any of these circumstances potentially could have a negative impact on our business, prospects, financial condition and operating results.

We may not be able to identify or complete transactions with attractive acquisition candidates. Future acquisitions may result in significant transaction expenses and we may incur significant costs.

We may from time to time selectively pursue on an opportunistic basis acquisitions of additional businesses that complement our existing business and footprint. The success of any such growth strategy would depend, in part, on selecting strategic acquisition candidates at attractive prices and effectively integrating their businesses into our own, including with respect to financial reporting and regulatory matters. There can be no assurance that we will be able to identify attractive acquisition candidates or complete the acquisition of any identified candidates at favorable prices and upon advantageous terms and conditions, including financing alternatives. In addition, general economic conditions or unfavorable capital and credit markets could affect the timing and extent to which we can successfully acquire new businesses, which could limit our revenues and profitability.

Our facilities or operations could be damaged or adversely affected as a result of natural disasters and other catastrophic events.

Our facilities or operations could be adversely affected by events outside of our control, such as natural disasters, wars, health epidemics such as the ongoing COVID-19 pandemic, and other calamities. We cannot assure you that any backup systems will be adequate to protect our facilities or operations from the effects of fire, floods, typhoons, earthquakes, power loss, telecommunications failures, break-ins, war, riots, terrorist attacks or similar events. Any of the foregoing events may give rise to interruptions, breakdowns, system failures, technology platform failures or internet failures, which could cause the loss or corruption of data or malfunctions of software or hardware as well as adversely affect our ability to provide services.

We may not have sufficient insurance coverage to cover business continuity.

A sustained or repeated interruption in the manufacturing of our products due to labor shortage, fire, flood, war, pandemic, natural disasters, regulatory requirements, and similar unforeseen events beyond our control may interfere with our ability to manufacture our products and fulfil customers' demands in a timely manner, and make it difficult, or in certain cases, impossible for us to continue our business for a substantial period of time. Failure to manufacture our products and meet customer demands would impair our ability to generate revenues which would adversely affect our financial results. We currently do not have a formal disaster recovery or business continuity plan in place and any disaster recovery and business continuity plans that we may put in place may prove inadequate in the event of a serious disaster or similar event. As part of our risk management, we maintain insurance coverage for our business. However, we cannot assure you that the amounts of insurance will be sufficient to satisfy any damages or losses we may incur. If our insurance coverage is not sufficient, we may incur substantial expenses, which, could have a material adverse effect on our business.

We face risks associated with expanding our international operations, including unfavorable and uncertain regulatory, political, economic, tax and labor conditions.

We are subject to legal and regulatory requirements, political uncertainty and social, environmental and economic conditions in numerous jurisdictions, over which we have little control and which are inherently unpredictable. Our operations in such jurisdictions, particularly as a company based in the United States, create risks relating to conforming our products to regulatory and safety requirements and charging and other electric infrastructures; organizing local operating entities; establishing, staffing and managing foreign business locations; attracting local customers; navigating foreign government taxes, regulations and permit requirements; enforceability of our contractual rights; trade restrictions, foreign direct investment review regimes, customs regulations, tariffs and price or exchange controls; and preferences in

foreign nations for domestically manufactured products. Such conditions may increase our costs and tax liabilities, impact our ability to sell our products and require significant management attention, and may harm our business if we are unable to manage them effectively.

Changes in the global trade environment, including the imposition of import tariffs, could adversely affect the amount or timing of our revenues, results of operations or cash flows.

Our current supply chain includes Chinese sources for various parts. Escalating trade tensions, particularly between the United States and China have led to increased tariffs and trade restrictions, including tariffs applicable to certain electronic materials and components of our products.

Tariffs and the possibility of additional tariffs in the future have created uncertainty, particularly if we are not able to second source parts from alternative vendors. There can be no guaranty that these developments will not negatively impact the price of the positive electrode used in our products. Additionally, existing or future tariffs may negatively affect key customers and suppliers, and other supply chain partners. Such outcomes could adversely affect the amount or timing of our revenues, results of operations or cash flows, and continuing uncertainty could cause sales volatility, price fluctuations or supply shortages or cause our customers to advance or delay their purchase of our products.

We are in the process of qualifying alternative sources but anticipate it will take time before alternate sources are qualified for every component. In addition, such sources may charge a higher cost than our current suppliers, which would negatively impact our results of operations. There is no guaranty that we will be able to identify alternate suppliers that meet our quality, volume and price requirements. Failure to meet these requirements could result in supply disruptions and increased costs. It is difficult to predict what further trade-related actions governments may take, which may include additional or increased tariffs and trade restrictions, and we may be unable to react to such actions quickly and effectively, which could result in supply shortages and increased costs.

We could be subject to foreign exchange risk.

Our international sales are expected to be denominated in U.S. dollars. As a result, we will not have significant direct exposure to currency valuation exchange rate fluctuations. However, because our products are sold internationally, our products may be at a price disadvantage as compared with other non-U.S. suppliers if the U.S. dollar appreciates relative to other major foreign currencies. This could lead to our receiving lower prices or our struggling to compete for international customers. Consequently, currency fluctuations, in particular, a renewed strengthening of the U.S. dollar, could adversely affect the competitiveness of our products in international markets.

We may be required to take write-downs or write-offs, restructuring and impairment or other charges that could have a significant negative effect on our financial condition, results of operations and stock price, which could cause you to lose some or all of your investment.

Unexpected risks may arise that cause us to write-down or write-off assets, restructure our operations, or incur impairment or other charges that could result in losses. Even though these charges may be non-cash items and not have an immediate impact on our liquidity, the fact that we report charges of this nature could contribute to negative market perceptions about us or our securities. In addition, charges of this nature may cause us to violate net worth or other covenants to which we may be subject. Accordingly, our stockholders could suffer a reduction in the value of their shares.

Our results of operations could vary as a result of changes to our accounting policies or the methods, estimates and judgments we use in applying our accounting policies.

The method estimates and judgments we use in applying our accounting policies have a significant impact on our results of operations. Such methods, estimates and judgments are, by their nature, subject to substantial risks, uncertainties and assumptions, and factors may arise over time that could lead us to reevaluate our methods, estimates and judgments.

In future periods, management will regularly evaluate its estimates such as for service agreements, loss accruals, warranty, performance guarantees, liquidated damages and inventory valuation allowances. Changes in those estimates and judgments could significantly affect our financial condition and results of operations. We will also adopt changes required by the Financial Accounting Standards Board and the SEC.

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

As a relatively new public company, we have and will continue to incur increased costs and administrative burdens associated with operating a public company, and our management will continue to devote substantial time to new compliance initiatives. As a public company, we are subject to the reporting requirements of the Exchange Act, the Sarbanes-Oxley Act, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, as well as rules adopted, and to be adopted, by the SEC and the NYSE. Compliance with such public company requirements is expected to continue to increase costs and make certain activities more time-consuming. We expect our management and other personnel to

continue to devote a substantial amount of time to these compliance initiatives. We cannot predict or estimate the amount or timing of additional costs we may incur to respond to these requirements. The impact of these requirements could also make it more difficult for us to attract and retain qualified persons to serve on our board of directors or as executive officers.

In addition, we may not have adequate personnel with the appropriate level of knowledge, experience and training in the accounting policies, practices or internal controls over financial reporting required of public companies in the United States. The development and implementation of the standards and controls necessary for us to achieve the level of accounting standards required of a public company in the United States may require costs greater than expected. It is possible that we will be required to further expand our employee base and hire additional employees to support our operations as a public company which will increase our operating costs in future periods.

Moreover, our efforts to comply with new and changing laws and regulations related to public disclosure and corporate governance have resulted in increased general and administrative expenses and a diversion of management time and attention. Because these laws, regulations and standards are subject to varying interpretations, their application in practice may evolve over time as new guidance becomes available. This evolution may result in continuing uncertainty regarding compliance matters and additional costs necessitated by ongoing revisions to our disclosure and governance practices. If we fail to address and comply with these regulations and any subsequent changes, we may be subject to penalty and our business may be harmed.

We may engage in transactions with related parties and such transactions present possible conflicts of interest that could have an adverse effect on us.

We may enter into transactions with related parties. Related-party transactions create the possibility of conflicts of interest with regard to our management, including that:

- we may enter into contracts between us, on the one hand, and related parties, on the other, that are not as a result of arm's-length transactions;
- our executive officers and directors that hold positions of responsibility with related parties may be aware of certain business opportunities that are appropriate for presentation to us as well as to such other related parties and may present such business opportunities to such other parties; and
- our executive officers and directors that hold positions of responsibility with related parties may have significant duties with, and spend significant time serving, other entities and may have conflicts of interest in allocating time.

Such conflicts could cause an individual in our management to seek to advance his or her economic interests or the economic interests of certain related parties above ours. Further, the appearance of conflicts of interest created by related-party transactions could impair the confidence of our investors. Our board of directors regularly reviews these transactions. Notwithstanding this, it is possible that a conflict of interest could have a material adverse effect on our business, financial condition and results of operations.

Risks Related to Regulatory, Environmental and Legal Issues

We may face regulatory challenges to or limitations on our ability to sell our Energy Centers and Energy Warehouses directly in certain markets. Expanding operations internationally could expose us to additional risks.

While we intend to continue to sell our products across the United States both directly and through third parties, our ability to continue such sales may be affected by future limitations, either directly to the ability to sell energy storage or by broader regulation related to the sales and operation of distributed energy resources, which could have an impact on our ability to sell our products to the market.

Although we currently primarily operate in the United States, we continue to expand our business internationally. Any expansion internationally could subject our business to risks associated with international operations. In addition, there may be laws in international jurisdictions we have not yet entered or laws we are unaware of in jurisdictions we have entered that may restrict our sales or other business practices. Even for those jurisdictions we have analyzed, the laws in this area can be complex, difficult to interpret and may change over time. Continued regulatory limitations and other obstacles interfering with our ability to sell our energy storage products may harm our business, financial condition and results of operations. Additionally, any regulation that affects the sale or operations of distributed energy resources could diminish the real or perceived value of our energy storage solutions in those markets. As a result of these risks, any potential future international expansion efforts that we may undertake may not be successful.

Our customers may be required to obtain environmental, health and safety or other certifications in order to install our products. If our customers are unable to obtain the necessary certifications, we will not be able to install our products, which would negatively impact our revenues.

While our engineering team has worked closely with the CSA Group, Intertek, UL and Technischer Überwachungsverein certification agencies to obtain certifications of our flow battery products against all applicable safety standards, there is no guarantee that such certifications shall continue to be obtained. From our prior certifications, we have expanded our flow battery product certification to the European Conformity marking in the European Union and intend to expand to other national standards such as the international certification of the International Electrotechnical Commission (“IEC”). Failure to obtain IEC certification may have impact on our revenues, as such certifications are required by some of our customers.

We are subject to multiple U.S. federal, state, local and other applicable regulations. Changes in applicable law, regulations or requirements, or our material failure to comply with any of them, can increase our costs and have other negative impacts on our business.

Applicable laws and requirements address multiple aspects of our operations, such as worker safety, consumer rights, privacy, cybersecurity, employee benefits and more, and can often have different requirements in different jurisdictions. Changes in these requirements, or any material failure to comply with them, could increase our costs, affect our reputation, result in claims, litigation, and regulatory investigations or other proceedings, which may result in fines, penalties, and other liabilities, and which may limit our business, drain management’s time and attention or otherwise, and generally impact our operations in adverse ways.

We are subject to requirements relating to environmental and safety regulations and environmental remediation matters which could adversely affect our business, results of operation and reputation.

We are subject to numerous federal, state and local environmental laws and regulations governing, among other things, solid and hazardous waste storage, treatment and disposal, and remediation of releases of hazardous materials. There are significant capital, operating and other costs associated with compliance with these environmental laws and regulations. Environmental laws and regulations may become more stringent in the future, which could increase costs of compliance or require us to manufacture with alternative technologies and materials.

Federal, state and local authorities also regulate a variety of matters, including, but not limited to, health, safety and permitting in addition to the environmental matters discussed above. New legislation and regulations may require us to make material changes to our operations, resulting in significant increases to the cost of production.

Our manufacturing process involves hazards such as but not limited to hazardous materials, machines with moving parts, and high voltage and/or high current electrical systems typical of large manufacturing equipment and related safety incidents. There may be environmental or safety incidents that damage machinery or product, slow or stop production, or harm employees. Consequences may include litigation, regulation, fines, increased insurance premiums, mandates to temporarily halt production, workers’ compensation claims, or other actions that impact our company brand, finances, or ability to operate.

We may be exposed to delays, limitations and risks related to the environmental permits and other operating permits required to operate our products.

Operation of our manufacturing facilities requires land use and environmental permits and other operating permits from federal, state and local government entities. While we have all permits necessary to carry out and perform our current plans and operations at our existing facility, we may require additional environmental, wastewater and land use permits for the commercial operation of any future manufacturing facilities. Delays, denials or restrictions on any of the applications for or assignment of the permits to operate our manufacturing facilities could adversely affect our ability to execute on our business plans and objectives.

We may collect and process certain information about our customers and about individuals and will be subject to various laws and regulations relating to privacy, data protection and cybersecurity.

We may collect and process certain battery data required for performance monitoring, safety and serviceability. This information is transmitted to our control center and stored. Such data currently is limited to battery operational and safety parameters. Additionally, we collect and otherwise process other data relating to individuals, including business partners, prospects, employees, vendors, and contractors. Our handling of data relating to individuals is subject to a variety of laws and regulations relating to privacy, data protection and cybersecurity, and we may become subject to additional obligations, including contractual obligations, relating to our maintenance and other processing of this data, and new or modified laws or regulations. Laws, regulations, and other actual and potential obligations relating to privacy, data protection, and cybersecurity are evolving rapidly, and we expect to potentially be subject to new laws and regulations, or new interpretations of laws and regulations, in the future in various jurisdictions. These laws, regulations, and other obligations,

and changes in their interpretation, could require us to modify our operations and practices, restrict our activities, and increase our costs. Further, these laws, regulations, and other obligations are complex and compliance with them can be difficult. It is possible that these laws, regulations, and other obligations may be inconsistent with one another or be interpreted or asserted to be inconsistent with our business or practices. We anticipate needing to dedicate substantial resources to comply with laws, regulations, and other obligations relating to privacy and cybersecurity in order to comply. Any actual or alleged failure by us to comply with our privacy policy or any federal, state or international privacy, data protection or cybersecurity laws or regulations or other obligations could result in claims and litigation against us, regulatory investigations and other proceedings, legal liability, fines, damages and other costs. Any actual or alleged failure by any of our vendors or business partners to comply with contractual or legal obligations regarding the protection of information about our customers could carry similar consequences. Should we become subject to additional laws, regulations, or other obligations relating to privacy, data protection or cybersecurity, we may need to undertake compliance efforts that could carry a large cost and could entail substantial time and other resources.

Further, although we take steps to protect the security of our customers' personal information and other personal information within our control, we may face actual or perceived security breaches, incidents, or other misuses of this information, and many jurisdictions have enacted laws requiring companies to notify individuals, regulatory authorities and others of security breaches involving certain types of data. We may be required to expend significant resources to comply with security breach and incident notification requirements if a third party accesses or acquires such personal information without authorization, if we otherwise experience a security breach or incident or loss or damage of personal information, or if this is perceived to have occurred. Any actual or perceived breach of our network or systems, or those of our vendors or service providers, could result in claims, litigation, and proceedings against us by governmental entities or others, have negative effects on our business and future prospects, including possible fines, penalties and damages, and could result in reduced demand for our energy storage products and harm to our reputation and brand, resulting in negative impacts to our business, prospects, and financial results.

We could be subject to penalties and other adverse consequences for any violations of the FCPA, and other foreign anti-bribery and anti-corruption laws.

We are subject to the FCPA, the U.S. domestic bribery statute contained in 18 U.S.C. § 201, the United Kingdom Bribery Act 2010, and possibly other anti-bribery and anti-corruption laws in countries outside of the United States in which we conduct our activities. We may have business dealings with customers in certain countries that are high risk for corruption. Anti-corruption and anti-bribery laws have been enforced aggressively in recent years and are interpreted broadly to generally prohibit companies and their employees, agents, representatives, business partners, and third-party intermediaries from authorizing, offering, or providing, directly or indirectly, improper payments or benefits to recipients in the public or private sector.

We sometimes leverage third parties to sell our products and conduct our business abroad. We, our employees, agents, representatives, business partners or third-party intermediaries may have direct or indirect interactions with officials and employees of government agencies or state-owned or affiliated entities and may be held liable for the corrupt or other illegal activities of these employees, agents, representatives, business partners or third-party intermediaries even if we do not explicitly authorize such activities. We cannot assure you that all of our employees and agents will not take actions in violation of applicable law, for which we may be ultimately held responsible. We currently have contracts and may potentially operate in parts of the world that have experienced higher levels of governmental corruption and as we increase our international sales and business, our risks under these laws may increase. In addition, due to the level of regulation in our industry and related energy industries, our entry into certain jurisdictions may require substantial government contact where norms can differ from U.S. standards.

These laws also require that we keep accurate books and records and maintain internal controls and compliance procedures designed to prevent any such actions. While we have policies and procedures to address and to mandate compliance with such laws, we cannot assure you that none of our employees, agents, representatives, business partners or third-party intermediaries will take actions in violation of our policies and applicable law, for which we may be ultimately held responsible.

In the event that we believe, have reason to believe, or are notified that our employees, agents, representatives, business partners, or third party intermediaries have or may have violated applicable laws, including anti-bribery and anti-corruption laws, we may be required to investigate or have outside counsel investigate the relevant facts and circumstances, and detecting, investigating and resolving actual or alleged violations can be expensive and require significant time and attention from senior management. Any allegation or violation of U.S. federal and state and non-U.S. laws, regulations and policies regarding anti-bribery and anti-corruption could result in substantial fines, sanctions, civil and/or criminal penalties, whistleblower complaints, sanctions, settlements, prosecution, enforcement actions, damages, adverse media coverage, investigations, loss of export privileges, suspension or debarment from government contracts, or other

curtailment of operations in the United States or other applicable jurisdictions. In addition, actual or alleged violations could damage our reputation and ability to do business. Any of the foregoing could materially adversely affect our reputation, business, financial condition, prospects and results of operations.

We are subject to governmental export and import controls and economic sanctions programs that could impair our ability to compete in international markets or subject us to liability if we violate these controls.

Our products and services are, or may in the future be, subject to U.S. export control laws and regulations including the Export Administration Regulations (“EAR”) and trade and economic sanctions maintained by the Office of Foreign Assets Control (“OFAC”) and to similar laws and regulations in all other jurisdictions in which we operate. As such, an export license may be required to export, re-export or transfer our products and services to certain countries or end-users or for certain end-uses. If we were to fail to comply with such export control laws and regulations or trade and economic sanctions, we could be subject to both civil and criminal penalties, including substantial fines, possible incarceration for employees and managers for willful violations, and the possible loss of our export and/or import privileges. Compliance with the EAR, OFAC sanctions, and other applicable regulatory requirements regarding the import and export of our products or the performance of services, may create delays in the introduction of our products and services in non-U.S. markets, prevent our customers with non-U.S. operations from deploying these products and services throughout their global systems or, in some cases, prevent the export of the products and services to some countries or users altogether. We may enter into agreements with customers and counterparties located in countries subject to list-based OFAC sanctions.

Obtaining the necessary export license for a particular sale or offering may not be possible, may be time-consuming, and may result in the delay or loss of sales opportunities. Further, U.S. export control laws and trade and economic sanctions as well as similar laws and regulations in other jurisdictions prohibit the export of products and services to certain U.S. embargoed or sanctioned countries, governments, and persons, as well as for prohibited end-uses. Even though we have taken precautions to ensure that we and our partners comply with all relevant import and export control laws and regulations and sanctions, monitoring and ensuring compliance with these complex laws and regulations is particularly challenging, and any failure by us or our partners to comply with such laws and regulations could have negative consequences for us, including reputational harm, government investigations and penalties.

Any change in domestic or international export or import laws or regulations, economic sanctions, or related legislation, shift in the enforcement or scope of existing export, import, or sanctions laws or regulations, or change in the countries, governments, persons, or technologies targeted by such export, import, or sanctions laws or regulations, could result in decreased use of our products and/or services by, or in our decreased ability to export or sell our products and/or services to, end-customers with international operations.

We may be exposed to various risks related to legal proceedings or claims that could adversely affect our operating results. The nature of our business exposes us to various liability claims, which may exceed the level of our insurance coverage resulting in our not being fully protected.

We have been and may continue to be party to lawsuits in the normal course of our business. Litigation can be expensive, lengthy and disruptive to normal business operations. Moreover, the results of complex legal proceedings are difficult to predict. Responding to lawsuits brought against us, or legal actions that we may initiate, can be expensive and time-consuming. Unfavorable outcomes from these claims and/or lawsuits could adversely affect our business, financial condition or results of operations, and we could incur substantial monetary liability and/or be required to change our business practices.

Our business may expose us to claims for personal injury, death or property damage resulting from the use of our products or from employee related matters. Additionally, we could be subject to potential litigation associated with compliance with various laws and governmental regulations at the federal, state or local levels, such as those relating to the protection of persons with disabilities, employment, health, safety, security and other regulations under which we operate.

We carry comprehensive insurance, subject to deductibles, at levels we believe are sufficient to cover existing and future claims made during the respective policy periods. However, we may be exposed to multiple claims, and, as a result, could incur significant out-of-pocket costs before reaching the deductible amount, which could adversely affect our financial condition and results of operations. In addition, the cost of such insurance policies may increase significantly upon renewal of those policies as a result of general rate increases for the type of insurance we carry as well as our historical experience and experience in our industry. Although we have not experienced any material losses that were not covered by insurance, our existing or future claims may exceed the coverage level of our insurance, and such insurance may not continue to be available on economically reasonable terms, or at all. If we are required to pay significantly higher premiums for insurance, are not able to maintain insurance coverage at affordable rates or must pay amounts in excess of claims covered by our insurance, then we could experience higher costs that could adversely affect our financial condition and results of operations.

We are subject to certain restrictions and obligations on our business as a result of grants and/or loans received under certain governmental programs and we may be subject to similar or other restrictions to the extent we utilize governmental grants in the future.

Some of our research has been funded by grants from U.S. government agencies. In conjunction with the Advanced Research Projects Agency-Energy grant we received from the Department of Energy, we granted to the United States a non-exclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States inventions related to iron flow technology and made within the scope of the grant. When new technologies are developed with U.S. government funding, the government obtains certain rights in any resulting patents and technical data, generally including, at a minimum, a nonexclusive license authorizing the government to use the invention or technical data for noncommercial purposes. U.S. government funding must be disclosed in any resulting patent applications, and our rights in such inventions will normally be subject to government license rights, periodic progress reporting, foreign manufacturing restrictions and march-in rights. Therefore, if we failed to disclose to the Department of Energy an invention made with grant funds that we disclosed to patent counsel or for publication, or if we elect not to retain title to the invention, the United States may request that title to the subject invention be transferred to it.

March-in rights refer to the right of the U.S. government, under certain limited circumstances, to require us to grant a license to technology developed under a government grant to a responsible applicant or, if we refuse, to grant such a license itself. March-in rights can be triggered if the government determines that we have failed to work sufficiently towards achieving practical application of a technology or if action is necessary to alleviate health or safety needs, to meet requirements of federal regulations or to give preference to U.S. industry. If we breach the terms of our grants, the government may gain rights to the intellectual property developed in our related research. The government's rights in our intellectual property may lessen its commercial value, which could adversely affect our performance.

To the extent we utilize governmental grants in the future, the governmental entities involved may retain certain rights in technology that we develop using such grant money. These rights could restrict our ability to fully capitalize upon the value of this research by reducing total revenues that might otherwise be available since such governmental rights may give the government the right to practice the invention without payment of royalties if we do not comply with applicable requirements. Such grants and other forms of government incentives may also subject us to additional disclosure or reporting requirements.

The reduction, elimination or expiration of government tax credits, subsidies and economic incentives related to renewable energy solutions could reduce demand for our technology and harm our business.

The U.S. federal government and some state and local governments provide incentives to end users and potential purchasers of our energy storage products in the form of rebates, tax credits and other financial incentives, such as system performance payments and payments for renewable energy credits associated with renewable energy generation. We will rely on these governmental rebates, tax credits and other financial incentives to significantly lower the effective price of the energy storage products to our customers in the United States. However, these incentives may expire on a particular date, end when the allocated funding is exhausted, or be reduced or terminated as a matter of regulatory or legislative policy.

Our energy storage products have qualified for tax exemptions, incentives or other customer incentives in many states including California. Some states have utility procurement programs and/or renewable portfolio standards for which our technology is eligible. There is no guarantee that these policies will continue to exist in their current form, or at all. Such state programs may face increased opposition on the U.S. federal, state and local levels in the future. Changes in federal or state programs could reduce demand for our energy storage products, impair sales financing and adversely impact our business results.

On August 16, 2022, President Biden signed into law the Inflation Reduction Act (the "IRA"), which extends the availability of investment tax credits ("ITCs") and production tax credits and makes significant changes to the tax credit regime that applies to solar and energy storage products. As a result of changes made by the IRA, the ITC for solar generation projects is extended until at least 2033, and has been expanded to include stand-alone battery storage. This expansion provides significant certainty on the tax incentives that will be available to stand-alone battery projects in the future. We believe the IRA will increase demand for our services due to the extensions and expansions of various tax credits that are critical for our customers' economic returns, while also providing more certainty in and visibility into the supply chain for materials and components for energy storage systems. However, the full impact of the IRA cannot be known, and many of the IRA's provisions, including with respect to battery storage projects, are not self-executing and require further guidance from the IRS and Treasury Department, which we expect to be issued in the coming months and years. Further, although these provisions generally subsidize battery storage both in front of and behind the meter, they may benefit other companies in unexpected ways and thus weaken our competitive position. For example, the IRA may enable companies producing shorter duration lithium ion batteries to compete with us through added volume of cells at lower cost.

We are an emerging growth company and a smaller reporting company within the meaning of the Securities Act, and if we take advantage of certain exemptions from disclosure requirements available to “emerging growth companies” or “smaller reporting companies,” this could make our securities less attractive to investors and may make it more difficult to compare our performance with other public companies.

We are an “emerging growth company” within the meaning 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, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements, and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and shareholder approval of any golden parachute payments not previously approved. As a result, our shareholders may not have access to certain information they may deem important. We will remain an emerging growth company until the earliest of (i) the last day of the fiscal year in which the market value of our common stock that are held by non-affiliates exceeds \$700,000,000 as of June 30 of that fiscal year, (ii) the last day of the fiscal year in which we have total annual gross revenue of \$1.07 billion or more during such fiscal year (as indexed for inflation), (iii) the date on which we have issued more than \$1.0 billion in non-convertible debt in the prior three-year period or (iv) December 31, 2025. In addition, Section 107 of the JOBS Act also provides that an emerging growth company can take advantage of the exemption from complying with new or revised accounting standards provided in Section 7(a)(2)(B) of the Securities Act as long as we are an emerging growth company. An emerging growth company can therefore delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have elected not to opt out of such extended transition period and, therefore, we may not be subject to the same new or revised accounting standards as other public companies that are not emerging growth companies. This may make comparison of our financial statements with another public company which is neither an emerging growth company nor an emerging growth company which has opted out of using the extended transition period difficult or impossible because of the potential differences in accounting standards used. We cannot predict whether investors will find our securities less attractive because we expect to rely on these exemptions. If some investors find our common stock less attractive as a result of our reliance on these exemptions, the trading price of our common stock may be lower than it otherwise would be, there may be a less active trading market for our common stock and the trading price of our common stock may be more volatile.

Additionally, we are currently a “smaller reporting company” as defined in Item 10(f)(1) of Regulation S-K. Smaller reporting companies may take advantage of certain reduced disclosure obligations, including, among other things, providing only two years of audited financial statements. We will remain a smaller reporting company only until the last day of the fiscal year in which (i) the market value of the common stock held by non-affiliates exceeds \$250,000,000 as of the prior June 30, or (ii) our annual revenues exceeded \$100,000,000 during such completed fiscal year and the market value of the common stock held by non-affiliates exceeds \$700,000,000 as of the prior June 30. To the extent we take advantage of such reduced disclosure obligations, it may also make comparison of our financial statements with other public companies difficult or impossible.

Changes in tax laws or in their implementation or interpretation may adversely affect our business and financial condition.

We are or may become subject to income- and non-income-based taxes in the United States under federal, state and local jurisdictions and in certain foreign jurisdictions in which we operate. Tax laws, regulations and administrative practices in these jurisdictions may be subject to significant change, with or without advance notice. For example, beginning in January 2022, the Tax Cuts and Jobs Act eliminates the right to deduct research and development expenditures for tax purposes in the period the expenses were incurred and instead requires all U.S. and foreign research and development expenditures to be amortized over five and fifteen tax years, respectively, and as a result, we recognized a deferred tax asset for the future tax benefit of the amortization deductions of the capitalized research and development expenditures. Changes in tax laws, as well as other factors, could cause us to experience fluctuations in our tax obligations and effective tax rates and otherwise adversely affect our tax positions and/or our tax liabilities. Such changes may adversely affect our effective tax rates, cash flows and general business condition.

Our ability to utilize our net operating loss carryforwards and certain other tax attributes may be limited.

As of December 31, 2022, we had U.S. federal and state net operating loss carryforwards of \$130.7 million and \$130.6 million, respectively. Federal net operating loss carryforwards generated after December 31, 2017 do not expire. The remaining federal net operating loss carryforwards expire beginning in 2032. It is possible that we will not generate taxable income in time to use our net operating loss carryforwards before their expiration (if applicable) or at all. Under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended, if a corporation undergoes an “ownership change” (generally defined as a greater than 50 percentage points change (by value) in the ownership of its equity by

certain stockholders over a rolling three-year period), the corporation's ability to use its pre-change net operating loss carryforwards and certain other pre-change tax attributes to offset its post-change income and taxes may be limited. We may have experienced such ownership changes in the past, and we may experience ownership changes in the future as a result of shifts in our stock ownership, some of which are outside our control. Accordingly, our ability to utilize our net operating loss carryforwards and certain other tax attributes could be limited by an "ownership change" as described above, which could result in increased tax liability to our company.

Risks Related to Our Intellectual Property

If we fail to protect, or incur significant costs in defending, our intellectual property and other proprietary rights, then our business and results of operations could be materially harmed.

Our success depends to a significant degree on our ability to protect our intellectual property and other proprietary rights. We rely on a combination of patent, trademark, copyright, trade secret, and unfair competition laws, as well as confidentiality and other contractual provisions with our customers, suppliers, employees, and others, to establish and protect our intellectual property and other proprietary rights. Our ability to enforce these rights is subject to general litigation risks, as well as uncertainty as to the enforceability of our intellectual property rights in various countries. When we seek to enforce our rights, we may be subject to claims that our intellectual property rights are invalid or not enforceable. Our assertion of intellectual property rights may result in another party seeking to assert claims against us, which could harm our business. Our inability to enforce intellectual property rights under any of these circumstances would likely harm our competitive position and business.

We have applied for patents in multiple jurisdictions, including the United States, Europe, and Australia, and under the Patent Cooperation Treaty, some of which have been issued. We cannot guarantee that any of our pending applications will be approved or that our existing and future intellectual property rights will be sufficiently broad to protect our proprietary technology, and any failure to obtain such approvals or finding that our intellectual property rights are invalid or unenforceable could force us to, among other things, rebrand or re-design our affected products. In countries where we have not applied for patent protection or where effective intellectual property protection is not available to the same extent as in the United States, we may be at greater risk that our proprietary rights will be misappropriated, infringed, or otherwise violated. Government actions may also undermine our intellectual property rights.

Our intellectual property may be stolen or infringed upon. In the event of such theft or infringement, we may be required to initiate lawsuits to protect our significant investment in our intellectual property. So far, we have been neither the subject of any lawsuits challenging the ownership or validity of our intellectual property, nor have we been required to initiate any lawsuits to protect our intellectual property. However, any such lawsuits may consume management and financial resources for long periods of time and may not result in outcomes that are favorable or readily enforceable, which may adversely affect our business, financial condition or results of operations.

Third parties may assert that we are infringing upon their intellectual property rights, which could divert management's attention, cause us to incur significant costs, and prevent us from selling or using the technology to which such rights relate.

Our competitors and other third parties hold numerous patents related to technology used in our industry. From time to time, we may also be subject to claims of intellectual property right infringement and related litigation, and, if we gain greater recognition in the market, we will face a higher risk of being the subject of claims that we have violated others' intellectual property rights. While we believe that our products and technology do not infringe in any material respect upon any valid intellectual property rights of third parties, we cannot be certain that we would be successful in defending against any such claims. If we do not successfully defend or settle an intellectual property claim, we could be liable for significant monetary damages and could be prohibited from continuing to use certain technology, business methods, content, or brands. To avoid a prohibition, we could seek a license from the applicable third party, which could require us to pay significant royalties, increasing our operating expenses. If a license is not available at all or not available on reasonable terms, then we may be required to develop or license a non-violating alternative, either of which could require significant effort and expense. If we cannot license or develop a non-violating alternative, we would be forced to limit or stop sales of our offerings and may be unable to effectively compete and subject to termination and indemnification obligations under our contracts. Any of these results would adversely affect our business, financial condition and results of operations.

Our patent applications may not result in issued patents or our patent rights may be contested, circumvented, invalidated or limited in scope, any of which could have a material adverse effect on our ability to prevent others from interfering with the commercialization of our products.

Our patent applications may not result in issued patents, which may have a material adverse effect on our ability to prevent others from commercially exploiting products similar to ours. The status of patents involves complex legal and factual questions and the breadth of claims allowed is uncertain. As a result, we cannot be certain that the patent applications that

we file will result in patents being issued, or that our patents and any patents that may be issued to us will afford protection against competitors with similar technology. Numerous patents and pending patent applications owned by others exist in the fields in which we have developed and are developing our technology. In addition to those who may claim priority, any of our existing or pending patents may also be challenged by others on the basis that they are otherwise invalid or unenforceable. Furthermore, patent applications filed in foreign countries are subject to laws, rules and procedures that differ from those of the United States, and thus we cannot be certain that foreign patent applications related to issued U.S. patents will be issued.

Even if our patent applications succeed and we are issued patents in accordance with them, we are still uncertain whether these patents will be contested, circumvented, invalidated or limited in scope in the future. The rights granted under any issued patents may not provide us with meaningful protection or competitive advantages, and some foreign countries provide significantly less effective patent enforcement than in the United States. In addition, the claims under any patents that issue from our patent applications may not be broad enough to prevent others from developing technologies that are similar or that achieve results similar to ours. The intellectual property rights of others could also bar us from licensing and exploiting any patents that issue from our pending applications. In addition, patents issued to us may be infringed upon or designed around by others and others may obtain patents that we need to license or design around, either of which would increase costs and may adversely affect our business, financial condition and results of operations.

Risks Related to Raising Capital

As we endeavor to expand our business, we will incur significant costs and expenses, which could outpace our cash reserves. Unfavorable conditions or disruptions in the capital and credit markets may adversely impact business conditions and the availability of credit.

We expect to incur additional costs and expenses in the future related to the continued development and expansion of our business, including in connection with expanding our manufacturing capabilities to significantly increase production capacity, developing our products, maintaining and enhancing our research and development operations, expanding our sales, marketing, and business development activities in the United States and internationally, and growing our project management, field services and overall operational capabilities for delivering projects. We do not know whether our revenues will grow rapidly enough to absorb these costs or the extent of these expenses or their impact on our results of operations.

Disruptions in the global capital and credit markets as a result of an economic downturn, economic uncertainty, changing or increased regulation, or failures of significant financial institutions, as well as any negative perceptions about our long-term business prospects or the renewable energy sector as a whole, even if exaggerated or unfounded, could adversely affect our customers' ability to access capital and could adversely affect our access to liquidity needed for business in the future. Our business could be hurt if we are unable to obtain additional capital as required, resulting in a decrease in our revenues and profitability.

We may need additional capital in the future, and it may not be available on acceptable terms, if at all.

As discussed in “Part II—Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations—Liquidity and Capital Resources”, we may need to access the debt and equity capital markets. However, these sources of financing may not be available on acceptable terms, or at all. Our ability to obtain additional financing will be subject to a number of factors, including market conditions, our operating performance, investor sentiment generally or about the renewable energy sector specifically and our ability to incur additional debt in compliance with agreements governing our then-outstanding debt. These factors may make the timing, amount, terms or conditions of additional financings unattractive to us. If we raise additional funds by issuing equity, equity-linked or debt securities, those securities may have rights, preferences or privileges senior to the rights of our currently issued and outstanding equity or debt, and our existing stockholders may experience dilution. If we are unable to generate sufficient funds from operations or raise additional capital, our successful operation and growth could be impeded.

Risks Related to Our Common Stock and Warrants

The price of our common stock may be volatile.

The price of our common stock may fluctuate due to a variety of factors, including:

- changes in the industries in which we and our customers operate;
- variations in our operating performance and the performance of our competitors in general;
- material and adverse impact of the COVID-19 pandemic on the markets and the broader global economy;
- actual or anticipated fluctuations in our quarterly or annual operating results;

- the public’s reaction to our press releases, our other public announcements and our filings with the SEC;
- our failure or the failure of our competitors to meet analysts’ projections or guidance that we or our competitors may give to the market;
- additions and departures of key personnel;
- changes in laws and regulations affecting our business;
- commencement of, or involvement in, litigation involving us;
- changes in our capital structure, such as future issuances of securities or the incurrence of additional debt;
- publication of research reports by securities analysts about us or our competitors or our industry;
- sales of shares of our common stock by our existing stockholders;
- short selling activities;
- the volume of shares of our common stock available for public sale; and
- general economic and political conditions such as recessions, interest rates, fuel prices, inflation, foreign currency fluctuations, international tariffs, social, political and economic risks, hostilities or the perception that hostilities may be imminent, military conflict and acts of war, including an escalation of the situation in the Ukraine and the related response, including sanctions or other restrictive actions, by the United States and/or other countries or terrorism.

These market and industry factors may materially reduce the market price of our common stock regardless of our operating performance.

In addition, we have been and in the future may again be the subject of a report issued by activist short sellers. Any such report, even if it contains false and misleading statements about our company, may cause our stock price to experience volatility.

A sale of a significant portion of our total outstanding shares into the market may cause the market price of our common stock to drop significantly, even if our business is doing well.

Sales of a substantial number of shares of our common stock in the public market could occur at any time. These sales, or the perception in the market that the holders of a large number of shares intend to sell shares, could reduce the market price of our common stock.

Certain holders of shares of our common stock have rights, subject to certain conditions, to require us to file registration statements covering their shares or to include their shares in registration statements that we may file for ourselves or other stockholders. Registration of these shares under the Securities Act would result in the shares becoming freely tradeable in the public market, subject to the restrictions of Rule 144 in the case of our affiliates. Any sales of securities by these stockholders could have a material adverse effect on the market price for our common stock. Sales of our common stock pursuant to the exercise of registration rights may make it more difficult for us to sell equity securities in the future at a time and at a price that we deem appropriate. These sales also could cause the trading price of our common stock to fall and make it more difficult for you to sell shares of our common stock at a time and price that you deem appropriate.

The issuance by us of additional shares of common stock or equity-linked securities may cause existing stockholders to experience dilution and could adversely affect our stock price.

From time to time in the future, we may issue additional shares of our common stock or equity-linked securities to raise additional capital or pursuant to a variety of transactions, including issuances in connection with financings, acquisitions, investments, our equity compensation plans or otherwise. Any such issuances of additional common stock or equity-linked securities may cause stockholders to experience significant dilution of their ownership interests and could adversely affect prevailing market prices of our common stock.

We have warrants outstanding that are exercisable for our common stock, which, if exercised, would increase the number of shares eligible for future resale in the public market and result in dilution to our shareholders.

As of December 31, 2022, we had outstanding Public Warrants to purchase an aggregate of 7,377,893 shares of our common stock and Private Warrants to purchase an aggregate of 4,083,334 shares of our common stock. The exercise price of each of these warrants is \$11.50 per share. As used herein, “Public Warrants” refer to warrants to purchase ordinary shares of STWO issued in STWO’s initial public offering, which were converted into warrants to purchase shares of ESS common stock in connection with the Business Combination; and “Private Warrants” refer to warrants to purchase ordinary

shares of STWO issued in a private placement concurrently with STWO's initial public offering, which were converted into warrants to purchase shares of ESS common stock in connection with the Business Combination.

In addition, on September 16, 2022, we entered into a warrant agreement with the Sacramento Municipal Utility District ("SMUD"), whereby we agreed to issue a warrant for up to 500,000 shares of our common stock at an exercise price of \$4.296 per share. The vesting of the shares underlying the warrant will be subject to the achievement of certain commercial milestones through December 31, 2030 pursuant to a related commercial agreement.

To the extent such warrants are exercised, additional shares of our common stock will be issued, which will result in dilution to the 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 prevailing market prices of our common stock.

The Public Warrants may be amended in a manner adverse to a holder if holders of 65% of the then outstanding Public Warrants approve of such amendment.

Our warrants were issued in registered form under a warrant agreement between Continental Stock Transfer & Trust Company, as warrant agent, and STWO. The warrant agreement provides that the terms of the warrants may be amended without the consent of any holder to cure any ambiguity or correct any defective provision or correct any mistake, but requires the approval by the holders of 65% of the then-outstanding Public Warrants to make any change that adversely affects the interests of the registered holders of Public Warrants. Accordingly, we may amend the terms of the Public Warrants in a manner adverse to a holder if holders of 65% of the then-outstanding Public Warrants approve of such amendment and, solely with respect to any amendment to the terms of the Private Warrants or any provision of the warrant agreement with respect to the Private Warrants, 65% of the number of the then outstanding Private Warrants. Although our ability to amend the terms of the Public Warrants with the consent of 65% of the then-outstanding Public Warrants is unlimited, examples of such amendments could be amendments to, among other things, increase the exercise price of the warrants, convert the warrants into cash, shorten the exercise period or decrease the number of shares of our common stock purchasable upon exercise of a warrant.

We may redeem your unexpired warrants prior to their exercise at a time that is disadvantageous to you, thereby making your warrants worthless.

We have the ability to redeem the outstanding Public Warrants at any time after they become exercisable and prior to their expiration, at a price of \$0.01 per warrant, provided that the closing price of our common stock equals or exceeds \$18.00 per share (as adjusted for share subdivisions, share dividends, rights issuances, subdivisions, reorganizations, recapitalizations and the like) for any 20 trading days within a 30 trading-day period ending on the third trading day prior to proper notice of such redemption and provided that certain other conditions are met. If and when the warrants become redeemable by us, 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. As a result, we may redeem the warrants as set forth above even if the holders are otherwise unable to exercise the warrants. Redemption of the outstanding warrants could force you to (i) exercise your warrants and pay the exercise price therefor at a time when it may be disadvantageous for you to do so, (ii) sell your warrants at the then-current market price when you might otherwise wish to hold your warrants or (iii) accept the nominal redemption price which, at the time the outstanding warrants are called for redemption, we expect would be substantially less than the market value of your warrants.

In addition, we have the ability to redeem the outstanding Public Warrants at any time after they become exercisable and prior to their expiration, at a price of \$0.10 per warrant upon a minimum of 30 days' prior written notice of redemption provided that the closing price of the our common stock equals or exceeds \$10.00 per share (as adjusted for adjustments to the number of shares issuable upon exercise or the exercise price of a warrant) for any 20 trading days within a 30 trading-day period ending on the third trading day prior to proper notice of such redemption and provided that certain other conditions are met, including that holders will be able to exercise their warrants prior to redemption for a number of shares of common stock determined based on the redemption date and the fair market value of our common stock. The value received upon exercise of the warrants (1) 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 (2) may not compensate the holders for the value of the warrants, including because the number of ordinary shares received is capped at 0.361 shares of common stock per warrant (subject to adjustment) irrespective of the remaining life of the warrants.

None of the Private Warrants will be redeemable by us as so long as they are held by ACON S2 Sponsor, LLC, (the "Sponsor") or its permitted transferees, except under certain circumstances.

We do not expect to declare any dividends in the foreseeable future.

We do not anticipate declaring any cash dividends to holders of our common stock in the foreseeable future. Consequently, investors may need to rely on sales of their shares after price appreciation, which may not occur for some time or not at all, as the only way to realize any future gains on their investment.

There can be no assurance that we will be able to comply with the continued listing standards of the NYSE.

Our common stock and our Public Warrants are listed on the NYSE under the symbols “GWH” and “GWH.W,” respectively. If the NYSE delists our securities from trading on its exchange for failure to meet the listing standards and we are not able to list such securities on another national securities exchange, we expect such securities could be quoted on an over-the-counter market. If this were to occur, we and our stockholders could face significant material adverse consequences including:

- a limited availability of market quotations for our securities;
- reduced liquidity for our securities;
- a limited amount of news and analyst coverage; and
- a decreased ability to issue additional securities or obtain additional financing in the future.

Reports published by analysts, including projections in those reports that differ from our actual results, could adversely affect the price and trading volume of our common stock.

Securities research analysts may establish and publish their own periodic projections for us. These projections may vary widely and may not accurately predict the results we actually achieve. Our share price may decline if our actual results do not match the projections of these securities research analysts. Similarly, if one or more of the analysts who write reports on us downgrades our stock or publishes inaccurate or unfavorable research about our business, our share price could decline. If one or more of these analysts ceases coverage of us or fails to publish reports on us regularly, our share price or trading volume could decline.

We may be subject to short selling strategies that may drive down the market price of our common stock.

Short selling occurs when an investor borrows a security and sells it on the open market, with the intention of buying identical securities at a later date to return to the lender. A short seller hopes to profit from a decline in the value of the securities between the sale of the borrowed securities and the purchase of the replacement shares. Because it is in the short seller’s best interests for the price of the stock to decline, some short sellers publish, or arrange for the publication of, opinions or characterizations regarding the relevant issuer, its business prospects, and similar matters calculated to or which may create negative market momentum. Short sellers can publicly attack a company’s reputation and business on a broader scale via online postings. In the past, the publication of such commentary about us by a self-described short seller has precipitated a decline in the market price of our common stock, and future similar efforts by other short sellers may have similar effects. Companies that are subject to unfavorable allegations promoted by short sellers, even if untrue, may have to expend a significant amount of resources to investigate such allegations and defend themselves.

Provisions in our amended and restated certificate of incorporation and amended and restated bylaws and Delaware law might discourage, delay or prevent a change in control of our company or changes in our management and, therefore, depress the market price of our common stock.

Our amended and restated certificate of incorporation and amended and restated bylaws contain provisions that could delay or prevent a change of control of our company or changes in our board of directors that our stockholders might consider favorable. These provisions, among other things:

- establish a classified board of directors so that not all members of our board are elected at one time;
- permit only the board of directors to establish the number of directors and fill vacancies on the board;
- provide that directors may only be removed “for cause” and only with the approval of a majority of the voting power of the issued and outstanding capital stock of the Company entitled to vote in the election of directors;
- authorize the issuance of “blank check” preferred stock that our board could use to implement a stockholder rights plan (also known as a “poison pill”);
- eliminate the ability of our stockholders to call special meetings of stockholders;
- prohibit stockholder action by written consent, which requires all stockholder actions to be taken at a meeting of our stockholders;
- prohibit cumulative voting by stockholders at any election of directors;

- authorize our board of directors to amend the bylaws;
- establish advance notice requirements for nominations for election to our board or for proposing matters that can be acted upon by stockholders at annual stockholder meetings; and
- require a super-majority vote of stockholders to amend some of the provisions described above.

In addition, Section 203 of the Delaware General Corporation Law (the “DGCL”), prohibits a publicly held Delaware corporation from engaging in a business combination with an interested stockholder, generally a person which together with its affiliates owns, or within the last three years has owned, 15% of our voting stock, for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner.

Any provision of our amended and restated certificate of incorporation, amended and restated bylaws or Delaware law that has the effect of delaying or preventing a change in control could limit the opportunity for our stockholders to receive a premium for their shares of our capital stock and could also affect the price that some investors are willing to pay for our common stock.

Our amended and restated bylaws provide that the Court of Chancery of the State of Delaware and the federal district courts of the United States of America will be the exclusive forums for certain stockholder litigation matters, which could limit our stockholders’ ability to obtain a favorable judicial forum for disputes with us or our directors, officers or employees.

Our amended and restated bylaws provide that the Court of Chancery of the State of Delaware (or, if the Court of Chancery does not have jurisdiction, another State court in Delaware or the federal district court for the District of Delaware) is the exclusive forum for the following (except for any claim as to which such court determines that there is an indispensable party not subject to the jurisdiction of such court (and the indispensable party does not consent to the personal jurisdiction of such court within 10 days following such determination), which is vested in the exclusive jurisdiction of a court or forum other than such court or for which such court does not have subject matter jurisdiction):

- any derivative action or proceeding brought on our behalf;
- any action asserting a claim of breach of fiduciary duty owed by any director, stockholder, officer or other employee of the Company to the Company or to the Company’s stockholders;
- any action arising pursuant to any provision of the DGCL, our amended and restated certificate of incorporation or our amended and restated bylaws; and
- any action asserting a claim against us that is governed by the internal affairs doctrine.

This provision would not apply to suits brought to enforce a duty or liability created by the Securities Act, the Exchange Act or any other claim for which the U.S. federal courts have exclusive jurisdiction.

Section 22 of the Securities Act creates concurrent jurisdiction for federal and state courts over all such Securities Act actions. Accordingly, both state and federal courts have jurisdiction to entertain 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 amended and restated bylaws further provide that, unless the Company consents in writing to the selection of an alternative forum, the federal district courts of the United States of America will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act against any person in connection with any offering of the Company’s securities, including any auditor, underwriter, expert, control person, or other defendant. We note that investors cannot waive compliance with the federal securities laws and the rules and regulations thereunder.

These 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 directors, officers or other employees, which may discourage lawsuits against us and our directors, officers and other employees. Any person or entity purchasing, holding or otherwise acquiring any interest in any of our securities shall be deemed to have notice of and consented to these provisions. There is uncertainty as to whether a court would enforce such provisions, and the enforceability of similar choice of forum provisions in other companies’ charter documents has been challenged in legal proceedings. While the Delaware courts have determined that such choice of forum provisions are facially valid, a stockholder may nevertheless seek to bring a claim in a venue other than those designated in the exclusive forum provisions, and there can be no assurance that such provisions will be enforced by a court in those other jurisdictions. If a court were to find these types of provisions to be inapplicable or unenforceable, and if a court were to find the exclusive forum provision in our amended and restated bylaws to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving the dispute in other jurisdictions, which could materially adversely affect our business.

Claims for indemnification by our directors and officers may reduce our available funds to satisfy successful third-party claims against us and may reduce the amount of money available to us.

Our amended and restated certificate of incorporation and amended and restated bylaws provide that we will indemnify our directors and officers, in each case to the fullest extent permitted by Delaware law.

In addition, as permitted by Section 145 of the DGCL, our amended and restated bylaws and our indemnification agreements that we have entered into with our directors and officers provide that:

- we indemnify our directors and officers for serving us in those capacities or for serving other business enterprises at our request, to the fullest extent permitted by Delaware law. Delaware law provides that a corporation may indemnify such person if such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the registrant and, with respect to any criminal proceeding, had no reasonable cause to believe such person's conduct was unlawful;
- we may, in our discretion, indemnify employees and agents in those circumstances where indemnification is permitted by applicable law;
- we are required to advance expenses, as incurred, to our directors and officers in connection with defending a proceeding, except that such directors or officers shall undertake to repay such advances if it is ultimately determined that such person is not entitled to indemnification;
- we are not obligated, pursuant to our amended and restated bylaws, to indemnify a person with respect to proceedings initiated by that person against us or our other indemnitees, except with respect to proceedings authorized by our board of directors or brought to enforce a right to indemnification;
- the rights conferred in our amended and restated bylaws are not exclusive, and we are authorized to enter into indemnification agreements with our directors, officers, employees and agents and to obtain insurance to indemnify such persons; and
- we may not retroactively amend our amended and restated bylaw provisions to reduce our indemnification obligations to directors; officers, employees and agents.

While we maintain a directors' and officers' insurance policy to the fullest extent permitted by the DGCL, such insurance may not be adequate to cover all liabilities that we may incur, which may reduce our available funds to satisfy third-party claims and may materially adversely affect our cash position.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Our corporate headquarters is located in Wilsonville, Oregon. The approximately 200,000 square foot facility contains both our corporate and administrative functions as well as our automated and semi-automated battery manufacturing lines. Currently, this facility has the capacity to manufacture approximately 800 MWh of batteries annually.

Over time, we plan to increase efficiency at the Wilsonville facility to scale manufacturing capacity up to 2,000 MWh. We also envision opening additional manufacturing facilities globally. This global expansion plan may include the following levers that are currently under consideration:

- Strategic investments in the supply chain to grow capacity;
- Rollout of redesigned automation cells, which we expect will increase efficiency in production;
- Energy Warehouse and Energy Center production expansion to Europe and/or Australia;
- Production of power modules in Europe; and
- Vertical integration of power module compartments.

ITEM 3. LEGAL PROCEEDINGS

From time to time, we may become involved in legal proceedings arising in the ordinary course of our business. We are not currently a party to any material legal proceedings, nor, to our knowledge, is any material legal proceeding threatened against us. In the future, we may become involved in legal proceedings that arise in the ordinary course of business, the outcome of which, if determined adversely to us, could individually or in the aggregate have a material adverse effect on our business, financial condition and results of operations.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASE OF EQUITY SECURITIES

Market Information and Holders

Our common stock is listed on the NYSE under the symbol "GWH" and our Public Warrants are listed on the NYSE under the symbol "GWH.W". As of February 24, 2023, there were 59 holders of record of our common stock and 4 holders of record of our Public Warrants. The actual number of stockholders of our common stock is greater than this number of record holders and includes stockholders who are beneficial owners but whose shares of common stock are held in street name by banks, brokers and other nominees.

Dividend Policy

We have not paid any cash dividends on the common stock to date. We have no current plans to pay cash dividends for the foreseeable future. Any decision to declare and pay dividends in the future will be made at the discretion of the board of directors and will depend on, among other things, our results of operations, financial condition, cash requirements, contractual restrictions and other factors that the board of directors may deem relevant. In addition, our ability to pay dividends may be limited by covenants of any existing and future outstanding indebtedness we or our subsidiaries incur. We do not anticipate declaring any cash dividends to holders of the common stock in the foreseeable future.

Issuer Purchases of Equity Securities

During the year ended December 31, 2022, we did not purchase any of our equity securities that are registered under Section 12(b) of the Exchange Act.

ITEM 6. [RESERVED]

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS.

Overview

ESS is a long-duration energy storage company specializing in iron flow battery technology. We design and produce long-duration batteries predominantly using earth-abundant materials that we believe can be cycled over 20,000 times without capacity fade. Because we designed our batteries to operate using an electrolyte of primarily salt, iron and water, they are non-toxic and substantially recyclable.

Our long-duration iron flow batteries are the product of nearly 50 years of scientific advancement. Our founders, Craig Evans and Dr. Julia Song, began advancing this technology in 2011 and formed Legacy ESS. Our team has significantly enhanced the technology, improved the round-trip efficiency and developed an innovative and patented solution to the hydroxide build-up problem that plagued previous researchers developing iron flow batteries. Our proprietary solution to eliminate the hydroxide formation is known as the Proton Pump, and it works by utilizing hydrogen generated by side reactions on the negative electrode. The Proton Pump converts the hydrogen back into protons in the positive electrolyte. This process eliminates the hydroxide and stabilizes the electrolytes' pH levels.

Our batteries provide flexibility to grid operators and energy assurance for commercial and industrial customers. Our technology addresses energy delivery, duration and cycle-life in a single battery platform that compares favorably to lithium-ion batteries, the most widely deployed alternative technology. Using our iron flow battery technology, we are developing two products, each of which is able to provide reliable, safe, long-duration energy storage. Our first energy storage product, the Energy Warehouse, is our "behind-the-meter" solution (referring to solutions that are located on the customer's premises, behind the service demarcation with the utility) that offers energy storage ranging from four to 12-hour duration. Our second, larger scale energy storage product, the Energy Center, is designed for "front-of-the-meter" (referring to solutions that are located outside the customer's premises, typically operated by the utility or by third-party providers who sell energy into the grid, often known as independent power producers) deployments specifically for utility and large commercial and industrial consumers.

The Business Combination

On October 8, 2021, ESS consummated the Business Combination. As a result, Legacy ESS merged with Merger Sub, with Legacy ESS surviving as a wholly owned subsidiary of STWO, which changed its name to "ESS Tech, Inc." The increase in cash resulting from the Business Combination is being used to fund our growth strategy related to the commercial sale of our second-generation energy storage solution and the scaling of our manufacturing operations to meet customer demand. The cash raised from the Business Combination is also being used to fund investments in personnel and research and development as well as provide liquidity for the funding of our ongoing operating expenses.

The Business Combination was accounted for as a reverse recapitalization. Legacy ESS was deemed the accounting predecessor and the combined entity is the successor SEC registrant, meaning that Legacy ESS' financial statements for previous periods will be disclosed in our future periodic reports filed with the SEC. Under this method of accounting, STWO was treated as the acquired company for financial statement reporting purposes.

As a result of the Business Combination, Legacy ESS became the successor to an SEC-registered and publicly traded company, which has required, and may further require, us to hire additional personnel and implement procedures and processes to address public company regulatory requirements and customary practices. We expect to incur additional annual expenses as a public company for, among other things, directors' and officers' liability insurance, director fees, and additional internal and external accounting, legal, and administrative resources, including increased personnel costs, audit and other professional service fees.

Key Factors and Trends Affecting Our Business

We believe that our performance and future success depends on several factors that present significant opportunities for us but also pose risks and challenges, including those discussed below and in the section "*Part I—Item 1A. Risk Factors*" included elsewhere in this Annual Report on Form 10-K.

We believe we have the opportunity to establish attractive margin unit economics if we are able to continue to reduce production costs and scale our operations. Our future financial performance will depend on our ability to deliver on these economies of scale with lower product costs. We believe our business model is positioned for scalability due to the ability to leverage the same product platform across our customer base. Significant improvements in manufacturing scale are expected to decrease the cost of materials and direct labor. Compared to 2022, we expect our indirect cost of goods and operating expenses to increase as we ramp up our research and development and manufacturing activities including with respect to our supply chain, parts and launch of our second-generation Energy Warehouses as well as higher general and administrative expenses related to operating as a public company. Achievement of margin targets and cash flow generation is dependent on finalizing development and manufacturing of Energy Centers.

Our near-term and medium-term revenue is expected to be generated from our Energy Centers and second-generation Energy Warehouses. We believe our unique technology provides a compelling value proposition and an opportunity for favorable margins and unit economics in the energy storage industry in the future.

COVID-19

The COVID-19 pandemic has disrupted supply chains and affected production and sales across a range of industries, and continues to impact the United States and other countries throughout the world. There have already been multiple waves of the COVID-19 pandemic and COVID-19 cases continue to surge in certain areas of the world, including in certain countries that were initially successful at containing the virus. For example, the Chinese government has previously pursued and may reinstate a 'zero COVID' or other policy, imposing lock downs that have adversely affected and may continue to adversely affect supply chains. The evolution of the pandemic and the ultimate extent of its economic impact are still unknown. Due to the number of variables involved, the significance and the duration of the pandemic's financial impact are difficult to determine. The extent of the impact of COVID-19 on our operational and financial performance will depend on certain developments, including the duration and spread of the virus, and the impact on our customers, employees and vendors. The ultimate outcome of these matters is uncertain and, accordingly, the impact on our financial condition or results of operations is also uncertain. We have issued several force majeure notices to customers as a result of delays caused by COVID-19 and future COVID-19 delays could further impact such agreements.

Inflation Reduction Act of 2022

On August 16, 2022, President Biden signed into law the Inflation Reduction Act (the "IRA"), which extends the availability of investment tax credits ("ITCs") and production tax credits and makes significant changes to the tax credit regime that applies to solar and energy storage products. As a result of changes made by the IRA, the ITC for solar generation projects is extended until at least 2033, and has been expanded to include stand-alone battery storage. This expansion provides significant certainty on the tax incentives that will be available to stand-alone battery projects in the future. We believe the IRA will increase demand for our services due to the extensions and expansions of various tax credits that are critical for our customers' economic returns, while also providing more certainty in and visibility into the supply chain for materials and components for energy storage systems. We are continuing to evaluate the overall impact and applicability of the IRA as implementing regulations are issued, and the passage of comparable legislation in other jurisdictions, to our results of operations going forward.

Components of Results of Operations

As the Business Combination is accounted for as a reverse recapitalization, the operating results included in this discussion reflect the historical operating results of Legacy ESS prior to the Business Combination and the combined results of ESS

following the closing of the Business Combination. The assets and liabilities of the Company are stated at their historical cost.

Revenue

We earn revenue from the sale of our energy storage products and from service contracts. Revenue recognition is deferred until written customer acceptance has been received, after site acceptance testing, or until we have established a history of successfully obtaining customer acceptance. In the near term, as our products are newly developed, this is likely to be a longer process than when our products are more mature and we have an established history of customer acceptance.

Operating expenses

Research and development expenses

Costs related to research and development consist of direct product development material costs, including freight charges, and product development personnel-related expenses, warranty-related costs, depreciation charges, overhead related costs, consulting services and other direct expenses. Personnel-related expenses consist of salaries, benefits and stock-based compensation. We expect our research and development costs to increase as we continue to invest in research and development activities to achieve our product roadmap as well as due to inflationary pressures.

Sales and marketing expenses

Sales and marketing expenses consist primarily of salaries, benefits and stock-based compensation for marketing and sales personnel and related support teams. To a lesser extent, sales and marketing expenses also include professional services costs, travel costs, and trade show sponsorships. We expect that our sales and marketing expenses will increase over time as we continue to hire additional personnel to scale our business.

General and administrative expenses

General and administrative expenses consist of personnel-related expenses for our corporate, executive, finance, legal, and other administrative functions, as well as expenses for outside professional services and insurance costs. Personnel-related expenses consist of salaries, benefits and stock-based compensation. To a lesser extent, general and administrative expenses include depreciation and other allocated costs, such as facility-related expenses, and supplies. We expect our general and administrative expenses to increase as we scale headcount with the growth of our business, and as a result of operating as a public company, including compliance with the rules and regulations of the SEC, legal, audit, additional insurance expenses, investor relations activities, and other administrative and professional services.

Other income (expenses), net

Interest income (expense), net

Interest expense consists primarily of interest on our notes payable. Interest income consists primarily of earned income on our cash equivalents, restricted cash, and short-term investments. These amounts will vary based on our cash, cash equivalents, restricted cash and short-term investment balances, and on market rates.

Gain (loss) on revaluation of warrant liabilities

The gain (loss) on revaluation of warrant liabilities consists of periodic fair value adjustments related to Legacy ESS' Series B and C warrants outstanding prior to the Business Combination and the Public Warrants and Private Warrants (excluding the Earnout Warrants) subsequent to the Business Combination.

Loss on revaluation of derivative liabilities

The loss on revaluation of derivative liability consists of periodic fair value adjustments associated with our derivative liability for the Legacy ESS Series C-2 Redeemable Convertible Preferred Stock Issuance Right liability and contingently issuable warrants prior to the Business Combination.

Gain (loss) on revaluation of earnout liabilities

The gain (loss) on revaluation of earnout liabilities consists of periodic fair value adjustments related to the Earnout Warrants issued in conjunction with the Business Combination. As used herein, "Earnout Warrants" refer to Private Warrants to purchase 583,334 shares of common stock which vest upon the meeting of certain 'Earnout Milestone Events' as defined in, and pursuant to the terms of, the Sponsor Letter Agreement, dated May 6, 2021.

Other (expenses) income, net

Other (expenses) income, net consists primarily of various gains and losses associated with our short-term investments and other income and expense items.

Results of Operations

Comparison of Year Ended December 31, 2022 to Year Ended December 31, 2021

The following table sets forth ESS' operating results for the periods indicated:

(\$ in thousands)	Year Ended December 31,		\$ Change	% Change
	2022	2021		
Revenue	\$ 894	\$ —	\$ 894	N/M
Operating expenses:				
Research and development	71,979	30,275	41,704	138%
Sales and marketing	6,938	3,041	3,897	128
General and administrative	27,469	27,286	183	1
Total operating expenses	106,386	60,602	45,784	76
Loss from operations	(105,492)	(60,602)	(45,784)	74
Other income (expenses), net:				
Interest income (expense), net	2,187	(1,886)	4,073	N/M
Gain (loss) on revaluation of warrant liabilities	24,475	(37,584)	62,059	N/M
Loss on revaluation of derivative liabilities	—	(223,165)	223,165	N/M
Gain (loss) on revaluation of earnout liabilities	1,313	(154,806)	156,119	N/M
Other (expenses) income, net	(452)	926	(1,378)	N/M
Total other income (expenses), net	27,523	(416,515)	444,038	(106.6)
Net loss and comprehensive loss to common stockholders	\$ (77,969)	\$ (477,117)	\$ 398,254	(83.7)%

N/M = Not meaningful

Revenue

Revenue for the year ended December 31, 2022 was \$894 thousand compared to zero for the year ended December 31, 2021. We commenced shipping our second-generation Energy Warehouses in the third quarter of 2021 and we received final customer acceptance for the initial unit shipped during the second quarter of 2022. We delivered and recognized revenue on an additional three units during the second half of 2022. Cost of goods sold for these units is zero as related costs have been accounted for as part of research and development expenses in the respective periods incurred; however, the production costs for these units significantly exceeded their selling price. This accounting treatment will continue until we meet the criteria for commercialization. After we exit the research and development phase upon meeting the criteria for commercialization, we expect to recognize a lower of cost or net realizable value charge as the cost of our inventories is likely to exceed estimated net realizable value.

Operating expenses

Research and development expenses

Research and development expenses increased by \$41,704 thousand, or 138%, from \$30,275 thousand for the year ended December 31, 2021 to \$71,979 thousand for the year ended December 31, 2022. The increase resulted primarily from an increase in material purchase costs, including freight, and increased personnel-related expenses due to significant effort on the development of the second-generation Energy Warehouse as well as efforts to create an efficient manufacturing process for our products.

Sales and marketing expenses

Sales and marketing expenses increased by \$3,897 thousand, or 128%, from \$3,041 thousand for the year ended December 31, 2021 to \$6,938 thousand for the year ended December 31, 2022. The increase is primarily due to costs incurred for marketing related activities to build awareness of our products' capabilities and increased personnel-related expenses.

General and administrative expenses

General and administrative expenses increased by \$183 thousand, or 1%, from \$27,286 thousand for the year ended December 31, 2021 to \$27,469 thousand for the year ended December 31, 2022. The increase is primarily due to fees paid to outside service providers including external banking fees, legal fees covering a variety of corporate matters, accounting fees and external audit fees as well as increased personnel-related expenses including recruiting expenses as we expanded headcount and increased insurance fees. These increases were almost entirely offset by a reduction in fees and expenses related to the Business Combination incurred in 2021.

Other (expense) income, net

Interest income (expense), net

Interest income (expense), net increased by \$4,073 thousand from \$1,886 thousand of interest expense for the year ended December 31, 2021 to \$2,187 thousand of interest income for the year ended December 31, 2022. The decrease in interest expense resulted primarily from a decrease in borrowings for 2022 compared to 2021. The increase in interest income was driven by interest earned on our short-term investment portfolio.

Gain (loss) on revaluation of warrant liabilities

Gain (loss) on revaluation of warrant liabilities resulted in a loss of \$37,584 thousand for the year ended December 31, 2021 compared to a gain of \$24,475 thousand for the year ended December 31, 2022. The changes in fair value of warrant liabilities was driven by changes in the market price of our common stock over the same period.

Loss on revaluation of derivative liabilities

The loss on revaluation of the Legacy ESS Series C-2 Redeemable Convertible Preferred Stock Issuance Right was \$223,165 thousand for the year ended December 31, 2021, as a result of ESS' increased equity value over the same period.

Gain (loss) on revaluation of earnout liabilities

Gain (loss) on revaluation of earnout liabilities resulted in a loss of \$154,806 thousand for the year ended December 31, 2021 compared to a gain of \$1,313 for the year ended December 31, 2022. The changes in fair value of earnout liabilities was driven by changes in the market price of our common stock over the same period.

Other (expenses) income, net

Other income was \$926 thousand for the year ended December 31, 2021 compared to other expense of \$452 thousand for the year ended December 31, 2022. The other income recognized in the year ended December 31, 2021 is due to the gain on extinguishment recognized upon the forgiveness of the promissory note under the Payroll Protection Program. The other expense recognized in the year ended December 31, 2022 is primarily due to unrealized losses incurred on short-term investments.

Liquidity and Capital Resources

Since our inception, we have financed our operations primarily through the issuance and sale of equity and debt securities and loan agreements. We have incurred significant losses and have negative cash flows from operations. As of December 31, 2022, we had an accumulated deficit of \$618,579 thousand. Management expects to continue to incur additional substantial losses in the foreseeable future as a result of our research and development and other operational activities. As of December 31, 2022, we had unrestricted cash and cash equivalents of \$34,767 thousand, which is available to fund future operations, and short-term investments of \$105,047 thousand. We believe that our unrestricted cash and cash equivalents and short-term investments as of December 31, 2022 will enable us to maintain our operations and satisfy our financial obligations for a period of at least 12 months following the filing date of this Annual Report on Form 10-K. Beyond 12 months we may need additional cash resources to the extent our current resources are insufficient to satisfy our cash requirements. Therefore, we may seek additional equity or debt financing. If such financing is not available, or if the financing terms are less desirable than we expect, we may be forced to decrease our level of investment in product development or scale back our operations, which could have an adverse impact on our business and financial prospects.

In March 2020, we borrowed \$4,000 thousand through a note payable with Silicon Valley Bank that is secured by significantly all of our property, except for intellectual property. The \$4,000 thousand note payable's original maturity date was January 1, 2023; however, the maturity date was modified and extended to January 1, 2024. The note bears interest at 0.50% below the bank's prime rate (7.50% and 2.75% rates at December 31, 2022 and 2021, respectively). As of December 31, 2022, the outstanding principal balance on the note payable was \$1,733 thousand. See Note 10, *Borrowings* to our consolidated financial statements for the year ended December 31, 2022 included elsewhere in this Annual Report on Form 10-K.

As of December 31, 2022, we had a standby letter of credit with First Republic Bank totaling \$725 thousand as security for an operating lease of office and manufacturing space in Wilsonville, Oregon. As of December 31, 2022, the letter of credit was secured by a restricted certificate of deposit account totaling \$75 thousand. There were no draws against the letter of credit during the years ended December 31, 2022 and 2021.

On September 1, 2022, we executed a standby letter of credit with CitiBank, N.A. for \$600 thousand as security for the performance and payment of the Company's obligations under a customer agreement. The letter of credit is in effect until the date on which the warranty period under the agreement expires. As of December 31, 2022, \$600 thousand was pledged

as collateral for the letter of credit and recorded as restricted cash, non-current. There were no draws against the letter of credit during the year ended December 31, 2022.

The following table summarizes cash flows from operating, investing and financing activities for the periods presented:

(\$ in thousands)	Years Ended December 31,	
	2022	2021
Net cash used in operating activities	\$ (81,620)	\$ (51,849)
Net cash used in investing activities	(117,884)	(2,767)
Net cash (used in) provided by financing activities	(4,073)	288,454

Cash flows from operating activities:

Our cash flows used in operating activities to date have been primarily comprised of costs related to research and development, manufacturing of our energy storage products, building awareness of our products' capabilities and other general and administrative activities. We expect our expenses related to personnel, manufacturing, research and development, sales and marketing, and general and administrative activities to increase.

Net cash used in operating activities was \$81,620 thousand for the year ended December 31, 2022, which is comprised of net loss of \$77,969 thousand and noncash changes in the fair value of warrant liabilities of \$24,475 thousand and earnout liabilities of \$1,313 thousand, partially offset by stock-based compensation of \$11,889 thousand. Net changes in operating assets and liabilities provided \$8,457 thousand of cash driven by increases in accounts payable, accrued and other current liabilities, accrued product warranties, and deferred revenue, partially offset by increases in accounts receivable, prepaid expenses and other assets, and a decrease in operating lease liabilities.

Net cash used in operating activities was \$51,849 thousand for the year ended December 31, 2021, which is comprised of net loss of \$477,117 thousand, offset by noncash changes in derivative liabilities of \$223,165 thousand, earnout liabilities of \$154,806 thousand, warrant liabilities of \$37,584 thousand, and stock-based compensation of \$7,922 thousand. Net changes in operating assets and liabilities provided \$2,087 thousand of cash driven by an increase in accounts payable and accrued and other current liabilities, partially offset by an increase in prepaid expenses and other assets.

Cash flows from investing activities:

Our cash flows from investing activities have been comprised primarily of purchases and sales of short-term investments and purchases of property and equipment.

Net cash used in investing activities was \$117,884 thousand for the year ended December 31, 2022, which related to purchases of short-term investments and, to a lesser extent, purchases of property and equipment. Purchases of property and equipment primarily relate to our investment in automating production.

Net cash used in investing activities was \$2,767 thousand for the year ended December 31, 2021, which relates to purchases of property and equipment.

Cash flows from financing activities:

Through December 31, 2022, we have raised capital from the Business Combination and financed our operations through the issuance of debt and equity securities and loan agreements.

Net cash used in financing activities was \$4,073 thousand for the year ended December 31, 2022, which is comprised of repurchases of shares from employees for income tax withholding purposes of \$2,808 thousand and payments on notes payable of \$1,900 thousand.

Net cash provided by financing activities was \$288,454 thousand for the year ended December 31, 2021 and included \$258,730 thousand in net cash contributions from the Business Combination and accompanying PIPE financing, \$15,559 thousand in proceeds from the exercise of Legacy ESS Series C-2 redeemable convertible preferred stock issuance rights and Series C-2 warrants upon completion of the Business Combination and \$10,995 thousand in proceeds from warrants exercised. Prior to the Business Combination, we additionally received \$11,461 thousand in proceeds from the sale of Legacy ESS Series C-2 redeemable convertible preferred stock. These cash inflows were partially offset by payments made towards offering costs of \$7,895 thousand.

The further ramping up of our commercialization and the expansion of our business will require a significant amount of cash for expenditures. Our ability to successfully manage this growth will depend on many factors, including our working capital needs, the availability of equity or debt financing and, over time, our ability to generate cash flows from operations.

Contractual Obligations and Commitments

Our contractual obligations and other commitments as of December 31, 2022 consist of operating lease commitments and notes payable. We also have a standby letter of credit that serves as security for certain operating leases for office and manufacturing space. The letter of credit is fully secured by restricted certificate of deposit accounts. There was no draw against the letter of credit during the year ended December 31, 2022. Additionally, we are committed to non-cancellable purchase commitments of \$21,540 thousand as of December 31, 2022.

Off-Balance Sheet Arrangements

We are not a party to any off-balance sheet arrangements, including guarantee contracts, retained or contingent interests, or unconsolidated variable interest entities that either have, or are reasonably likely to have, a current or future material effect on our financial statements.

Critical Accounting Policies and Estimates

The preparation of consolidated financial statements in conformity with U.S. GAAP requires that management apply accounting policies and make estimates and assumptions that affect amounts reported in the statements. The following accounting policies represent those that management believes are particularly important to the consolidated financial statements and that require the use of estimates, assumptions, and judgments to determine matters that are inherently uncertain.

Fair Value of ESS Series C-2 Redeemable Convertible Preferred Stock Issuance Right

The Legacy ESS Series C redeemable convertible preferred stock financing agreement provided additional committed funding of up to approximately \$80 million, through the purchase of up to 39,971,716 shares of Legacy ESS Series C-2 Preferred Stock based on the completion of certain operational milestones at a predetermined price of \$2.00, to certain Series C-1 investors. On May 6, 2021, Legacy ESS entered into an amendment to the Legacy ESS Series C redeemable convertible preferred stock financing agreement with the two holders of the remaining Legacy ESS Series C-2 Redeemable Convertible Preferred Stock Issuance Right. Under the terms of the amended agreement, in conjunction with a successful Business Combination with STWO, two existing investors purchased 7,994,442 additional shares of Legacy ESS Series C-2 Preferred Stock and received warrants to purchase 21,159,364 shares of Legacy ESS Series C-2 Preferred Stock with an exercise price of \$.00007 per share. The Legacy ESS Series C-2 Redeemable Convertible Preferred Stock Issuance Right was eliminated with the consummation of the Business Combination.

We determined that our obligation to issue, and our investors' obligation to purchase, shares of Legacy ESS Series C-2 Preferred Stock at a fixed price represents a freestanding derivative financial instrument and was initially recorded at fair value. Subsequent changes in fair value at each reporting date are recorded as a component of other income and expense. The value of the Legacy ESS Series C-2 Redeemable Convertible Preferred Stock Issuance Right is determined based on significant inputs not observed in the market. Through the third quarter of 2020, the fair value of the Legacy ESS Series C-2 Redeemable Convertible Preferred Stock Issuance Right was determined using a Black-Scholes option pricing model. Beginning December 31, 2020 and thereafter, the fair value of the Legacy ESS Series C-2 Redeemable Convertible Preferred Stock Issuance Right was determined using a Black-Scholes option pricing model with consideration for a remain private scenario and a SPAC transaction scenario as described above. We utilized key assumptions, such as the fair value of the Legacy ESS Series C-2 Redeemable Convertible Preferred Stock, the volatility of peer companies' stock prices, the risk-free interest rate based on the U.S. treasury yield, and the expected term (based on the shorter of remaining term to a significant event or expiration date of the purchase right).

Convertible Preferred Stock Warrant Liabilities

Through the consummation of the Business Combination, we accounted for warrants to purchase shares of Legacy ESS Series B Preferred Stock and Legacy ESS Series C Preferred Stock as liabilities at their estimated fair values because these warrants may obligate us to transfer assets to the holders at a future date under certain circumstances, such as a merger, acquisition, reorganization, sale of all or substantially all of our assets, each a change of control event. The warrants were recorded at fair value upon issuance and are subject to remeasurement to fair value at each period end, with any fair value adjustments recognized in the statements of operations and comprehensive loss.

Through the third quarter of 2020, Legacy ESS measured the fair value of its warrant liabilities using unobservable inputs within the Black-Scholes option-pricing model. Beginning December 31, 2020 and thereafter, the fair value of the warrant liabilities was determined using a Black-Scholes option pricing model with consideration for a remain private scenario and a SPAC transaction scenario as described above. We utilized various key assumptions, such as the fair value of the Legacy ESS Series B Preferred Stock and Legacy ESS Series C Preferred Stock, the volatility of peer companies' stock prices, the risk-free interest rate based on the U.S. treasury yield, and the expected term (based on remaining term to a significant event).

All warrants were exercised prior to the consummation of the Business Combination.

Earnout Liabilities

Pursuant to the Merger Agreement, the Company was permitted to issue to eligible Legacy ESS securityholders, on a pro rata basis, up to 16,500,000 shares of additional common stock (the “Earnout Shares”) less any RSUs issued pursuant to the Incentive RSU Pool, issuable in two equal tranches upon the occurrence of the respective Earnout Milestone Events. The initial fair value of the Earnout Shares was estimated using a model based on multiple stock price paths developed through the use of a Monte Carlo simulation that incorporated into the valuation the possibility that the market condition targets may not be satisfied. The Earnout Milestone Events were achieved on November 9, 2021 and Legacy ESS issued 15,674,965 shares to securityholders.

Research and Development

We are in the research and development phase. Therefore, all related costs are currently accounted for as part of research and development expense in the consolidated statement of operations and comprehensive loss. The criteria established to determine when commercialization has been reached includes the length of time the units have been operational in the field and the level of performance at which those units operate. As we transition from the research and development phase and into a full commercial phase, all inventoriable costs will be capitalized, net of any lower of cost or net realizable value charges. As of December 31, 2022, the criteria for commercialization has not yet been met.

Revenue Recognition

Revenue is earned from the sales of energy storage systems and is derived from customer contracts. Revenue is recognized in an amount that reflects the consideration to which we expect to be entitled in exchange for transferring the promised goods and/or services to the customer, when or as our performance obligations are satisfied which includes estimates for variable consideration (e.g., liquidated damages). For sales of energy storage systems, our performance obligations are satisfied at the point in time when the customer obtains control of the system. Payment terms generally include advance payments to reserve capacity and/or upon issuance of the customer’s purchase order with the remainder due upon the achievement of various milestones including shipment readiness, delivery, commissioning of the system, and completion of final site testing.

The transaction price of the underlying customer agreement is allocated to each performance obligation based on its relative standalone selling price. When the standalone selling price is not directly observable, revenue is determined based on an estimate of selling price using the observable market price that the good or service sells for separately in similar circumstances and to similar customers, and/or an expected cost plus margin approach when the observable selling price of a good or services is not known and is either highly variable or uncertain.

Revenue recognition is deferred until written customer acceptance has been received, after site acceptance testing, or until we have established a history of successfully obtaining customer acceptance. In the near term, as our products are newly developed, this is likely to be a longer process than when our products are more mature and we have an established history of customer acceptance.

Product Warranties

We generally provide a standard warranty for a period of one year and an extended warranty through our optional Ironclad Services Plan (“ISP”). The standard warranty is accounted for as an assurance-type warranty, which provides customers with assurance that the product complies with agreed-upon specifications and does not represent a separate performance obligation. The ISP warranty is considered a distinct service and is accounted for as a performance obligation where a portion of the transaction price is allocated to that performance obligation.

We accrue an estimate of warranty costs at the time of recording the revenue for a unit. Warranty accruals include management’s best estimate of the projected costs to repair or replace any items under warranty, which is based on various factors including actual claim data to date.

Initial warranty data is limited at the early stage in the commercialization of our products. Thus, it is likely that as we sell additional energy storage systems, we will acquire additional information on the components requiring repair or replacement as well as the projected costs to repair or replace items under warranty which may result in a material difference between our estimated costs and our actual costs. We review our warranty accrual at least quarterly and adjust our estimates as needed to ensure our accruals are adequate to meet expected future warranty obligations. Adjustments to warranty accruals are recorded to research and development expenses while the Company is in the research and development phase.

Recently Issued Accounting Standards

See Note 2, *Significant Accounting Policies* to our consolidated financial statements for the year ended December 31, 2022 included elsewhere in this Annual Report on Form 10-K.

Emerging Growth Company Status

We are an “emerging growth company” as defined in Section 2(a) of the Securities Act and have elected to take advantage of the benefits of the extended transition period for new or revised financial accounting standards. We expect to continue to take advantage of the benefits of the extended transition period for as long as we remain an emerging growth company, although we may decide to early adopt such new or revised accounting standards to the extent permitted by such standards. This may make it difficult or impossible to compare our financial results with the financial results of another public company that is either not an emerging growth company or is an emerging growth company that has chosen not to take advantage of the extended transition period exemptions because of the potential differences in accounting standards used.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are a smaller reporting company as defined by Rule 12b-2 of the Exchange Act and are not required to provide the information otherwise reported under this Item.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The following financial statements and report are included in Item 8:

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of ESS Tech, Inc

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of ESS Tech, Inc. (the “Company”) as of December 31, 2022 and 2021, the related consolidated statements of operations and comprehensive loss, stockholders’ equity (deficit), and cash flows for each of the two years in the period ended December 31, 2022, 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, 2022 and 2021 and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2022, in conformity with U.S. generally accepted accounting principles.

Basis for Opinion

These financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on the Company’s financial statements based on our audits. 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 audits 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 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 audits, 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 audits included performing procedures to assess the risks of material misstatement of the 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 financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Ernst & Young LLP

We have served as the Company’s auditor since 2020.

Portland, Oregon

March 1, 2023

ESS Tech, Inc.
Consolidated Balance Sheets
As of December 31, 2022 and 2021
(in thousands, except share and per share data)

	2022	2021
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 34,767	\$ 238,940
Restricted cash, current	1,213	1,217
Accounts receivable, net	4,952	451
Accounts receivable, net - related parties	—	66
Short-term investments	105,047	—
Prepaid expenses and other current assets	5,657	4,844
Total current assets	151,636	245,518
Property and equipment, net	17,570	4,501
Operating lease right-of-use assets	3,401	—
Restricted cash, non-current	675	75
Other non-current assets	271	105
Total assets	\$ 173,553	\$ 250,199
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$ 3,036	\$ 1,572
Accrued and other current liabilities	14,125	6,487
Accrued product warranties	1,643	—
Operating lease liabilities, current	1,421	—
Deferred revenue	6,168	3,663
Notes payable, current	1,600	1,900
Total current liabilities	27,993	13,622
Notes payable, non-current	315	1,869
Operating lease liabilities, non-current	2,535	—
Deferred revenue, non-current	2,442	—
Earnout warrant liabilities	163	1,476
Public warrant liabilities	2,066	18,666
Private warrant liabilities	980	8,855
Other non-current liabilities	85	552
Total liabilities	36,579	45,040
Commitments and contingencies (Note 11)		
Stockholders' equity:		
Preferred stock (\$0.0001 par value, 200,000,000 shares authorized, none issued and outstanding as of December 31, 2022 and 2021)	—	—
Common stock (\$0.0001 par value; 2,000,000,000 shares authorized, 153,821,339 and 151,839,058 shares issued and outstanding as of December 31, 2022 and 2021, respectively)	16	16
Additional paid-in capital	755,537	745,753
Accumulated deficit	(618,579)	(540,610)
Total stockholders' equity	136,974	205,159
Total liabilities and stockholders' equity	\$ 173,553	\$ 250,199

See accompanying notes to consolidated financial statements

ESS Tech, Inc.
Consolidated Statements of Operations and Comprehensive Loss
Years Ended December 31, 2022 and 2021
(in thousands, except share and per share data)

	2022	2021
Revenue:		
Revenue	\$ 610	\$ —
Revenue - related parties	284	—
Total revenue	<u>894</u>	<u>—</u>
Operating expenses:		
Research and development	71,979	30,275
Sales and marketing	6,938	3,041
General and administrative	27,469	27,286
Total operating expenses	<u>106,386</u>	<u>60,602</u>
Loss from operations	(105,492)	(60,602)
Other income (expenses), net:		
Interest income (expense), net	2,187	(1,886)
Gain (loss) on revaluation of warrant liabilities	24,475	(37,584)
Loss on revaluation of derivative liabilities	—	(223,165)
Gain (loss) on revaluation of earnout liabilities	1,313	(154,806)
Other (expenses) income, net	(452)	926
Total other income (expenses), net	<u>27,523</u>	<u>(416,515)</u>
Net loss and comprehensive loss to common stockholders	<u>\$ (77,969)</u>	<u>\$ (477,117)</u>
Net loss per share - basic and diluted	<u>\$ (0.51)</u>	<u>\$ (5.73)</u>
Weighted average shares used in per share calculation - basic and diluted	<u>152,676,155</u>	<u>83,256,431</u>

See accompanying notes to consolidated financial statements

ESS Tech, Inc.
Consolidated Statements of Stockholders' Equity (Deficit)
Years Ended December 31, 2022 and 2021
(in thousands, except share and per share data)

	Redeemable Convertible Preferred Stock		Common Stock		Common Stock Warrants	Additional Paid-In Capital	Accumulated Deficit	Total Stockholders' Equity (Deficit)
	Shares	Amount	Shares	Amount				
Balance as of December 31, 2020	—	\$ —	58,919,345	\$ 6	\$ 153	\$ 35,446	\$ (63,493)	\$ (27,888)
Issuance of Legacy ESS Redeemable Convertible Preferred Stock	—	—	5,746,003	1	—	29,515	—	29,516
Issuance of Legacy ESS common stock upon exercise of stock options	—	—	2,482,958	—	—	664	—	664
Issuance of Legacy ESS common stock upon exercise of warrants	—	—	3,398,214	—	(153)	26,338	—	26,185
Issuance of Legacy ESS Series C-2 Redeemable Convertible Preferred Stock upon exercise of the Series C-2 Redeemable Convertible Preferred Stock Issuance Right and Series C-2 warrant	—	—	29,153,806	3	—	238,480	—	238,483
Net Business Combination and PIPE Financing	—	—	35,495,281	4	—	128,913	—	128,917
Issuance of common stock upon achievement of earnout	—	—	15,674,965	2	—	263,338	—	263,340
Issuance of common stock upon exercise of options	—	—	13,112	—	—	7	—	7
Issuance of common stock upon exercise of warrants	—	—	955,374	—	—	15,130	—	15,130
Stock-based compensation expense	—	—	—	—	—	7,922	—	7,922
Net loss	—	—	—	—	—	—	(477,117)	(477,117)
Balance as of December 31, 2021	—	\$ —	151,839,058	\$ 16	\$ —	\$ 745,753	\$ (540,610)	\$ 205,159
Issuance of common stock under employee stock plans	—	—	2,226,463	—	—	657	—	657
Cancellation of shares used to settle payroll tax withholding	—	—	(244,202)	—	—	(2,808)	—	(2,808)
Warrants issued	—	—	—	—	—	46	—	46
Warrants exercised	—	—	20	—	—	—	—	—
Stock-based compensation expense	—	—	—	—	—	11,889	—	11,889
Net loss	—	—	—	—	—	—	(77,969)	(77,969)
Balance as of December 31, 2022	—	\$ —	153,821,339	\$ 16	\$ —	\$ 755,537	\$ (618,579)	\$ 136,974

See accompanying notes to consolidated financial statements

ESS Tech, Inc.
Consolidated Statements of Cash Flows
For the Years Ended December 31, 2022 and 2021
(in thousands)

	2022	2021
Cash flows from operating activities:		
Net loss	\$ (77,969)	\$ (477,117)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	1,523	572
Non-cash lease expense	1,134	—
Stock-based compensation expense	11,889	7,922
Change in fair value of warrant liabilities	(24,475)	37,584
Change in fair value of derivative liabilities	—	223,165
Change in earnout liabilities	(1,313)	154,806
Other non-cash income and expenses, net	(866)	(868)
Changes in operating assets and liabilities:		
Accounts receivable	(1,886)	—
Prepaid expenses and other assets	(311)	(4,673)
Accounts payable	1,464	886
Accrued and other current liabilities	6,789	2,211
Accrued product warranties	1,643	—
Deferred revenue	1,881	3,663
Operating lease liabilities	(1,123)	—
Net cash used in operating activities	(81,620)	(51,849)
Cash flows from investing activities:		
Purchases of property and equipment	(14,180)	(2,767)
Purchases and maturities of short-term investments, net	(103,704)	—
Net cash used in investing activities	(117,884)	(2,767)
Cash flows from financing activities:		
Borrowings on notes payable	—	20,000
Payments on notes payable	(1,900)	(21,067)
Repurchase of shares from employees for income tax withholding purposes	(2,808)	—
Proceeds from contributions to Employee Stock Purchase Plan	492	—
Net cash contributions from Business Combination and PIPE Financing	—	258,730
Payments made towards offering costs	—	(7,895)
Proceeds from warrants exercised	165	10,995
Proceeds from exercise of Legacy ESS Series C-2 Redeemable Convertible Preferred Stock Issuance Rights and C-2 warrants upon Business Combination	—	15,559
Proceeds from sale of Legacy ESS Series C-2 Redeemable Convertible Preferred Stock, net of issuance costs	—	11,461
Other, net	(22)	671
Net cash (used in) provided by financing activities	(4,073)	288,454
Net change in cash, cash equivalents and restricted cash	(203,577)	233,838
Cash, cash equivalents and restricted cash, beginning of period	240,232	6,394
Cash, cash equivalents and restricted cash, end of period	\$ 36,655	\$ 240,232

See accompanying notes to consolidated financial statements

ESS Tech, Inc.
Statements of Cash Flows (continued)
For the Years Ended December 31, 2022 and 2021(in thousands)

	2022	2021
Supplemental disclosures of cash flow information:		
Cash paid for operating leases included in cash used in operating activities	\$ 1,625	\$ —
Cash paid for interest	154	1,799
Non-cash investing and financing transactions:		
Purchase of property and equipment included in accounts payable and accrued and other current liabilities	1,358	526
Right-of-use operating lease assets obtained in exchange for lease obligations	4,534	—
Right-of-use finance lease assets obtained in exchange for lease obligations	123	—
Warrant vested under contracts with customers	46	—
Extinguishment of derivative liabilities upon sale of Legacy ESS Series C-2 redeemable convertible preferred stock, net of amount allocated to warrants	—	18,055
Extinguishment of warrant liabilities upon exercise of Legacy ESS Series B, Series C-1 and Series C-2 redeemable convertible preferred stock warrants	—	26,178
Assumption of accrued expenses upon Business Combination	—	75
Assumption of private and public warrant liabilities upon Business Combination	—	11,833
Assumption of earnout warrant liabilities upon Business Combination	—	502
Assumption of earnout liability upon Business Combination	—	109,507
Extinguishment of earnout liability upon achievement of earnout and issuance of shares	—	263,338
Extinguishment of derivative liability upon exercise of Legacy ESS Series C-2 Issuance Right and related Series C-2 warrant liability upon Business Combination	—	222,924
Extinguishment of public warrant liability upon exercise of warrants	—	4,143
Cash and cash equivalents	\$ 34,767	\$ 238,940
Restricted cash, current	1,213	1,217
Restricted cash, non-current	675	75
Total cash, cash equivalents and restricted cash shown in the consolidated statements of cash flows	<u>\$ 36,655</u>	<u>\$ 240,232</u>

See accompanying notes to consolidated financial statements

ESS TECH, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. DESCRIPTION OF BUSINESS, BASIS OF PRESENTATION AND RISKS AND UNCERTAINTIES

Description of Business—ESS Tech, Inc. (“ESS” or the “Company”) is a long-duration energy storage company specializing in iron flow battery technology. ESS develops long-duration iron flow batteries for commercial and utility-scale energy storage applications requiring four or more hours of flexible energy capacity. The Company designs and produces long-duration batteries predominantly using earth-abundant materials that the Company believes can be cycled over 20,000 times without capacity fade. The Company continues to be in the research and development phase.

The Company was originally incorporated as a Cayman Islands exempted company on July 21, 2020 as a publicly traded special purpose acquisition company under the name ACON S2 Acquisition Corp. (“STWO”) for the purpose of effecting a merger, share exchange, asset acquisition, share purchase, reorganization or similar business combination involving STWO and one or more businesses. On October 8, 2021 (the “Closing Date”), the Company consummated the merger provided for under the merger agreement (the “Merger Agreement”) dated May 6, 2021, by and among STWO, SCharge Merger Sub, Inc., a Delaware corporation and wholly owned direct subsidiary of STWO (“Merger Sub”), and ESS Tech, Inc., a Delaware corporation (“Legacy ESS”).

Pursuant to the terms of the Merger Agreement, STWO deregistered by way of continuation under the Cayman Islands Companies Act (2021 Revision) and registered as a corporation in the State of Delaware under Part XII of the Delaware General Corporation Law, and a business combination between STWO and Legacy ESS was effected through the merger of Merger Sub with and into Legacy ESS, with Legacy ESS surviving as a wholly owned subsidiary of STWO (together with the other transactions described in the Merger Agreement, the “Business Combination”). On the Closing Date, STWO changed its name from “ACON S2 Acquisition Corp” to “ESS Tech, Inc.”, and its shares of common stock and warrants for shares of common stock commenced trading on the New York Stock Exchange under the new ticker symbols “GWH” and “GWH.W”, respectively.

Basis of Presentation—The accompanying consolidated financial statements include the accounts of the Company and its wholly owned subsidiary and have been prepared in accordance with accounting principles generally accepted in the United States of America (“U.S. GAAP”).

Pursuant to the Merger Agreement, the merger between Merger Sub and Legacy ESS was accounted for as a reverse recapitalization in accordance with U.S. GAAP (the “Reverse Recapitalization”). Under this method of accounting, STWO was treated as the “acquired” company and Legacy ESS was treated as the acquirer for financial reporting purposes. Accordingly, for accounting purposes, the Reverse Recapitalization was treated as the equivalent of Legacy ESS issuing stock for the net assets of STWO, accompanied by a recapitalization. The net assets of STWO were stated at historical cost, with no goodwill or other intangible assets recorded. Legacy ESS was determined to be the accounting acquirer based on the following predominant factors:

- Legacy ESS existing stockholders had the greatest voting interest in the Company;
- Legacy ESS directors represented all of the new board of directors of the Company;
- Legacy ESS senior management continued as the senior management of the Company; and,
- Legacy ESS had the larger employee base.

The assets, liabilities and results of operations prior to the Reverse Recapitalization are those of Legacy ESS. The shares and corresponding capital amounts and losses per share, prior to the Reverse Recapitalization, have been retroactively restated based on shares reflecting the exchange ratio of approximately 1.47 (the “Per Share Consideration”) established in the Business Combination.

Risks and Uncertainties—The Company is subject to a number of risks associated with companies of similar size in its industry, including, but not limited to, the need for successful development of products, the need for additional capital and financing to fund operations, competition from substitute products and services from larger companies, legal protection of proprietary technology, patent litigation, dependence on key individuals, and risks associated with changes in information technology.

COVID-19 presents material uncertainty and risk with respect to the Company, its performance, and its financial results and could adversely affect the Company’s financial position and results.

Segment Information—The Company has determined that its Chief Executive Officer (“CEO”) is its chief operating decision maker. The CEO reviews financial information for purposes of assessing performance and making decisions on how to allocate resources. The Company has determined that it operates in a single reportable segment.

Substantially all of the Company's operations and long-lived assets were attributable to operations in the United States as of December 31, 2022 and 2021.

Use of Estimates—The preparation of the consolidated financial statements in conformity with U.S. GAAP requires management to make estimates, judgments and assumptions that affect the reported amounts of assets and liabilities and disclosure of commitments and contingencies as of the date of the financial statements and the reported amounts of expenses during the reporting periods. Such estimates relate to, among others, the useful lives and assessment of recoverability of property and equipment, deferred tax assets valuation, determination of the fair value of the Company's investments, Bridge Loan, warrant liabilities, Series C-2 Redeemable Convertible Preferred Stock Issuance Right, earnout liabilities, earnout warrant liabilities, public warrants, private warrants, and determination of variable consideration, standalone selling price, product warranty liabilities, as well as other accruals. These estimates are based on historical trends, market pricing, current events and other relevant assumptions and data points. Actual results could differ from those estimates and such differences may be material to the financial statements.

Concentration of Credit Risk—Financial instruments that potentially subject the Company to concentration of credit risk consist of cash and cash equivalents and restricted cash. The Company's cash and cash equivalents include cash in bank accounts, money market funds, and investments with a maturity of three months or less at the date of purchase. The Company's restricted cash includes a certificate of deposit, collateral associated with a standby letter of credit, and a performance and payment bond. Deposits held with banks may exceed the amount of insurance provided on such deposits.

Reclassifications—Certain prior year amounts have been reclassified to conform with current year presentation. These reclassifications had no effect on the reported results of operations.

2. SIGNIFICANT ACCOUNTING POLICIES

Net Loss Per Share—The Company will use the two-class method when computing net loss per common share when shares are issued that meet the definition of participating securities. Under this method, net earnings are reduced by the amount of dividends declared in the current period for common stockholders and participating security holders. The remaining earnings or "undistributed earnings" are allocated between common stock and participating securities to the extent that each security may share in earnings as if all the earnings for the period had been distributed. Once calculated, the earnings per common share is computed by dividing the net loss attributable to common stockholders by the weighted average number of common shares outstanding during each year presented. Diluted loss attributable to common stockholders per common share has been computed by dividing the net loss attributable to common stockholders by the weighted average number of common shares outstanding plus the dilutive effect of outstanding options, warrants, and restricted stock units ("RSUs") during the respective periods. In cases where the Company has a net loss, no dilutive effect is shown as options, warrants, and RSUs become anti-dilutive.

Cash and Cash Equivalents—Cash and cash equivalents include cash in bank accounts, money market funds, and investments with a maturity of three months or less at the date of purchase. Cash equivalents are recorded at carrying value, which approximates fair value.

Restricted Cash—Restricted cash is required as collateral for certain of the Company's lease agreements and contractual supply and service arrangements. Restricted cash includes a certificate of deposit for the Company's lease agreements, collateral associated with a standby letter of credit issued to a customer, and a performance and payment bond for the Company's supply and service arrangements. The certificate of deposit and bond are recorded at carrying value, which approximates fair value. Restricted cash amounts are reported in the consolidated balance sheets as current or non-current depending on when the cash will be contractually released.

Accounts Receivable, Net—The Company evaluates the creditworthiness of its customers. If the collection of any specific receivable is doubtful, an allowance is recorded in the allowance for doubtful accounts which is included in accounts receivable, net in the consolidated balance sheets. The Company had no allowance for doubtful accounts recorded at either December 31, 2022 or 2021.

Property and Equipment, Net—Property and equipment are stated at cost, net of depreciation. Depreciation is provided using the straight-line method over the estimated useful lives of the assets, which range from three to seven years. Leasehold improvements are amortized over the lesser of the estimated useful lives of the assets or the remaining lease term. Expenditures for maintenance and repairs are expensed in the consolidated statements of operations and comprehensive loss as incurred. Expenditures which materially increase values, change capacities, or extend useful lives are capitalized. When assets are retired or disposed of, the cost and accumulated depreciation are removed from the accounts, and any resulting gains or losses are recognized in other income (expense), net in the consolidated statements of operations and comprehensive loss.

The Company evaluates the recoverability of property and equipment for possible impairment whenever events or circumstances indicate that the carrying amount of such assets may not be recoverable. The Company assesses the alternative use of an asset, the condition of the asset and the current market demand to determine if an asset is impaired. No impairment loss was recognized during the years ended December 31, 2022 and 2021.

Investments—Investments consist primarily of U.S. Treasury securities, U.S. agency securities, and commercial paper and are classified as trading securities as they are bought and held principally for the purpose of selling them in the near term. Trading securities are carried on the consolidated balance sheets at fair value. Unrealized gains and losses on trading securities are included in other income (expense), net in the consolidated statements of operations and comprehensive loss. For trading securities still held at the reporting date, the Company recorded net losses of \$45 thousand and zero for the years ended December 31, 2022 and 2021, respectively.

Revenue Recognition—Revenue is earned from the sale, installation and commissioning of energy storage systems and is derived from customer contracts. Revenue is recognized in an amount that reflects the consideration to which the Company expects to be entitled in exchange for transferring the promised goods and/or services to the customer, when or as the Company’s performance obligations are satisfied, which includes estimates for variable consideration (e.g., liquidated damages). For sales of energy storage systems, the Company’s performance obligations are satisfied at the point in time when the customer obtains control of the system.

Revenue recognition is deferred until written customer acceptance has been received, after site acceptance testing, or until the Company has established a history of successfully obtaining customer acceptance. In the near term, as the Company’s products are newly developed, this is likely to be a longer process than when the products are mature and the Company has an established history of customer acceptance. No right of return exists on sales of energy storage systems. Performance obligations for services, including the optional Ironclad Services Plan (“ISP”) extended warranty and ongoing operations and maintenance program provided to customers, are satisfied over time as the respective services are performed.

The transaction price of the underlying customer agreement is allocated to each performance obligation based on its relative standalone selling price. When the standalone selling price is not directly observable, revenue is determined based on an estimate of selling price using the observable market price that the good or service sells for separately in similar circumstances and to similar customers, and/or an expected cost plus margin approach when the observable selling price of a good or services is not known and is either highly variable or uncertain.

Costs to obtain a contract relate primarily to commissions paid to the Company’s sales personnel related to the sale of energy storage systems. The Company expenses costs associated with obtaining new contracts as incurred if the amortization period of the asset recognized by the Company is one year or less.

The Company invoices customers in accordance with customer agreements and in advance of recognizing revenue as the Company has not satisfied certain performance obligations that transfer control to the customer. Payment terms generally include advance payments to reserve capacity and/or upon issuance of the customer’s purchase order with the remainder due upon the achievement of various milestones including but not limited to shipment readiness, delivery, commissioning of the system, and completion of final site testing. Advanced customer payments and unsatisfied performance obligations are recognized as deferred revenue in the consolidated balance sheets.

Sales tax collected from customers is recorded on a net basis and therefore, not included in revenue. Sales tax is recorded as a liability until remitted to governmental authorities. Shipping and handling, freight costs and other reimbursable costs are accounted for as fulfillment activities and included in revenue. Related costs are included in research and development expenses while the Company is in the research and development phase.

Product Warranties—Warranty obligations are incurred in connection with the sale of the Company’s products. The Company generally provides a standard warranty for a period of one year and an extended warranty through the optional ISP. The standard warranty is accounted for as an assurance-type warranty, which provides customers with assurance that the product complies with agreed-upon specifications and does not represent a separate performance obligation. The ISP warranty is considered a service-type warranty which is a distinct service and a portion of the transaction price is allocated to that performance obligation.

Costs to provide for standard warranty obligations are estimated and recorded as a liability at the time revenue is recognized on the sale of the energy storage system. Warranty reserves include management’s best estimate of the projected costs to repair or to replace any items under warranty, which is based on various factors, including the use of actual claim data to date. Adjustments to warranty reserves are recorded to research and development expenses while the Company is in the research and development phase.

Sales and Marketing—Sales and marketing expenses consist primarily of salaries, benefits and stock-based compensation for marketing and sales personnel and related support teams. To a lesser extent, sales and marketing expenses also include professional services costs, travel costs, and trade show sponsorships and participation. Advertising costs are expensed as incurred. The Company incurred advertising costs of \$173 thousand and \$45 thousand for the years ended December 31, 2022 and 2021, respectively.

Research and Development—The Company continues to be in the research and development phase. Research and development costs are expensed as incurred and consist primarily of direct product development material costs, including freight charges, and product development personnel-related expenses, warranty-related costs, depreciation charges, overhead related costs, consulting services, and other direct expenses. Personnel-related expenses consist of salaries, benefits and stock-based compensation.

The Company receives funding from federal agencies for research and development activities related to its products. Under certain circumstances, up to the entire amount of funding may need to be repaid to the grantor in the form of a success fee in future periods if the Company monetized the results of the activities funded by the grantor. The portion of such funding the Company may be required to pay in certain circumstances is recorded in accrued and other current liabilities in the consolidated balance sheets and was \$452 thousand as of December 31, 2022 and 2021.

General and Administrative—General and administrative expenses consist of personnel-related expenses for the Company’s corporate, executive, finance, legal, and other administrative functions, as well as expenses for outside professional services and insurance costs. Personnel-related expenses consist of salaries, benefits and stock-based compensation. To a lesser extent, general and administrative expenses include depreciation and other allocated costs, such as facility-related expenses and supplies.

Stock-Based Compensation—The Company accounts for stock-based compensation in accordance with ASC 718, *Compensation – Stock Compensation (“ASC 718”)*. The Company measures and recognizes compensation expense for all stock-based awards based on estimated fair values on the date of the grant, recognized over the requisite service period. For awards that vest solely based on a service condition, the Company recognizes stock-based compensation expense on a straight-line basis over the requisite service period. The compensation expense related to awards with performance conditions is recognized over the requisite service period when the performance conditions are probable of being achieved. The compensation expense related to awards with market conditions is recognized on an accelerated attribution basis over the requisite service period identified as the derived service period over which the market conditions are expected to be achieved, and is not reversed if the market condition is not satisfied. The Company accounts for forfeitures as they occur. Stock-based awards granted to employees are primarily stock options and RSUs.

The fair value of each stock option granted is estimated using the Black-Scholes Merton option-pricing model using the single-option award approach. The following assumptions are used in the Black-Scholes Merton option-pricing model:

Risk-Free Interest Rate—The risk-free interest rate is based on the implied yield available on the date of grant on U.S. Treasury zero-coupon issued with a term that is equal to the option’s expected term at the grant date.

Expected Volatility—The Company estimates the volatility for option grants by evaluating the average historical volatility of a peer group of companies for the period immediately preceding the option grant for a term that is approximately equal to the option’s expected term.

Expected Term—The expected term for employees represents the period over which options granted are expected to be outstanding using the simplified method, as the Company’s historical share option exercise experience does not provide a reasonable basis upon which to estimate the expected term. The simplified method deems the term to be the average of the time-to-vesting and contractual life of the stock-based awards.

Dividend Yield—The Company has not declared or paid dividends to date and does not anticipate declaring dividends. As such, the dividend yield has been estimated to be zero.

Income Taxes—The Company accounts for income taxes under the asset and liability method. Under this method, deferred taxes are determined based on the temporary differences between the financial statement and tax bases of assets and liabilities using tax rates expected to be in effect during the years in which the bases differences are expected to reverse. The effect of a change in tax rates on deferred tax assets and liabilities is recognized in the consolidated statement of operations and comprehensive loss in the period that includes the enactment date. The Company provides for a valuation allowance when it is more likely than not that some portion of, or all of the Company’s deferred tax assets will not be realized. In making such determination, the Company considers all available positive and negative evidence, including future reversals of existing taxable temporary differences, projected future

taxable income, tax-planning strategies, and results of recent operations. As of December 31, 2022 and 2021, the Company has recorded a full valuation allowance against its deferred tax assets.

ASC 740, *Accounting for Income Taxes* (“ASC 740”), requires that the tax benefit of net operating losses, temporary differences and credit carryforwards be recorded as an asset to the extent that management assesses that realization is “more likely than not.” Realization of the future tax benefits is dependent on the Company’s ability to generate sufficient taxable income within the carryforward period. Because of the Company’s history of operating losses, management believes that recognition of the deferred tax assets arising from the above-mentioned future tax benefits is currently not likely and, accordingly, has provided a full valuation allowance for these tax benefits for the years ended December 31, 2022 and 2021.

The Company recognizes accrued interest and penalties related to unrecognized tax benefits as a component of income tax expense. No amounts were accrued for the payment of interest and penalties as of December 31, 2022 and 2021 as the Company is currently not aware of any issues under review that could result in significant payments, accruals, or material deviation from its position.

Fair Value—The Company follows ASC 820, *Fair Value Measurements* (“ASC 820”), which establishes a common definition of fair value to be applied when U.S. GAAP requires the use of fair value, establishes a framework for measuring fair value, and requires certain disclosure about such fair value measurements.

ASC 820 establishes a hierarchy for inputs used in measuring fair value that maximizes the use of observable inputs and minimizes the use of unobservable inputs by requiring that observable inputs be used when available. Observable inputs are inputs that market participants would use in pricing the asset or liability based on market data obtained from sources independent of the Company. Unobservable inputs are inputs that reflect the Company’s assumptions about what market participants would use in pricing the asset or liability based on the best information available in the circumstances. The hierarchy is broken down into three levels based on the reliability of inputs as follows:

Level 1: Observable inputs such as quoted prices in active markets for identical assets or liabilities to which the Company has access at a measurement date.

Level 2: Observable inputs other than Level 1 quoted prices that are observable for the asset or liability, either directly or indirectly; these include quoted prices for similar assets or liabilities in an active market, quoted prices for identical assets and liabilities in markets that are not active, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.

Level 3: Unobservable inputs for which little or no market data exists and for which the Company must develop its own assumptions regarding the assumptions that market participants would use in pricing the asset or liability, including assumptions regarding risk.

Because of the uncertainties inherent in the valuation of assets or liabilities for which there are no observable inputs, those estimated fair values may differ significantly from the values that may have been used had a ready market for the assets or liabilities existed.

Recent Accounting Pronouncements—Pursuant to the Jumpstart Our Business Startups Act (“JOBS Act”), an emerging growth company is provided the option to adopt new or revised accounting standards that may be issued by the FASB or the SEC either (i) within the same periods as those otherwise applicable to non-emerging growth companies or (ii) within the same time periods as private companies. The Company has elected to use the extended transition period for complying with any new or revised financial accounting standards. As a result, the Company’s consolidated financial statements may not be comparable to the financial statements of issuers who are required to comply with the effective date for new or revised accounting standards that are applicable to public companies. The Company also intends to continue to take advantage of some of the reduced regulatory and reporting requirements of emerging growth companies pursuant to the JOBS Act so long as the Company qualifies as an emerging growth company.

In June 2016, the FASB issued ASU No. 2016-13, *Financial Instruments-Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments* (“ASU 2016-13”), which requires the measurement and recognition of expected credit losses for financial assets held at amortized cost. ASU 2016-13 replaces the existing incurred loss impairment model with a forward-looking expected credit loss model, which will result in earlier recognition of credit losses. ASU 2016-13 is effective for emerging-growth companies for fiscal years beginning after December 15, 2022, and interim periods within those fiscal years. The Company has determined that the adoption of ASU 2016-13 will not have a material impact on its consolidated financial statements or related disclosures. In future periods, as revenue and accounts receivable increase, ASU 2016-13 could have a material impact on its consolidated financial statements.

Recently Adopted Accounting Pronouncements—On January 1, 2022, the Company adopted ASU 2016-02, *Leases (ASC 842)*, which superseded previous guidance related to accounting for leases within Topic 840, *Leases*. The Company elected the practical expedient provided under ASU 2018-11, *Leases (Topic 842) Targeted Improvements*, which amended ASU 2016-02 to provide entities an optional transition practical expedient to adopt the new standard with a cumulative effect adjustment as of the beginning of the year of adoption with prior year comparative financial information and disclosures remaining as previously reported. As a result, no adjustments were made to the consolidated balance sheet prior to January 1, 2022 and amounts are reported in accordance with historical accounting under Topic 840, while the consolidated balance sheets as of December 31, 2022 are presented under Topic 842.

The Company elected the package of practical expedients permitted under the transition guidance, which allowed it to carry forward historical lease classification, its assessment of whether a contract was or contains a lease, and its assessment of initial direct costs for any leases that existed prior to January 1, 2022. The Company also elected to combine its lease and non-lease components and to keep leases with an initial term of 12 months or less off the consolidated balance sheets and recognize the associated lease payments in the consolidated statements of operations and comprehensive loss on a straight-line basis over the lease term.

For new required disclosures and further information see Note 9, *Leases*. Adoption of the new standard resulted in the recording of lease assets and lease liabilities of \$4,534 thousand and \$5,229 thousand, respectively, as of January 1, 2022. The transition did not have a material impact on the Company's results of operations, cash flows or liquidity measures.

For the year ended December 31, 2022, the Company adopted ASU No. 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*, which simplifies the accounting for income taxes. The adoption did not result in a material impact to the Company's consolidated financial statements or related disclosures.

3. BUSINESS COMBINATION

As discussed in Note 1, on October 8, 2021, the Company consummated the Business Combination pursuant to the Merger Agreement, with Legacy ESS surviving the Business Combination as a wholly owned subsidiary of the Company. Upon the Business Combination closing, each share of Legacy ESS common stock, par value \$0.0001 per share ("Legacy ESS Common Stock") and preferred stock, par value \$0.0001 per share ("Legacy ESS Preferred Stock"), were converted into the right to receive shares of the Company's common stock at the Per Share Consideration as calculated pursuant to the Merger Agreement. The aggregate consideration paid to Legacy ESS stockholders in connection with the Business Combination (excluding any potential Earnout Shares (as defined below)), was 99,700,326 shares of the Company's common stock (including 125,958 shares of common stock issued following the Closing as a result of a transaction expense adjustment as disclosed in the Company's Form 8-K filed with the SEC on November 15, 2021).

Upon the closing of the Business Combination, the Company's certificate of incorporation was amended and restated to, among other things, increase the total number of authorized shares of capital stock to 2,200,000,000, of which 2,000,000,000 shares are common stock, \$0.0001 par value per share, and 200,000,000 shares are preferred stock, \$0.0001 par value per share.

In connection with the Business Combination, on the Closing Date, STWO issued and sold an aggregate of 25,000,000 shares of the Company's common stock for a selling price of \$10.00 per share and an aggregate selling price of \$250,000 thousand pursuant to subscription agreements, dated as of May 6, 2021, with certain accredited investors, in a Private Investment in Public Equity ("PIPE Financing").

Each issued and outstanding warrant of Legacy ESS was exercised in full in exchange for the issuance of shares of the Company's common stock immediately prior to the Closing.

Each issued and outstanding vested and unvested Legacy ESS option was converted into options of the Company exercisable for shares of the Company's common stock with the same terms except for the number of shares exercisable and the exercise price, each of which was adjusted using the Per Share Consideration.

Legacy ESS allocated to Legacy ESS employees 824,998 RSUs (the "Incentive RSU Pool") of which 757,448 were vested upon meeting certain Earnout Milestone Events on November 9, 2021. A total of 67,550 RSUs were cancelled or not awarded as the holders did not meet the continued service requirement through the vesting date.

Pursuant to the Merger Agreement, the Company was permitted to issue to eligible Legacy ESS securityholders, on a pro rata basis, up to 16,500,000 shares of additional common stock (the "Earnout Shares") less any RSUs issued pursuant to the Incentive RSU Pool, issuable in two equal tranches upon the occurrence of the respective Earnout Milestone Events. The Earnout Milestone Events were achieved on November 9, 2021 and Legacy ESS issued 15,674,965 shares to securityholders. 6,707,318 of the Earnout Shares were delivered subsequent to December 31,

2021 upon satisfaction of a regulatory holding period and were excluded from the calculation of diluted weighted-average common shares outstanding for the period. See Note 4, *Loss per Share*.

The Business Combination is accounted for as a reverse recapitalization in accordance with U.S. GAAP. Under this method of accounting, STWO was treated as the “acquired” company and Legacy ESS was treated as the acquirer for financial reporting purposes. Accordingly, for accounting purposes, the Business Combination was treated as the equivalent of Legacy ESS issuing stock for the net assets of STWO, accompanied by a recapitalization. The net assets of STWO were stated at historical cost, with no goodwill or other intangible assets recorded.

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

Cash contributions from Business Combination and PIPE Financing, net of redemptions	\$ 258,730
Less: transaction costs paid by ESS	(7,895)
Net cash contributions from Business Combination and PIPE Financing	<u>250,835</u>
Less: non-cash fair value of Public and Private Common Stock Warrants	(11,833)
Less: non-cash fair value of Earnout Shares and Warrants	(110,010)
Less: liabilities assumed from STWO	(75)
Net Business Combination and PIPE Financing	<u><u>\$ 128,917</u></u>

The number of shares of common stock issued immediately following the consummation of the Business Combination:

Class A Common Stock, outstanding prior to Business Combination	25,000,000
Class B Common Stock, outstanding prior to Business Combination	6,250,000
Less: redemption of STWO shares	<u>(20,754,719)</u>
Common Stock of STWO	10,495,281
ESS common stock issued upon exercise of C-2 Right and Warrant	29,153,806
Shares issued in PIPE Financing	<u>25,000,000</u>
Business Combination and PIPE Financing shares - common stock	64,649,087
Legacy ESS Convertible Preferred Stock converted to ESS common stock	57,104,322
Legacy ESS Common Stock converted to ESS common stock	<u>13,442,198</u>
Total shares of common stock immediately after Business Combination	<u><u>135,195,607</u></u>

4. LOSS PER SHARE

The following table presents the calculation of basic and diluted net loss per share attributable to common shareholders for the years ended December 31, 2022 and 2021 (in thousands, except per share data):

	<u>2022</u>	<u>2021</u>
Net loss attributable to common stockholders	<u>\$ (77,969)</u>	<u>\$ (477,177)</u>
Weighted-average shares outstanding – basic and diluted	<u>152,676,155</u>	<u>83,256,431</u>
Net loss per share – basic and diluted	<u>\$ (0.51)</u>	<u>\$ (5.73)</u>

Due to the net losses for the years ended December 31, 2022 and 2021, basic and diluted net loss per common share were the same, as the effect of potentially dilutive securities would have been anti-dilutive.

The following outstanding balances of common share equivalent securities have been excluded from the calculation of diluted weighted-average common shares outstanding because the effect is anti-dilutive for the periods presented:

	2022	2021
Stock options	3,223,109	3,796,530
Restricted stock units	6,346,955	3,392,153
Warrants	11,473,727	11,461,247
Earnout shares pending satisfaction of regulatory holding period	—	6,707,318
Number of securities outstanding	<u>21,043,791</u>	<u>25,357,248</u>

5. PREPAID EXPENSES AND OTHER CURRENT ASSETS

Prepaid expenses and other current assets consist of the following (in thousands):

	December 31, 2022	December 31, 2021
Insurance	\$ 2,033	\$ 3,482
Vendor advances	3,147	1,103
Other	477	259
Total prepaid expenses and other current assets	<u>\$ 5,657</u>	<u>\$ 4,844</u>

6. PROPERTY AND EQUIPMENT, NET

Property and equipment, net consist of the following (in thousands):

	December 31, 2022	December 31, 2021
Machinery and equipment	\$ 13,699	\$ 2,868
Furniture and fixtures	184	90
Leasehold improvements	3,115	746
Software	183	—
Construction in process	3,230	2,517
Total property and equipment	<u>20,411</u>	<u>6,221</u>
Less accumulated depreciation	(2,841)	(1,720)
Total property and equipment, net	<u>\$ 17,570</u>	<u>\$ 4,501</u>

Depreciation expense was \$1,506 thousand and \$572 thousand for the years ended December 31, 2022 and 2021, respectively.

7. ACCRUED AND OTHER CURRENT LIABILITIES

Accrued and other current liabilities consist of the following (in thousands):

	December 31, 2022	December 31, 2021
Payroll and related benefits	\$ 2,948	\$ 1,876
Materials and related purchases	6,892	2,108
Amounts due to customers	770	—
Deferred rent	—	142
Professional and consulting fees	1,011	1,820
Accrued capital purchases	1,093	—
Other	1,411	541
Total accrued and other current liabilities	<u>\$ 14,125</u>	<u>\$ 6,487</u>

8. ACCRUED PRODUCT WARRANTIES

The following table summarizes product warranty activity (in thousands):

	Year Ended December 31,	
	2022	2021
Accrued product warranties - beginning of period	\$ —	\$ —
Accruals for warranties issued	2,612	—
Repairs and replacements	(969)	—
Accrued product warranties - end of period	<u>\$ 1,643</u>	<u>\$ —</u>

9. LEASES

The Company determines if an arrangement is a lease at inception and whether the arrangement is classified as an operating or finance lease. At commencement of the lease, the Company records a right-of-use (“ROU”) asset and lease liability in the consolidated balance sheets based on the present value of lease payments over the term of the arrangement. ROU assets represent the right to use an underlying asset for the lease term and lease liabilities represent the Company’s obligation to make lease payments arising from the lease. As the Company’s leases do not provide an implicit rate, it uses its incremental borrowing rate based on the information available at commencement date in determining the present value of lease payments. The Company determines its incremental borrowing rate based on publicly available data for instruments with similar characteristics, including recently issued debt, as well as other factors. Contract terms may include options to extend or terminate the lease, and when the Company deems it reasonably certain that ESS will exercise that option it is included in the ROU asset and lease liability. Operating leases will reflect lease expense on a straight-line basis, while finance leases will result in the separate presentation of interest expense on the lease liability and amortization expense of the ROU asset.

ROU assets related to the Company’s operating leases are included in operating lease ROU assets, while the corresponding lease liabilities are included in current and non-current operating lease liabilities on the Company’s consolidated balance sheets. ROU assets related to the Company’s finance leases are included in other non-current assets, while the corresponding lease liabilities are included in accrued and other current liabilities and other non-current liabilities on the Company’s consolidated balance sheets.

The Company does not record leases with a term of 12-months or less in the consolidated balance sheets. Short-term lease costs were immaterial for the year ended December 31, 2022.

The Company leases office and manufacturing space in Wilsonville, Oregon under operating leases and printers and copiers under finance leases. Each of the operating leases provides the Company an option to renew the lease for an additional 60 months which have not been included in the operating lease obligations.

Operating lease costs for the year ended December 31, 2022 were \$1,483 thousand. Finance lease costs for the year ended December 31, 2022 were immaterial. As of December 31, 2022, the weighted-average remaining term for the operating leases was 2.6 years and the weighted-average discount rate was 7.5%. The weighted-average remaining term for the finance lease was 4.3 years and the weighted-average discount rate was 7.5%.

As of December 31, 2022, future maturities of lease liabilities are as follows (in thousands):

	Operating Leases	Finance Leases
2023	\$ 1,670	\$ 30
2024	1,720	30
2025	986	30
2026	—	30
2027	—	6
Thereafter	—	—
Total minimum lease payments	<u>\$ 4,376</u>	<u>\$ 126</u>
Less imputed interest	(420)	(19)
Total	<u>\$ 3,956</u>	<u>\$ 107</u>

2021 Lease Disclosures

Future minimum lease payments from the Company's 2021 Form 10-K as filed in accordance with Leases (Topic 840) under non-cancelable operating lease agreements for the years ending December 31, are as follows (in thousands):

2022	\$	1,625
2023		1,670
2024		1,720
2025		983
Total	\$	<u>5,998</u>

Rent expense related to operating leases recorded in accordance with Leases (Topic 840) was \$1,491 thousand for the year ended December 31, 2021.

10. BORROWINGS

Borrowings consist of the following (in thousands):

	December 31, 2022	December 31, 2021
Total notes payable	\$ 1,915	\$ 3,769
Less current portion of notes payable	1,600	1,900
Notes payable, non-current	<u>\$ 315</u>	<u>\$ 1,869</u>

Notes Payable

In 2018, the Company entered into a \$1,000 thousand note payable with a bank that was secured by all property of the Company, except for its intellectual property. The note payable's original maturity date was July 1, 2021.

In March 2020, the Company amended the note payable and borrowed an additional \$4,000 thousand. The additional \$4,000 thousand borrowing changed the present value of cash flows by more than 10% and, as such, was treated as a debt extinguishment. The Company recognized a \$62 thousand loss on extinguishment of debt for the year ended December 31, 2020. The Company's notes payable to the bank were recorded at fair value as part of the extinguishment. The \$4,000 thousand note payable's original maturity date was January 1, 2023.

In April 2020, the Company entered into a deferral agreement ("Deferral Agreement") to extend the maturity date of the original \$1,000 thousand note payable to September 1, 2022 and extend the maturity date of the additional \$4,000 thousand note payable to January 1, 2024. The Company accounted for the Deferral Agreement as a debt modification based on an analysis of cash flows before and after the debt modification.

The original \$1,000 thousand note payable was fully repaid in September 2022, pursuant to the terms of the Deferral Agreement.

The notes payable bear interest at 0.50% below the bank's prime rate (7.50% on December 31, 2022). The Company makes monthly interest and principal payments on the note payable based on the schedule defined in the agreement.

Annual maturities on notes payable outstanding at December 31, 2022 are as follows (in thousands):

2023	\$ 1,600
2024	333
Total maturities	<u>1,933</u>
Less unamortized debt premium	(18)
Total notes payable	<u>\$ 1,915</u>

Payroll Protection Program Loan

In April 2020, the Company entered into an unsecured promissory note under the Payroll Protection Program ("PPP Loan") administered by the United States Small Business Administration. The principal amount of the PPP Loan was \$936 thousand. The PPP Loan bore interest of 1.0% per annum and had a maturity date of April 20, 2022. In July 2021, the Company applied for and received forgiveness on the \$936 thousand PPP Loan plus \$12 thousand in accrued interest. The gain on extinguishment of debt of \$948 thousand is recorded within other income (expense), net in the Company's consolidated statements of operations and comprehensive loss for the year ended December 31, 2021.

Bridge Loan

In July 2021, the Company entered into a six-month \$20,000 thousand bridge loan ("Bridge Loan"), maturing on the earlier of January 12, 2022 or consummation of the Business Combination, which ultimately closed on October 8, 2021. See Note 3, *Business Combination*. The Bridge Loan bore interest of 9%, of which 2.25% was payable monthly and 6.75% paid-in-kind ("PIK") interest was due upon maturity. At maturity, a final payment of \$1,250 thousand was due in addition to all outstanding principal and accrued interest. The Bridge Loan was paid off pursuant to the terms of the Business Combination.

The Company elected the fair value option to account for the Bridge Loan, which contained embedded derivatives. The Company recorded the Bridge Loan at fair value of \$20,000 thousand at issuance. Interest expense of \$1,578 thousand was recognized related to the paid in-kind interest and final payment on the Bridge Loan for the year ended December 31, 2021.

11. COMMITMENTS AND CONTINGENCIES

The Company, from time to time, is a party to various claims, legal actions, and complaints arising in the ordinary course of business. The Company is not aware of any legal proceedings or other claims, legal actions, or complaints through the date of issuance of these consolidated financial statements.

As of December 31, 2022, and 2021, the Company had a standby letter of credit with First Republic Bank totaling \$725 thousand as security for an operating lease of office and manufacturing space in Wilsonville, Oregon. As of December 31, 2022 the letter of credit was secured by a restricted certificate of deposit account totaling \$75 thousand. There were no draws against the letter of credit during the years ended December 31, 2022 and 2021.

On September 1, 2022, the Company executed a standby letter of credit with CitiBank, N.A., for \$600 thousand as security for the performance and payment of the Company's obligations under a customer agreement. The letter of credit is in effect until the date on which the warranty period under the agreement expires, which is anticipated to be in 2025. As of December 31, 2022, \$600 thousand was pledged as collateral for the letter of credit and recorded as restricted cash, non-current. There were no draws against the letter of credit during the year ended December 31, 2022.

The Company purchases materials from several suppliers and has entered into agreements with various contract manufacturers, which include cancelable and noncancelable purchase commitments. As of December 31, 2022 and 2021, total unfulfilled noncancelable purchase commitments were \$21,540 thousand and \$10,160 thousand, respectively. In addition, total unfulfilled cancellable purchase commitments amounted to \$5,663 thousand and \$10,446 thousand as of December 31, 2022, and 2021, respectively. These purchase commitments were not recorded in the consolidated financial statements.

12. LEGACY ESS REDEEMABLE CONVERTIBLE PREFERRED STOCK

All Legacy ESS redeemable convertible preferred stock classified as redeemable was converted into Legacy ESS common stock, which was subsequently exchanged for the Company's common stock as a result of the Business Combination using the Per Share Consideration of approximately 1.47. All preferred stock amounts have been retroactively adjusted to reflect the Business Combination.

Immediately prior to the completion of the Business Combination on October 8, 2021, all outstanding shares of Legacy ESS redeemable convertible preferred stock converted into an aggregate 57,104,332 shares of common stock.

Legacy ESS Rights to Purchase Series C-2 Redeemable Convertible Preferred Stock

Legacy ESS Series C redeemable convertible preferred stock financing agreement initially provided additional committed funding of up to \$79,999 thousand, through the purchase of up to 39,971,716 shares of Series C-2 redeemable convertible preferred stock based on the completion of certain operational milestones at a predetermined price of \$2.00 per share, to certain Series C-1 Investors.

Legacy ESS determined that its obligation to issue, and Legacy ESS investors' obligation to purchase shares of Series C-2 redeemable convertible preferred stock at a fixed price represents a freestanding derivative financial instrument (the "Series C-2 Redeemable Convertible Preferred Stock Issuance Right"). The Series C-2 Redeemable Convertible Preferred Stock Issuance Right was initially recorded at fair value and was adjusted to fair value at each reporting date, with the change in fair value recorded as a revaluation of derivative liabilities as a component of other income (expense), net in the consolidated statement of operations and comprehensive loss. The Series C-2 Redeemable Convertible Preferred Stock Issuance Right was initially scheduled to expire in August 2021 and was classified as a non-current derivative liability as of December 31, 2020.

The Series C-2 Redeemable Convertible Preferred Stock Issuance Right was initially valued at a fair value of \$11,379 thousand.

Sale of Legacy ESS Series C-2 Redeemable Convertible Preferred Stock

In March 2021, Legacy ESS issued 5,746,003 shares of Series C-2 redeemable convertible preferred stock for \$2.00 per share, totaling \$11,500 thousand. Legacy ESS incurred \$39 thousand in costs associated with the issuance. In connection with the sale of the Series C-2 redeemable convertible preferred stock, Legacy ESS issued warrants to purchase 861,896 shares of Series C-2 redeemable convertible preferred stock and extinguished a portion of the Series C-2 Redeemable Convertible Preferred Stock Issuance Right for 5,746,003 shares. The warrants were exercisable at a price of \$0.0001 per share. The extinguishment of a portion of the Series C-2 Redeemable Convertible Preferred Stock Issuance Right reduced Legacy ESS derivative liabilities and increased the amount attributable to the issuance by \$23,152 thousand. Total transaction value of \$34,613 thousand was allocated to the

Series C-2 redeemable convertible preferred stock and warrants in the amounts of \$29,516 thousand and \$5,096 thousand, respectively.

Amendment to Legacy ESS Series C-2 Redeemable Convertible Preferred Stock Issuance Right and Related Warrants

On May 7, 2021, Legacy ESS amended its Series C-2 Preferred Stock Purchase Agreement and Amendment to Series C Preferred Stock Purchase Agreement. Under the terms of the amended agreement, the number of shares of Series C-2 convertible redeemable preferred stock required to be issued by Legacy ESS and purchased by investors under the Series C-2 Redeemable Convertible Preferred Stock Issuance Right were adjusted, and Legacy ESS issued Series C-2 warrants. The Series C-2 warrants were exercisable at a price of \$0.00007 per share upon a successful Business Combination with STWO. The investors were permitted to purchase shares subject to the Series C-2 Redeemable Convertible Preferred Stock Issuance Right at any time and must purchase the shares upon the Company's achievement of specific milestones. The number of shares subject to and potential proceeds from the Series C-2 Redeemable Convertible Preferred Stock Purchase Agreement and related Series C-2 warrants were as follows:

	As of May 7, 2021	
	Upon completion of the Business Combination	
	Quantity	Price
Series C-2 Redeemable Convertible Preferred Stock Issuance Right	7,994,442	\$ 2.00
Series C-2 Warrant exercisable upon completion of the Business Combination	21,159,364	\$ 0.00007

The Series C-2 warrants and the Series C-2 Redeemable Convertible Preferred Stock Issuance Right were exercised in conjunction with the Business Combination which closed on October 8, 2021 and the Company received proceeds of \$15,559 thousand, which were net of \$439 thousand in issuance costs.

The Company recorded a net increase in the derivative liability of \$223,165 thousand for the year ended December 31, 2021 for changes in the estimated fair value of the Series C-2 Redeemable Convertible Preferred Stock Issuance Right and Series C-2 warrant exercisable upon completion of the Business Combination.

Legacy ESS Warrants

Legacy ESS Series B redeemable convertible preferred stock warrants were issued at exercise prices ranging from \$0.0007 per share to \$0.83 per share. 100,161 shares of Series B redeemable convertible preferred stock warrants had a ten-year exercise period and the remainder did not expire until a significant transaction had occurred, as defined by the warrant purchase agreement. The warrants were fully vested at the issuance date.

Legacy ESS Series C-1 and C-2 redeemable convertible preferred stock warrants were issued with prices ranging from \$0.00007 per share to \$1.25 per share, a life of ten years and were fully vested at issuance.

Legacy ESS common stock warrants, all issued at a price of \$0.0007 per share, were recorded at fair value within equity. Legacy ESS common stock warrants were fully vested at issuance and did not expire until a significant transaction has occurred, as defined by the Warrant Purchase Agreement.

In connection with the Business Combination, all Legacy ESS warrants were exercised during the year ended December 31, 2021.

13. COMMON STOCK WARRANTS

Common stock warrant balances consist of the following:

	December 31, 2022	December 31, 2021
Public Warrants outstanding	7,377,893	7,377,913
Private Warrants outstanding:		
Other Private Warrants outstanding	3,500,000	3,500,000
Earnout Warrants outstanding	583,334	583,334
Total common stock warrants	<u>11,461,227</u>	<u>11,461,247</u>

As part of STWO’s initial public offering, 8,333,287 warrants to purchase common stock listed on the New York Stock Exchange (“NYSE”) under the ticker symbol “GWH.W” (the “Public Warrants”) were sold. The Public Warrants entitle the holder thereof to purchase one share of common stock at a price of \$11.50 per share, subject to adjustments. The Public Warrants may be exercised only for a whole number of shares of common stock. No fractional shares will be issued upon exercise of the warrants. The Public Warrants will expire five years after completion of the business combination, on October 8, 2026, or earlier upon redemption or liquidation.

The Company may call the Public Warrants for redemption starting anytime, in whole and not in part, at a price of \$0.01 per warrant, so long as the Company provides not less than 30 days prior written notice of redemption to each warrant holder, and if, and only if, the reported last sale price of common stock equals or exceeds \$18.00 per share or \$10.00 per share for any 20 trading days within a 30-trading day period ending on the third trading day prior to the date the Company sends the notice of redemption to the warrant holders provided there is an effective registration statement covering the shares of common stock issuable upon exercise of the warrants.

The Company may call the Public Warrants for redemption starting anytime, in whole and not in part, at a price of \$0.10 per warrant, so long as the Company provides not less than 30 days prior written notice of redemption to each warrant holder; provided that holders will be able to exercise their warrants on a cashless basis prior to redemption and receive a number of shares determined based on the redemption date fair market value of the shares, and if, and only if, the reported last sale price of common stock equals or exceeds \$10.00 per share or \$10.00 per share for any 20 trading days within a 30-trading day period ending on the third trading day prior to the date the Company sends the notice of redemption to the warrant holders provided there is an effective registration statement covering the shares of common stock issuable upon exercise of the warrants.

Simultaneously with STWO’s initial public offering, STWO issued in a private placement 4,666,667 warrants to purchase common stock (the “Private Warrants”) to STWO’s sponsor. In connection with the Business Combination, STWO’s sponsor agreed to forfeit 583,333 Private Warrants. Of the remaining 4,083,334 Private Warrants, 3,500,000 were immediately vested and 583,334 warrants (the “Earnout Warrants”) were vested upon meeting certain Earnout Milestone Events on November 9, 2021. Each Private Warrant and Earnout Warrant is exercisable for one share of common stock at a price of \$11.50 per share, subject to adjustment.

The Private Warrants and Earnout Warrants, post vesting on November 9, 2021, are identical to the Public Warrants, except that the Private Warrants and Earnout Warrants and the shares of common stock issuable upon exercise of the Private Warrants are not transferable, assignable or salable until 30 days after the completion of a Business Combination, subject to certain limited exceptions. Additionally, the Private Warrants and Earnout Warrants are non-redeemable so long as they are held by the initial purchasers or such purchasers’ permitted transferees. If the Private Warrants and Earnout Warrants are held by someone other than their initial purchasers or their permitted transferees, then the Private Warrants and Earnout Warrants will be redeemable by the Company and exercisable by such holders on the same basis as the Public Warrants. Additionally, if the Company redeems the Public Warrants when the common stock equals or exceeds \$10.00 per share for any 20 trading days within a 30-day period ending on the third trading day prior to the date the Company sends the notice of redemption to warrant holders and the closing price of the common share for any 20 trading days within the same period is less than \$18.00 per share, the Company must concurrently redeem the Private Warrants and Earnout Warrants.

The table below shows the common stock warrant activities during the year ended December 31, 2022:

	December 31, 2021	Issued	Exercised	December 31, 2022
Earnout Warrants	583,334	—	—	583,334
Public Warrants	7,377,913	—	20	7,377,893
Private Warrants (excluding Earnout Warrants)	3,500,000	—	—	3,500,000
Total common stock warrants	<u>11,461,247</u>	<u>—</u>	<u>20</u>	<u>11,461,227</u>

The table below shows the common stock warrant activities during the year ended December 31, 2021:

	December 31, 2020	Issued	Exercised	December 31, 2021
Earnout Warrants	—	583,334	—	583,334
Public Warrants	—	8,333,287	955,374	7,377,913
Private Warrants (excluding Earnout Warrants)	—	3,500,000	—	3,500,000
Total common stock warrants	<u>—</u>	<u>12,416,621</u>	<u>955,374</u>	<u>11,461,247</u>

The Company's common stock warrants were initially recorded at fair value upon completion of the Business Combination and are adjusted to fair value at each reporting date based on the market price of the Public Warrants, with the change in fair value recorded as a component of other income and expense in the consolidated statements of operations. For the year ending December 31, 2022, the Company recorded a net decrease to the liabilities for Earnout Warrants, Public Warrants and Private Warrants (excluding Earnout Warrants) of \$1,313 thousand, \$16,600 thousand and \$7,875 thousand, respectively. For the year ending December 31, 2021, the Company recorded a net increase to the liabilities for Earnout Warrants, Public Warrants and Private Warrants (Excluding Earnout Warrants) of \$974 thousand, \$14,476 thousand and \$5,355 thousand, respectively.

SMUD Warrant

On September 16, 2022, the Company entered into a warrant agreement with the Sacramento Municipal Utility District ("SMUD"), whereby the Company agreed to issue a warrant for up to 500,000 shares of the Company's common stock at an exercise price of \$4.296 per share. The vesting of the shares underlying the warrant will be subject to the achievement of certain commercial milestones through December 31, 2030 pursuant to a related commercial agreement. As of December 31, 2022, vesting conditions had been met for 12,500 of the shares.

14. STOCK-BASED COMPENSATION

Stock-based compensation expense is allocated on a departmental basis based on the classification of the award holder. The following table presents the amount of stock-based compensation related to stock-based awards to employees on the Company's consolidated statements of operations and comprehensive loss during the years ended December 31, 2022 and 2021 (in thousands):

	2022	2021
Research and development	\$ 2,856	\$ 2,233
Sales and marketing	456	213
General and administrative	8,577	5,476
Total stock-based compensation	<u>\$ 11,889</u>	<u>\$ 7,922</u>

2021 Equity Incentive Plan

In October 2021, the Board of Directors of the Company adopted the ESS Tech, Inc. 2021 Equity Incentive Plan (the "2021 Plan"). The 2021 Plan became effective upon consummation of the Business Combination. The stock awards may be issued as Incentive Stock Options ("ISO"), Non-statutory Stock Options ("NSO"), Stock Appreciation Rights, Restricted Stock Awards, or Restricted Stock Unit Awards. Only employees are eligible to receive ISO awards. Employees, directors, and consultants who are providing continuous service to the Company are eligible to receive stock awards other than ISOs. The number of shares available for issuance under the 2021 Plan will be increased on the first day of each fiscal year beginning with the 2022 fiscal year and ending with the 2031 fiscal year, in an amount equal to the lesser of (i) 15,260,000 Shares, (ii) five percent (5%) of the outstanding shares on the last day of the immediately preceding fiscal year, or (iii) such number of shares determined by the Company no later than the last day

of the immediately preceding fiscal year. As of January 1, 2023, the number of shares available for issuance under the 2021 Plan was increased by 4,614,640 shares in accordance with the plan and as approved by the Board. Under the 2021 Plan, the Company is authorized to issue 17,610,000 shares of common stock as of December 31, 2022.

Option prices for incentive stock options are set at the fair market value of the Company's common stock at the date of grant. The fair market value of RSUs is set at the closing sales price of the Company's common stock at the date of grant. Employee new hire grants generally cliff vest at the end of the first year and then 1/48th of the original grant over the remaining three years. Grants expire 10 years from the date of grant.

As of December 31, 2022, there were 10,626,299 shares available for future grant under the 2021 Plan.

Stock Options and Restricted Stock Units

Stock option and RSU activity, prices, and values during the years ended December 31, 2022 and 2021 are as follows (in thousands, except for share, per share, and contractual term data):

	Options Outstanding				RSUs	
	Number of shares	Weighted average exercise price	Weighted average remaining contractual term (years)	Aggregate intrinsic values (\$'000s)	Number of plan shares outstanding	Weighted average grant date fair value per share
Balances at December 31, 2020	5,732,422	\$ 0.30	8.23	\$ 4,333	—	\$ —
Options and RSUs granted	1,454,549	1.75			3,392,153	10.69
Options exercised and RSUs released	(2,496,070)	0.27			—	—
Options and RSUs forfeited	(894,371)	0.46			—	—
Balances as of December 31, 2021	<u>3,796,530</u>	\$ 0.83	8.08	\$ 40,274	3,392,153	\$ 10.69
Options and RSUs granted	65,717	8.00			5,602,206	4.68
Options exercised and RSUs released	(529,832)	4.28			(1,526,784)	8.02
Options and RSUs forfeited	(109,306)	2.53			(1,120,620)	10.46
Balances as of December 31, 2022	<u>3,223,109</u>	\$ 1.01	7.39	\$ 4,583	<u>6,346,955</u>	\$ 6.10
Options vested and exercisable - December 31, 2021	<u>1,827,374</u>	\$ 0.31	7.20	\$ 20,337		
Options vested and exercisable - December 31, 2022	<u>1,947,123</u>	\$ 0.76	7.06	\$ 3,244		

The aggregate intrinsic value is the fair market value on the reporting date less the exercise price for each option. The aggregate intrinsic value of the options exercised was \$2,107 thousand and \$6,244 thousand during the years ended December 31, 2022 and 2021, respectively.

The fair value of each stock option award is estimated on the date of the grant using the Black-Scholes Merton option-pricing model. For options granted during the years ended December 31, 2022 and 2021, respectively, the weighted average estimated fair value using the Black-Scholes Merton option pricing model was \$5.23 and \$5.63 per option, respectively.

In accordance with ASC 718, the fair value of each option grant has been estimated as of the date of grant using the following weighted average assumptions:

	2022	2021
Risk-free rate	1.64 %	1.01 %
Expected volatility	73.95 %	75.14 %
Expected term	6 years	6 years
Expected dividends	—	—

As of December 31, 2022, there was approximately \$28,129 thousand of unamortized stock-based compensation cost related to unvested stock options and RSUs, which was expected to be recognized over a weighted average period of 2.81 years.

Employee Stock Purchase Plan

In May 2022, the Company commenced its first offering period under the ESS Tech, Inc. Employee Stock Purchase Plan (the “ESPP”), which assists employees in acquiring a stock ownership interest in the Company. The ESPP permits eligible employees to purchase common stock at a discount through payroll deductions during specified offering periods. No employee may purchase more than \$25,000 worth of stock in any calendar year. The price of shares purchased under the ESPP is equal to 85% of the fair market value of the common stock on the first or last day of the offering period, whichever is lower. The total ESPP expense for the year ended December 31, 2022 was \$270 thousand.

15. FAIR VALUE MEASUREMENTS

The Company follows ASC 820, which establishes a common definition of fair value to be applied when U.S. GAAP requires the use of fair value, establishes a framework for measuring fair value, and requires certain disclosure about such fair value measurements.

The following table presents the Company’s fair value hierarchy for its financial assets and liabilities measured at fair value on a recurring basis (in thousands):

	December 31, 2022		
	Total Assets at Fair Value	Cash Equivalents and Restricted Cash	Short-Term Investments
Level 1:			
Money market funds	\$ 27,993	\$ 27,993	\$ —
U.S. Treasury securities	19,944	—	19,944
Total Level 1	47,937	27,993	19,944
Level 2:			
Certificate of deposit	75	75	—
U.S. agency securities	55,319	—	55,319
Commercial paper	35,756	5,972	29,784
Total Level 2	91,150	6,047	85,103
Total assets measured at fair value	<u>\$ 139,087</u>	<u>\$ 34,040</u>	<u>\$ 105,047</u>
December 31, 2021			
	Total Assets at Fair Value	Cash Equivalents and Restricted Cash	Short-Term Investments
Level 1:			
Money market funds	\$ 237,897	\$ 237,897	\$ —
Level 2:			
Certificate of deposit	125	125	—
Total assets measured at fair value	<u>\$ 238,022</u>	<u>\$ 238,022</u>	<u>\$ —</u>

The following tables present the Company's fair value hierarchy for its financial liabilities measured at fair value on a recurring basis (in thousands):

	December 31, 2022			
	Level 1	Level 2	Level 3	Total
Liabilities:				
Earnout warrant liabilities	\$ —	\$ 163	\$ —	\$ 163
Public common stock warrants	2,066	—	—	2,066
Private common stock warrants	—	980	—	980
Total liabilities measured at fair value	\$ 2,066	\$ 1,143	\$ —	\$ 3,209

	December 31, 2021			
	Level 1	Level 2	Level 3	Total
Liabilities:				
Earnout warrant liabilities	\$ —	\$ 1,476	\$ —	\$ 1,476
Public common stock warrants	18,666	—	—	18,666
Private common stock warrants	—	8,855	—	8,855
Total liabilities measured at fair value	\$ 18,666	\$ 10,331	\$ —	\$ 28,997

There were no transfers among Level 1, Level 2, or Level 3 categories during the periods presented. The carrying amounts of the Company's notes payable and accounts payable approximate their fair values due to their short maturities.

Level 1 Assets: The Company invests in money market funds and U.S. Treasury securities that have maturities of 90 days or less. These assets are valued using observable inputs that reflect quoted prices for securities with identical characteristics.

Level 2 Assets: The Company invests in a certificate of deposit, U.S. agency securities, and commercial paper. These assets are valued using observable inputs that reflect quoted prices for securities with similar characteristics and other observable inputs (such as interest rates that are observable at commonly quoted intervals).

Level 1 Liabilities: The Company values its public common stock warrants based on the market price of the warrants.

Level 2 Liabilities: The Company values its earnout warrant liabilities and private common stock warrants based on the market price of the Company's public common stock warrants.

Level 3 Liabilities: The Company values the following as Level 3 liabilities:

Bridge Loan

The Company accounted for the Bridge Loan under the fair value option election wherein the Bridge Loan was initially measured at its issue-date fair value and then subsequently re-measured at estimated fair value on a recurring basis at each reporting date. As a result of applying the fair value option, direct costs and fees related to the Bridge Loan were expensed as incurred.

The fair value of the Bridge Loan was based on significant inputs including, estimated time to maturity, which causes them to be classified as a Level 3 measurement within the fair value hierarchy. The valuation used assumptions and estimates the Company believed would be made by a market participant in making the same valuation. The Bridge Loan was repaid on October 8, 2021 as part of the Business Combination. See Note 10, *Borrowings* for further details.

Legacy ESS Warrants

Freestanding warrants to purchase redeemable convertible preferred stock were accounted for as liability awards and recorded at fair value on their initial issuance date and adjusted to fair value at each reporting date, with the change in fair value being recorded in the consolidated statements of operations and other comprehensive loss. The warrants were accounted for as liabilities as the underlying preferred shares were contingently redeemable upon occurrence of a change in control, which was outside the control of the Company.

The Company measured its warrant liabilities using Level 3 unobservable inputs within the Black-Scholes Merton option-pricing model. The Company used various key assumptions, such as the fair value of redeemable convertible preferred stock Series B and Series C, the volatility of peer companies' stock prices, the risk-free interest rate based on the U.S. treasury yield, and the expected term (based on remaining term to a significant event). The Company

measured the fair value of the redeemable convertible preferred stock warrants at each reporting date, with subsequent gains and losses from remeasurement of Level 3 financial liabilities recorded through other expense, net in the consolidated statements of operations and comprehensive loss.

In connection with the Business Combination, all Legacy ESS warrants were exercised during the year ended December 31, 2021.

Rights to Purchase Legacy ESS Series C-2 Redeemable Convertible Preferred Stock

Legacy ESS Series C Preferred Stock Purchase Agreement initially provided additional committed funding of up to \$79,999 thousand, through the purchase of up to 39,971,716 shares of Series C-2 redeemable convertible preferred stock based on the completion of certain operational milestones at a predetermined price of \$2.00 per share, to certain Series C-1 Investors. This commitment was called the Series C-2 Redeemable Convertible Preferred Stock Issuance Right, see Note 12, *Legacy ESS Redeemable Convertible Preferred Stock*.

The value of the Series C-2 Redeemable Convertible Preferred Stock Issuance Right was determined based on significant inputs not observable in the market, which represented a Level 3 measurement within the fair value hierarchy.

The Company utilized a probability weighting of successful completion of the Business Combination versus probability of the Company staying private in establishing the quantity of purchase rights to value and the fair value of the Series C-2 Redeemable Convertible Preferred Stock Issuance Right. The fair value of the Series C-2 Redeemable Convertible Preferred Stock Issuance Right was determined using a discounted cash flow model, which took into account the estimated value of Series C-2 stock, estimated time to purchase, probability of purchase and the risk-free interest rate based on the U.S. treasury yield. The Company measured the fair value of the Series C-2 Redeemable Convertible Preferred Stock Issuance Right at each reporting date, with subsequent gains and losses from remeasurement of Level 3 financial liabilities recorded through other expense, net in the consolidated statements of operations and comprehensive loss. The Company included the valuation of the related Series C-2 warrants that were only exercisable upon completion of the Business Combination with the valuation of the Series C-2 Redeemable Convertible Preferred Stock Issuance Right.

The following table sets forth a summary of changes in the fair value of the Company's Level 3 liabilities at fair value on a recurring basis for the years ended December 31, 2022 and 2021 (in thousands):

	2022	2021
Bridge loan:		
Beginning balance January 1	\$ —	\$ —
Fair value of Bridge loan funded	—	20,000
Accrued interest	—	1,578
Change in fair value	—	—
Repayment of loan principal and interest	—	(21,578)
Ending balance December 31	—	—
Legacy ESS Warrant liabilities:		
Beginning balance January 1	—	3,329
Change in fair value	—	17,753
Fair value of warrants issued	—	5,096
Fair value of warrants exercised	—	(26,178)
Ending balance December 31	—	—
Series C-2 Redeemable Convertible Preferred Stock Issuance Right liability:		
Beginning balance January 1	—	22,911
Change in fair value	—	223,165
Fair value of derivatives extinguished	—	(23,152)
Fair value of Series C-2 Redeemable Convertible Preferred Stock Issuance Right exercised	—	(222,924)
Ending balance December 31	—	—
Total	\$ —	\$ —

16. INCOME TAXES

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. The significant components of deferred tax assets and liabilities are as follows (in thousands):

	As of December 31,	
	2022	2021
Deferred tax assets:		
Net operating losses	\$ 34,454	\$ 24,655
Tax credit carryforward	909	292
Equity compensation	737	1,143
Capitalized research and development expenses	16,946	—
Other	2,153	1,231
Total deferred tax assets	55,199	27,321
Valuation allowance	(54,261)	(27,321)
Deferred tax assets, net of valuation allowance	938	—
Deferred tax liabilities:		
Right-of-use assets	(938)	—
Net deferred tax	\$ —	\$ —

The Tax Cuts and Jobs Act (the “Act”) was enacted on December 22, 2017. Included in the Act is the requirement to capitalize and amortize research and development expenditures beginning in 2022. Prior to 2022, the Company had been expensing these costs as incurred for tax purposes. The capitalization of the research and development expenditures resulted in a new deferred tax asset of \$16,946 thousand, which was offset by a valuation allowance, resulting in no significant impact to income tax expense for the year ending December 31, 2022.

ASC 740 requires that the tax benefit of net operating losses, temporary differences and credit carryforwards be recorded as an asset to the extent that management assesses that realization is “more likely than not.” Realization of the future tax benefits is dependent on the Company’s ability to generate sufficient taxable income within the carryforward period. Because of the Company’s history of operating losses, management believes that recognition of the deferred tax assets arising from the above-mentioned future tax benefits is currently not likely and, accordingly, has provided a valuation allowance for fiscal years 2022 and 2021. The valuation allowance increased by \$26,940 thousand during the year ended December 31, 2022.

As of December 31, 2022, the Company has federal and state net operating loss carryforwards of \$130,708 thousand and \$130,578 thousand, respectively. Federal net operating losses generated prior to 2018 will start to expire in 2032. Federal net operating losses generated after 2017 do not expire. The state net operating losses will begin to expire in 2027. The Company also has federal and state research and development tax credit carryforwards totaling \$1,795 thousand and \$28 thousand, respectively. The federal research and development credit carryforwards begin to expire in 2039, unless previously utilized. The state research and development credit carryforwards do not expire.

The effective tax rate of the Company's provision for income taxes differs from the federal statutory rate as follows:

	Years Ended December 31,	
	2022	2021
Federal statutory tax rate	21.0 %	21.0%
State tax, net of federal tax benefit	7.2	0.6
Stock compensation	(0.2)	0.0
Non-deductible officer compensation	(1.4)	(0.1)
Transaction costs related to the Business Combination	—	(0.2)
Warrant liabilities revaluation	6.6	(1.7)
Derivative liabilities revaluation	—	(9.8)
Earnout Shares liabilities revaluation	0.4	(6.8)
Permanent differences	0.1	0.0
R&D tax credits	0.8	0.0
Other	0.1	0.1
Valuation allowance	(34.6)	(3.1)
Effective tax rate	<u>— %</u>	<u>— %</u>

The changes in the Company's uncertain tax positions are summarized as follows (in thousands):

Balance as of December 31, 2020	\$ 47
Additions in 2021	245
Balance as of December 31, 2021	292
Additions in 2022	613
Balance as of December 31, 2022	<u>\$ 905</u>

During the years ended December 31, 2022 and 2021, the Company recognized uncertain tax positions of \$613 thousand and \$245 thousand, respectively, related to a reduction of the research and development credit deferred tax asset. Unrecognized tax benefits may change during the next twelve months for items that arise in the ordinary course of business. The Company does not expect a material change to its unrecognized tax benefits over the next twelve months that would have an adverse effect on its operating results.

The Company recognizes interest and penalties accrued on any unrecognized tax benefits as a component of income tax expense. The Company had no accrued interest or penalties related to uncertain tax positions as of 2022 and 2021.

The Company files federal and certain state income tax returns, which provide varying statutes of limitations on assessments. However, because of net operating loss carryforwards, substantially all tax years since inception remain open to federal and state tax examination.

17. REVENUE

Disaggregated Revenue

The following table presents the Company's revenue, disaggregated by source (in thousands):

	Year Ended December 31,	
	2022	2021
Product revenue	\$ 803	\$ —
Service and other revenue	91	—
Total revenue	<u>\$ 894</u>	<u>\$ —</u>

The majority of the Company's revenue is derived from the product sales of energy storage systems. See Note 2, *Significant Accounting Policies* for further information regarding revenue recognition.

Contract Balances

Deferred revenues primarily relate to consideration received from customers in advance of the Company satisfying performance obligations under contractual arrangements. Contract balances are reported in a net contract asset or deferred revenue liability position on a contract-by-contract basis at the end of each reporting period.

The following table summarizes deferred revenue activity (in thousands):

	Year Ended December 31,	
	2022	2021
Deferred revenue - beginning of period	\$ 3,663	2,258
Deferral of revenue	7,704	1,405
Recognition of previously unearned revenue	(830)	—
Deposits returned to customers	(1,157)	—
Reclassification to accrued liabilities due to estimation of variable consideration	(770)	—
Deferred revenue - ending of period	<u>\$ 8,610</u>	<u>\$ 3,663</u>

18. DEFINED CONTRIBUTION PLAN

The Company has a 401(k) plan to provide defined contribution retirement benefits for all employees who have completed six months of service. Employees may elect to contribute a portion of their pretax compensation to the 401(k) plan, subject to annual limitations. The Company may make profit-sharing contributions at the discretion of the Board of Directors. Employee contributions are always fully vested. For the years ended December 31, 2022 and 2021, the Company contributed \$674 thousand and \$292 thousand, respectively.

19. RELATED PARTY TRANSACTIONS

In April 2021, the Company signed a framework agreement with one of its investors, SB Energy Global Holdings One Ltd (“SBE”), to supply energy storage products to SBE in support of its market activities. Under this agreement, the Company has made various commitments to meet SBE’s potential need for energy storage products and is obligated to reserve a certain percentage of manufacturing capacity to meet SBE’s future needs, subject to periodic reviews of its firm and anticipated orders. To date, no orders have been placed under the framework agreement.

Additionally, the Company entered into a preferred financing equity transaction with SBE and Breakthrough Energy Ventures, LLC as discussed in Note 12, *Legacy ESS Redeemable Convertible Preferred Stock*. These related parties were also issued 6,707,318 of the Earnout Shares discussed in Note 3, *Business Combination*.

As of December 31, 2021, the Company had recorded accounts receivable of \$66 thousand and deferred revenue of \$171 thousand for sales of energy storage systems to related parties.

During the year ended December 31, 2022, the Company recognized revenue of \$284 for sales of energy storage systems and extended warranty services to related parties. As of December 31, 2022, the Company had recorded deferred revenue of \$5 thousand for sales of extended warranty services to related parties.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

Not applicable.

ITEM 9A. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

We have established disclosure controls and procedures that are designed to ensure that the information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in SEC rules and forms and that such information is accumulated and communicated to management, including our principal executive officer and principal financial officer, as appropriate to allow timely decisions regarding required disclosure.

Under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, we conducted an evaluation of the effectiveness of our disclosure controls and procedures as required under Rules 13a-15(e) and 15d-15(e) under the Exchange Act as of the end of the period covered by this Annual Report on Form 10-K. Based on that evaluation, our principal executive officer and principal financial officer have concluded that the Company's disclosure controls and procedures were not effective due to an existing material weakness related to the operating effectiveness of internal controls over the review and analysis of certain transactions within our financial statement close process.

Management's Remediation Initiatives

We have taken and will continue to take steps to remediate the identified unremediated material weakness and enhance our internal controls, including the following:

- We have hired additional personnel and are continuing to expand our team. We are further designing and implementing a formalized internal control framework, including over journal entries and management review controls.
- We are continuing our efforts to improve and strengthen our control processes and procedures to fully remediate these deficiencies. Our management will continue to work with outside advisors to ensure that our controls and procedures are adequate and effective.

Management's Report on Internal Controls over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rule 13a-15(f). Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework in "Internal Control — Integrated Framework (2013)" issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this assessment, our management concluded that our internal control over financial reporting was ineffective as of December 31, 2022 as a result of the material weakness described above.

Attestation Report of the Registered Public Accounting Firm

As we are an "emerging growth company" as defined in Section 2(a) of the Securities Act, management's report is not subject to attestation by our registered public accounting firm.

Changes in Internal Control over Financial Reporting

Other than the actions taken as described in "Management's Remediation Initiatives" above to improve the Company's internal control over financial reporting, there have been no changes in our internal control over financial reporting during the fiscal year ended December 31, 2022 that materially affected, or which are reasonably likely to materially affect, our internal control over financial reporting.

Inherent Limitations on Effectiveness of Controls

Our system of internal control over financial reporting was designed to provide reasonable assurance regarding the preparation and fair presentation of published financial statements in accordance with generally accepted accounting principles. All internal control systems, no matter how well designed, have inherent limitations. Therefore, even those systems determined to be effective can provide only reasonable assurance and may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

ITEM 9B. OTHER INFORMATION

None.

ITEM 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

Not applicable.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this item is incorporated by reference in our proxy statement relating to our 2023 Annual Meeting of Stockholders. The proxy statement will be filed with the SEC within 120 days of the fiscal year ended December 31, 2022.

ITEM 11. EXECUTIVE COMPENSATION

The information required by this item is incorporated by reference in our proxy statement relating to our 2023 Annual Meeting of Stockholders. The proxy statement will be filed with the SEC within 120 days of the fiscal year ended December 31, 2022.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information required by this item is incorporated by reference in our proxy statement relating to our 2023 Annual Meeting of Stockholders. The proxy statement will be filed with the SEC within 120 days of the fiscal year ended December 31, 2022.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required by this item is incorporated by reference in our proxy statement relating to our 2023 Annual Meeting of Stockholders. The proxy statement will be filed with the SEC within 120 days of the fiscal year ended December 31, 2022.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The information required by this item is incorporated by reference in our proxy statement relating to our 2023 Annual Meeting of Stockholders. The proxy statement will be filed with the SEC within 120 days of the fiscal year ended December 31, 2022.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

(a) Financial Statements and Schedules

The financial statements are set forth under Item 8 of this Annual Report on Form 10-K. Financial statement schedules have been omitted since they are either not required, not applicable, or the information is otherwise included.

(b) Exhibit Listing

Exhibit	Description	Form	File No.	Exhibit No.	Incorporated by	Filed Herewith
					Reference	
					Filing Date	
2.1#	Merger Agreement, dated as of May 6, 2021, by and among STWO, SCharge Merger Sub, Inc. and ESS Tech, Inc.	8-K	001-39525	2.1	May 7, 2021	
3.1	Amended and Restated Certificate of Incorporation of ESS	8-K	001-39525	3.1	October 15, 2021	
3.2	Amended and Restated Bylaws of ESS	10-Q	001-39525	3.2	November 3, 2021	

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4.1	Warrant Agreement, dated September 16, 2020, by and between STWO and Continental Stock Transfer & Trust Company	S-4	333-257232	4.1	June 21, 2021	
4.2	Description of securities					X
4.3	Assignment, Assumption and Amendment Agreement to the Warrant Agreement, dated October 8, 2021, by and among ESS, STWO, Continental Stock Transfer & Trust Company, Computershare Trust Company, N.A. and Computershare, Inc.	8-K	001-39525	4.2	October 15, 2021	
4.4	Warrant to Purchase Stock, dated September 16, 2022, by and between the Company and Sacramento Municipal Utility District	10-Q	001-39525	4.3	November 3, 2022	
10.1	Form of Registration Rights Agreement	8-K	001-39525	10.4	May 7, 2021	
10.2	Form of Subscription Agreement	8-K	001-39525	10.1	May 7, 2021	
10.3	Sponsor Letter Agreement, dated as of May 6, 2021	8-K	001-39525	10.3	May 7, 2021	
10.4	Stockholders' Agreement, dated as of May 6, 2021, by and among ESS, SBE and BEV	8-K	001-39525	10.5	October 15, 2021	
10.5#	Framework Agreement, dated as of March 31, 2021, by and between SBE US Holdings One, Inc. and ESS Tech, Inc.	S-4	333-257232	10.13	June 21, 2021	
10.6	Office Lease Agreement, dated July 24, 2017, by and between ESS Tech, Inc. and Parkway Woods Business Park, LLC	S-4	333-257232	10.8	June 21, 2021	
10.7†	Energy Storage Systems, Inc. 2014 Equity Incentive Plan	S-4	333-257232	10.6	June 21, 2021	
10.8†	Amendment to ESS Tech, Inc. 2014 Equity Incentive Plan	S-4	333-257232	10.7	June 21, 2021	
10.9†	2021 Equity Incentive Plan and form of award agreements thereunder					X
10.10†	2021 Employee Stock Purchase Plan					X
10.11†	Outside Director Compensation Policy	8-K	001-39525	10.12	October 15, 2021	
10.12	Form of Indemnification Agreement	8-K	001-39525	10.2	October 15, 2021	
10.13†	Employment Agreement, dated April 1, 2021, by and between ESS Tech, Inc. and Eric Dresselhuys	S-4	333-257232	10.10	June 21, 2021	
10.14†	Employment Agreement, dated November 1, 2022, by and between ESS Tech, Inc. and Anthony Rabb					X
10.15†	Employment Agreement, dated May 23, 2021, by and between ESS Tech, Inc. and Craig Evans	S-4	333-257232	10.11	June 21, 2021	
16.1	Letter from Perkins & Company, P.C.	S-4/A	333-257232	16.1	July 28, 2021	

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16.2	Letter from Marcum LLP	POSA M	333-260693	16.2	December 9, 2021	
21.1	List of Subsidiaries	S-1	333-260693	21.1	November 2, 2021	
23.1	Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm					X
24.1	Power of Attorney (contained in the signature page to this Annual Report on Form 10-K)					X
31.1	Certification of Principal Executive Officer pursuant to Rule 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as amended, with respect to the Company's Annual Report on Form 10-K for the year ended December 31, 2022					X
31.2	Certification of Principal Financial Officer pursuant to Rule 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as amended, with respect to the Company's Annual Report on Form 10-K for the year ended December 31, 2022					X
32.1*	Certification of Principal Executive Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, with respect to the Company's Annual Report on Form 10-K for the year ended December 31, 2022					X
32.2*	Certification of Principal Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, with respect to the Company's Annual Report on Form 10-K for the year ended December 31, 2022					X
101.INS	Inline XBRL Instance Document – the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document					X
101.SCH	Inline XBRL Taxonomy Extension Schema Document					X
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document					X
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document					X
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document					X
104	Cover Page Interactive Data File (formatted as inline XBRL with applicable taxonomy extension information contained in Exhibits 101)					X

† Indicates management contract or compensatory plan or arrangement.

- # Portions of this exhibit have been omitted in accordance with Item 601 of Regulation S-K.
- * These exhibits are furnished with this Annual Report on Form 10-K and are not deemed filed with the Securities and Exchange Commission and are not incorporated by reference in any filing of ESS Tech, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date hereof and irrespective of any general incorporation language contained in such filings.

ITEM 16. FORM 10-K SUMMARY

Not applicable.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Act of 1934, the registrant has duly caused this Annual Report on Form 10-K to be signed on its behalf by the undersigned, thereunto duly authorized.

March 1, 2023

ESS TECH, INC.

By: /s/ Eric P. Dresselhuys

Name: Eric P. Dresselhuys

Title: Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Eric Dresselhuys, Craig Evans and Anthony Rabb, jointly and each one of them, as his or her true and lawful attorneys-in-fact and agents, 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 all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming that all 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 Annual Report on Form 10-K has been signed below by the following persons on behalf of the registrant and in the capacities indicated on March 1, 2023.

<u>Signature</u>	<u>Title</u>
<u>/s/ Eric P. Dresselhuys</u> Eric P. Dresselhuys	<i>Chief Executive Officer and Director</i> (Principal Executive Officer)
<u>/s/ Anthony Rabb</u> Anthony Rabb	<i>Chief Financial Officer</i> (Principal Financial and Accounting Officer)
<u>/s/ Craig Evans</u> Craig Evans	<i>President and Director</i>
<u>/s/ Raffi Garabedian</u> Raffi Garabedian	<i>Director</i>
<u>/s/ Rich Hossfeld</u> Rich Hossfeld	<i>Director</i>
<u>/s/ Michael Niggli</u> Michael Niggli	<i>Chairman of the Board of Directors</i>
<u>/s/ Kyle Teamey</u> Kyle Teamey	<i>Director</i>
<u>/s/ Alexi Wellman</u> Alexi Wellman	<i>Director</i>
<u>/s/ Daryl Wilson</u> Daryl Wilson	<i>Director</i>

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statement:

- (1) Post-Effective Amendment No. 2 to Registration Statement on Form S-1 on Form S-3 (No. 333-263316) and Post-Effective Amendment No. 3 to Registration Statement on Form S-1 on Form S-3 (No. 333-260693) of ESS Tech, Inc. pertaining to the registration of shares of its common stock,
- (2) Registration Statement on Form S-8 (No. 333-261649) of ESS Tech, Inc. pertaining to the ESS Tech, Inc. 2021 Equity Incentive Plan, ESS Tech, Inc. 2021 Employee Stock Purchase Plan and Amended Energy Storage Systems, Inc. 2014 Equity Incentive Plan
- (3) Registration Statement on Form S-8 (No. 333-263281) of ESS Tech, Inc. pertaining to the ESS Tech, Inc. 2021 Equity Incentive Plan, and
- (4) Registration Statement on Form S-3 (No. 333-268138) of ESS Tech, Inc. pertaining to the registration of shares of its common stock, preferred stock, debt securities, depository shares, warrants, subscription rights, purchase contracts and units.

of our report dated March 1, 2023, with respect to the consolidated financial statements of ESS Tech, Inc. included in this Annual Report (Form 10-K) of ESS Tech, Inc. for this year ended December 31, 2022.

/s/ Ernst & Young LLP

Portland, Oregon
March 1, 2023

**CERTIFICATION
PURSUANT TO RULE 13a-14 AND 15d-14
UNDER THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED**

I, Eric P. Dresselhuys, certify that:

1. I have reviewed this Annual Report on Form 10-K for the year ended December 31, 2022 of ESS Tech, Inc.;
2. Based on my knowledge, this Report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this Report;
3. Based on my knowledge, the financial statements, and other financial information included in this Report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this Report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this Report is being prepared;
 - b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this Report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this Report based on such evaluation; and
 - d. Disclosed in this Report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal controls over financial reporting.

March 1, 2023

By: /s/ Eric P. Dresselhuis

Eric P. Dresselhuis

Chief Executive Officer

(Principal Executive Officer)

**CERTIFICATION
PURSUANT TO RULE 13a-14 AND 15d-14
UNDER THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED**

I, Anthony Rabb, certify that:

1. I have reviewed this Annual Report on Form 10-K for the year ended December 31, 2022 of ESS Tech, Inc.;
2. Based on my knowledge, this Report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this Report;
3. Based on my knowledge, the financial statements, and other financial information included in this Report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this Report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this Report is being prepared;
 - b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this Report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this Report based on such evaluation; and
 - d. Disclosed in this Report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal controls over financial reporting.

March 1, 2023

By: /s/ Anthony Rabb

Anthony Rabb

Chief Financial Officer

(Principal Financial Officer)

**CERTIFICATION PURSUANT TO
18 U.S.C. 1350
(SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002)**

In connection with the Annual Report of ESS Tech, Inc (the “Company”) on Form 10-K for the year ended December 31, 2022, as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Eric P. Dresselhuys, Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge:

1. the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

March 1, 2023

By: /s/ Eric P. Dresselhuys

Name: Eric P. Dresselhuys

Title: Chief Executive Officer

(Principal Executive Officer)

**CERTIFICATION PURSUANT TO
18 U.S.C. 1350
(SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002)**

In connection with the Annual Report of ESS Tech, Inc (the “Company”) on Form 10-K for the year ended December 31, 2022, as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Anthony Rabb, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge:

1. the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

March 1, 2023

By: /s/ Anthony Rabb

Name: Anthony Rabb

Title: Chief Financial Officer

(Principal Financial Officer)