

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 001-39345

QUANTUMSCAPE CORPORATION

(Exact name of registrant as specified in its Charter)

Delaware
(State or Other Jurisdiction of
Incorporation or Organization)
1730 Technology Drive
San Jose, California
(Address of Principal Executive Offices)

85-0796578
(I.R.S. Employer
Identification No.)

95110
(Zip Code)

Registrant's telephone number, including area code: (408) 452-2000

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Class A Common Stock, par value \$0.0001 per share	QS	The 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 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 every Interactive Data File required to be submitted 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 such files). YES ☒ NO ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, 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 ☒ Accelerated filer ☐

Non-accelerated filer ☐ Smaller reporting company ☐

Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

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

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

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

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

As of June 30, 2022, the last day of the registrant's most recently completed second fiscal quarter, the aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant, based on the closing price of the shares of common stock on The New York Stock Exchange, was approximately \$2.2 billion. Shares of common stock held by each executive officer and director and by each person who owns 5% or more of the outstanding common stock have been excluded from the foregoing calculation in that such persons may be deemed affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

The number of shares of the registrant's Class A Common Stock, par value \$0.0001 per share outstanding was 360,515,533, and the number of shares of the registrant's Class B Common Stock, par value \$0.0001 per share outstanding was 79,454,147, as of February 21, 2023.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive proxy statement relating to its annual meeting of stockholders to be held in 2023, to be filed with the Securities and Exchange Commission within 120 days after the end of the fiscal year to which this Annual Report on Form 10-K relates, are incorporated herein by reference in Part III where indicated. Except with respect to information specifically incorporated by reference in this Annual Report on Form 10-K, such proxy statement is not deemed to be filed as part hereof.

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CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

Unless the context otherwise requires, all references to “QuantumScape,” “we,” “us,” “our,” or the “Company” in this Annual Report on Form 10-K (this “Report”) refer to QuantumScape Corporation and its subsidiaries.

The Company makes forward-looking statements in this Report and in documents incorporated herein by reference. All statements, other than statements of present or historical fact included in or incorporated by reference in this Report, regarding the Company’s future financial performance, as well as the Company’s strategy, future operations, financial position, estimated revenues and losses, projected costs, prospects, plans and objectives of management are forward-looking statements. When used in this Report, the words “anticipate,” “believe,” “continue,” “could,” “estimate,” “expect,” “intends,” “may,” “might,” “plan,” “possible,” “potential,” “predict,” “project,” “should,” “will,” “would,” the negative of such terms, and other similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain such identifying words. These forward-looking statements are based on management’s current expectations, assumptions, hopes, beliefs, intentions and strategies regarding future events and are based on currently available information as to the outcome and timing of future events. The Company cautions you that these forward-looking statements are subject to risks and uncertainties, including those described in Part I, Item 1A, “Risk Factors” in this Annual Report on Form 10-K, most of which are difficult to predict and many of which are beyond the control of the Company and incident to its business. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make.

In addition, forward-looking statements in this Report and in any document incorporated herein by reference should not be relied upon as representing the Company’s views as of any subsequent date, and the Company does not undertake any obligation to update forward-looking statements to reflect events or circumstances after the date they were made, whether as a result of new information, future events or otherwise, except as may be required under applicable laws.

As a result of a number of known and unknown risks and uncertainties, the Company’s actual results or performance may be materially different from those expressed or implied by these forward-looking statements. Some factors that could cause actual results to differ include those discussed in the section titled “Risk Factors” in this Report and in our other filings with the Securities and Exchange Commission (“SEC”).

PART I

Item 1. Business.

Corporate History and Background

The original QuantumScape Corporation, now named QuantumScape Battery, Inc. (“Legacy QuantumScape”), a wholly owned subsidiary of the Company, was founded in 2010 with the mission to revolutionize energy storage to enable a sustainable future.

On November 25, 2020 (the “Closing Date”), Kensington Capital Acquisition Corp. (“Kensington”), a special purpose acquisition company, consummated the Business Combination Agreement (the “Business Combination Agreement”) dated September 2, 2020, by and among Kensington, Kensington Merger Sub Corp., a Delaware corporation and wholly owned subsidiary of Kensington (“Merger Sub”), and Legacy QuantumScape.

Pursuant to the terms of the Business Combination Agreement, a business combination between Kensington and Legacy QuantumScape was effected through the merger of Merger Sub with and into Legacy QuantumScape, with Legacy QuantumScape surviving as the surviving company and as a wholly-owned subsidiary of Kensington (the “Merger” and, collectively with the other transactions described in the Business Combination Agreement, the “Business Combination”). On the Closing Date, Kensington changed its name to QuantumScape Corporation.

Overview

QuantumScape is developing next generation battery technology for electric vehicles (“EVs”) and other applications.

We are at the beginning of a forecasted once-in-a-century shift in automotive powertrains, from internal combustion engines to clean EVs. After 30 years of gradual improvements in conventional lithium-ion batteries, the benefits of EVs have been demonstrated, principally in the premium passenger car market. However, there are fundamental limitations inhibiting widespread adoption of battery technology, and we believe the automotive market needs a step change in battery technology to make mass market EVs competitive with the fossil fuel alternative.

We have spent over a decade developing a proprietary solid-state battery technology to meet this challenge. QuantumScape’s lithium-metal solid-state battery technology is being designed to offer greater energy density, faster charging, and enhanced safety when compared to today’s conventional lithium-ion batteries. We believe no other lithium-metal battery technology has demonstrated the capability of achieving automotive rates of power (power is the rate at which a battery can be charged and discharged) with acceptable battery life, at room temperature and modest levels of pressure (approximately 3 to 4 atm).

Since 2012, we have developed a strong partnership with Volkswagen Group of America Investments, LLC (“VGA”) and certain of its affiliates (together with VGA, “Volkswagen”). Volkswagen is one of the largest car companies in the world and intends to be a leader in EVs. Over the last ten years Volkswagen has invested a total of more than \$300 million in us and has established a 50-50 joint venture (“JV”) with us to enable an industrial level of production of our solid-state batteries. As 50-50 partners in the joint venture with Volkswagen, we expect to share equally in the revenue and profit from the joint venture. Over the course of our relationship, Volkswagen has successfully tested multiple early generations of certain of our single-layer and multi-layer laboratory cells at automotive rates of power.

While we expect Volkswagen will be the first to commercialize vehicles using our battery technology, we are, and over the next few years, intend to continue, working closely with other automotive original equipment manufacturers (“OEMs”) to make our solid-state battery cells widely available over time. Subject to the terms of the JV arrangements with Volkswagen, we are not prohibited from working in parallel with other automotive OEMs or other non-automotive companies to commercialize our technology. As of December 31, 2022, we have customer sampling agreements with five other OEMs to collaborate with us in the testing and validation of our solid-state battery cells, with the goal of providing such cells to the OEMs for inclusion into pre-production prototype vehicles. These OEMs range from top ten manufacturers by global revenue to premium performance and luxury carmakers; additionally, they include both traditional and pure play EV companies. We are currently focused on automotive EV applications, which have among the most stringent sets of requirements for batteries. However, we recognize that our solid-state battery technology has applicability in other large and growing markets including stationary storage and consumer electronics, such as smartphones and wearables and intend to explore opportunities in those areas as appropriate.

In 2021, we announced our plans to build up our manufacturing capability with the addition of a pre-pilot production line (“QS-0”) in California. QS-0 is intended to have a continuous flow, high automation line with sufficient capacity and process maturity to engage in automotive qualification and if successful, provide first commercialization via the production of C-sample battery cells made available for sale to a third party. We secured a long-term lease in April 2021 for QS-0. QS-0 is intended to be followed by a 1GWh pilot-production line (“QS-1”), and subsequently expansion to the full 21GWh target (“QS-1 Expansion”).

Our development uses earth-abundant materials and processes suitable for high volume production. Our processes use equipment which is already used at scale in the battery or ceramics industries. Outside of the separator, our battery is being designed to use many generally available materials and processes that are standard across today's battery manufacturers. As a result, we expect to benefit from the projected industry-wide cost declines for these materials that result from process improvements and economies of scale. We believe that the manufacturing of our solid-state battery cells provides us with a structural cost advantage because our battery cells are manufactured without an anode.

Industry Background

Shift to EVs

We believe that evolving consumer preferences coupled with growing government incentives and regulations are driving a once-in-a-century shift to EVs.

Countries around the world are promoting EVs. The dependence on gasoline-powered internal combustion engine ("ICE") vehicles has heightened environmental concerns, created reliance among industrialized and developing nations on large oil imports, and exposed consumers to unstable fuel prices and health concerns related to heightened emissions. Many national and regional regulatory bodies have adopted legislation to incentivize or require a shift to lower-emission and zero-emission vehicles. For example, over a dozen countries including the United Kingdom, the Netherlands, Sweden, Germany, France and Norway have announced intentions to either increase applicable environmental targets or outright ban the sale of new ICE vehicles in the next two decades. In 2022, the California Air Resources Board (CARB) approved the regulation that establishes a year-by-year roadmap so that by 2035 100% of new cars and light trucks sold in California are required to be zero-emission vehicles. Also in 2022, the European Union approved an effective ban on the sale of new petrol and diesel cars from 2035. This global push to transition from ICE vehicles, aided by favorable government incentives and regulations, is accelerating the growth in lower- and zero-emission vehicle markets.

Furthermore, consumers are increasingly considering EVs for a variety of reasons including better performance, growing EV charging infrastructure, significantly lighter environmental impact, and lower maintenance and operating costs. Automakers such as Tesla, Inc. have demonstrated that premium EVs can deliver a compelling alternative to fossil fuels. As EVs become more competitive and more affordable, we believe that they will continue to take market share from ICE vehicles. We believe that this shift will occur across vehicle types and market segments. However, the inherent limitations of lithium-ion battery technology continue to impede improvements in EV competitiveness on range and charging times compared with ICE vehicles.

Current Battery Technology Will Not Meet the Requirements for Broad Adoption of EVs

Despite the significant progress in the shift to EVs, the market remains dominated by ICE vehicles. According to The Wall Street Journal, approximately 10% of global car sales in 2022 were electrified. For EVs to be adopted at scale across market segments batteries need to improve. In particular, we believe there are five key requirements to drive broad adoption of EVs:

- **Battery capacity (energy density).** EVs need to be able to drive over 300 miles on a single charge to be competitive with ICE vehicles and achieve broad market adoption. The space required for conventional lithium-ion battery technology limits the range of many EVs. Higher energy density will enable automotive OEMs to increase battery pack energy without increasing the size and weight of the vehicle's battery pack.
- **Fast charging capability.** EV batteries need to be fast-charging to replicate the speed and ease with which a gasoline car can be refueled. We believe this objective is achieved with the ability to charge from 10% to 80% capacity in approximately 15 minutes or less, faster than today's conventional batteries can deliver without materially degrading life.
- **Safety (nonflammable).** EV batteries need to replace as many of the flammable components in the battery as possible with non-flammable equivalents to reduce the extent of damage caused by a fire. With current batteries, many abuse conditions can result in fires, for example malfunctions that can result in overcharges and battery damage from accidents.
- **Battery cycle life.** Batteries need to be usable for the life of the vehicle, typically 12 years or 150,000 miles. If the battery fades prematurely, EVs will not be an economically practical alternative.
- **Cost.** Mass market adoption of EVs requires a battery that is capable of delivering long range while remaining cost competitive with a vehicle price point of around \$30,000.

Since these requirements have complex interlinkages, most manufacturers of conventional lithium-ion batteries used in today's cars are forced to make trade-offs. For example, conventional batteries can be fast-charged, but at the cost of adversely impacting their battery life.

We believe that a battery technology that can meet these requirements will enable an EV solution that is much more broadly competitive with ICE. According to the Organisation Internationale des Constructeurs d'Automobiles, more than 80 million ICE vehicles were produced in 2021 across the auto industry, representing a significant untapped demand for a battery that meets these requirements.

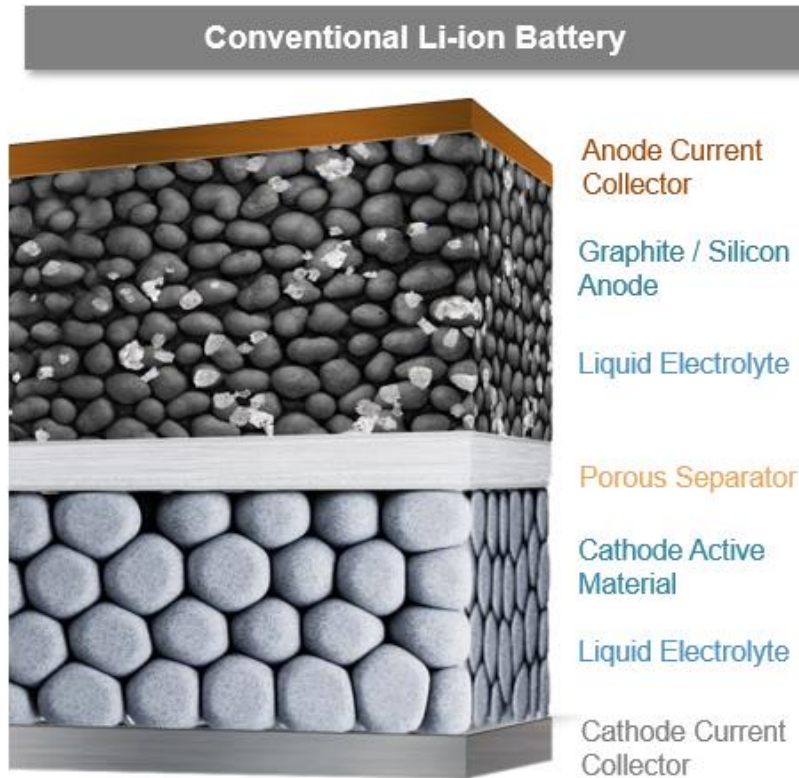
Limitations of Conventional Lithium-ion Battery Technologies

The last significant development in battery technology was the commercialization of lithium-ion batteries in the early 1990s which created a new class of batteries with higher energy density. Lithium-ion batteries have enabled a new generation of mobile electronics, efficient renewable energy storage, and the start of the transition to electrified mobility.

Since the 1990s, conventional lithium-ion batteries have gradually improved in energy density. Most increases in energy density have come from improved cell design and incremental improvements in cathode and anode technology. However, there is no Moore's law in batteries—it has taken conventional lithium-ion batteries at least 10 years to double in energy density and it has been approximately 30 years since the introduction of a major new chemistry. As the industry approaches the theoretical limit of achievable energy density for lithium-ion batteries, we believe a new architecture is required to deliver meaningful gains in energy density.

Batteries have a cathode (the positive electrode), an anode (the negative electrode), a separator which prevents contact between the anode and cathode, and an electrolyte which transports ions but not electrons. A conventional lithium-ion battery (as shown in the figure below) uses a liquid electrolyte, a polymer separator, and an anode made principally of carbon (graphite) or a carbon/silicon composite. Lithium ions move from the cathode to the anode when the battery is charged and vice versa during discharge.

Conventional Lithium-Ion Battery Design



In a fully-discharged lithium-ion cell, the lithium in the cell resides in the cathode. When the cell is charged, lithium ions move from the cathode to the anode, where they diffuse into the carbon particles that make up the anode. In the fully charged state, the lithium ions sit in the anode. When the battery is discharged, these lithium ions are allowed to move back from the anode to the cathode, and in the process, energy can be extracted from the system.

One limit to the energy density of conventional lithium-ion batteries is imposed by the anode, which provides a host material made of carbon (graphite) and/or silicon to hold the lithium ions, preventing them from binding together into pure metallic lithium. Metallic lithium, when used with conventional liquid electrolytes and porous separators, can form growths of lithium known as dendrites, which can penetrate through the separator and short-circuit the cell.

While using a host material in the anode is an effective way to prevent dendrites, this host material adds volume and mass to the cell, adds cost to the battery, and limits the battery life due to side reactions at the interface with the liquid electrolyte. The rate at which lithium diffuses through the anode also limits the maximum cell power.

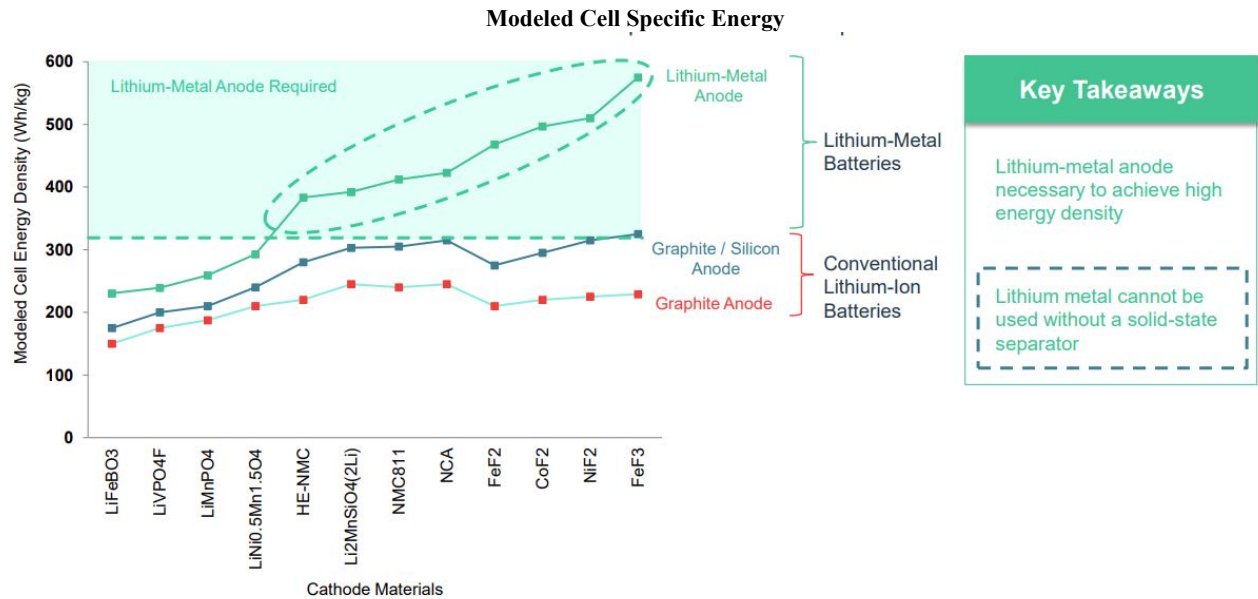
The addition of silicon to a carbon anode provides a modest boost to energy density relative to a pure carbon anode. However, silicon is a host material that not only suffers from the limitations of carbon as discussed above, but also introduces cycle life challenges as a result of the repeated expansion and contraction of the silicon particles, since silicon undergoes significantly more expansion than carbon when hosting lithium ions. Furthermore, the voltage of the lithium-silicon reaction subtracts from the overall cell voltage, reducing cell energy.

Lithium-Metal Anode Required to Unlock Highest Energy Density

We believe that a lithium-metal anode is the most promising approach that can break out of the constraints inherent in conventional lithium-ion batteries and enable significant improvements in energy density.

In a lithium-metal battery, the anode is made of metallic lithium; there is no host material. Eliminating the host material reduces the size and weight of the battery cell and eliminates the associated materials and manufacturing costs. This results in the highest theoretical gravimetric energy density for a lithium-based battery system if the system can be manufactured without excess lithium on the anode. Lithium-ion batteries currently used in the auto industry have energy densities of less than 300 Wh/kg. We believe lithium-metal batteries have the potential to achieve significantly higher energy density.

Lithium-metal anodes are generally compatible with conventional cathode materials, and lithium-metal batteries will derive some benefit from continued improvement in conventional cathode materials. Moreover, lithium-metal anodes may enable future generations of higher energy cathodes, such as the metal fluorides, that may not achieve significant energy density gains when used with lithium-ion anodes, as shown in the figure below.



Source: Andre et al, J Mater Chem A, (2015) 6709
Note: Modeled cell specific energy is based on traditional cell designs and architectures.

Although the industry has understood for over 40 years the potential benefits of lithium-metal anodes, the industry has not been able to develop a separator that makes a lithium-metal anode practical for rechargeable applications.

Solid-State Separator Required to Enable Lithium-Metal Anode

We believe that a lithium-metal battery requires that the porous separators used in conventional lithium-ion batteries be replaced with a solid-state separator capable of conducting lithium ions between the cathode and anode at rates comparable to conventional liquid electrolyte while also suppressing the formation of lithium dendrites, which are growths of lithium metal which can grow across the separator and short-circuit the cell. While various solid-state separators have been shown to operate at low power densities, such low power densities are not useful for most practical applications. To our best knowledge, we are the only company that has been able to demonstrate a solid-state separator for lithium-metal batteries capable of resisting dendrite formation at higher power densities, such as those required for automotive applications and fast-charging, for at least 800 cycles at around 25°C.

We believe that our ability to develop this proprietary solid-state separator will enable the shift from lithium-ion to lithium-metal batteries.



Our proprietary solid-state lithium-metal cell represents the next-generation of battery technology.

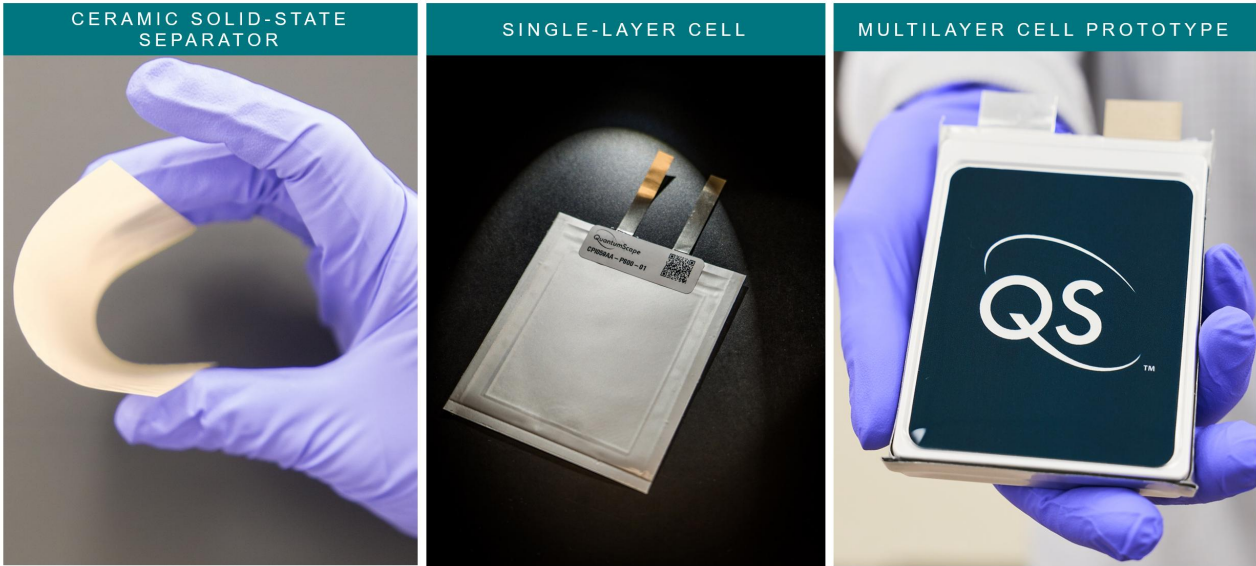
Our battery cells have none of the host materials used in conventional anodes. In fact, when our cells are manufactured there is no anode. When the cell is first charged, lithium moves out of the cathode, diffuses through our solid-state separator and plates in a thin metallic layer directly on the anode current collector, forming an anode. When the battery cell is discharged, the lithium diffuses back into the cathode.

Eliminating the anode host material found in conventional lithium-ion cells increases the volumetric energy density. A pure lithium-metal anode also enables the theoretically highest gravimetric energy density for a lithium battery system, if the system can be manufactured without excess lithium on the anode.

Our proprietary solid-state separator is the core technology breakthrough that enables reliable cycling of the lithium-metal anode battery. Without a working solid-state separator, the lithium would form dendrites which would grow through a traditional porous separator and short circuit the cell.

An effective solid-state separator requires a solid material that has conductivity in a range similar to liquid electrolytes, chemically stable next to lithium— one of the most reactive elements — and able to resist the formation of dendrites. Our team worked over ten years to develop a composition that meets these requirements and to develop the techniques necessary to manufacture the separator material at scale using a continuous process. We have a number of patents covering both the composition of this material and key steps of the manufacturing process.

Our Material and Cell



Our solid-state separator is a dense, entirely inorganic ceramic. As shown in the figure above, it is made into a film that is thinner than a human hair and then cut into pieces roughly the size of a playing card. Our solid-state separator is flexible because it has a low defect density and is thin. In contrast, typical household ceramics are less flexible and can break due to microscopic defects which reduce structural integrity.

The separator is placed between a cathode and anode current collector to form a single battery cell layer, as shown by the single layer pouch cell in the graphic above. Our single-layer solid-state cells have been tested for power density, cycle life and temperature performance. This is the only solid-state technology we are aware of that is capable of simultaneously satisfying what we believe are the key requirements for automotive commercial usage (at least 800 cycles while maintaining at least 80% energy retention, 100% depth of discharge, 1C/1C rates, <30°C temperature, <4 atm pressure) and that has been validated by independent testing.

Data from our testing of single-layer battery cells shows that unlike previous solid-state efforts, our solid-state separators can work at high rates of power, with the ability to charge from 10% to 80% capacity in approximately 15 minutes or less, faster than today’s conventional batteries can deliver without materially degrading life. We also presented data showing our single-layer battery cell can work at a wide range of temperatures, including results that show cycling at –10°C.

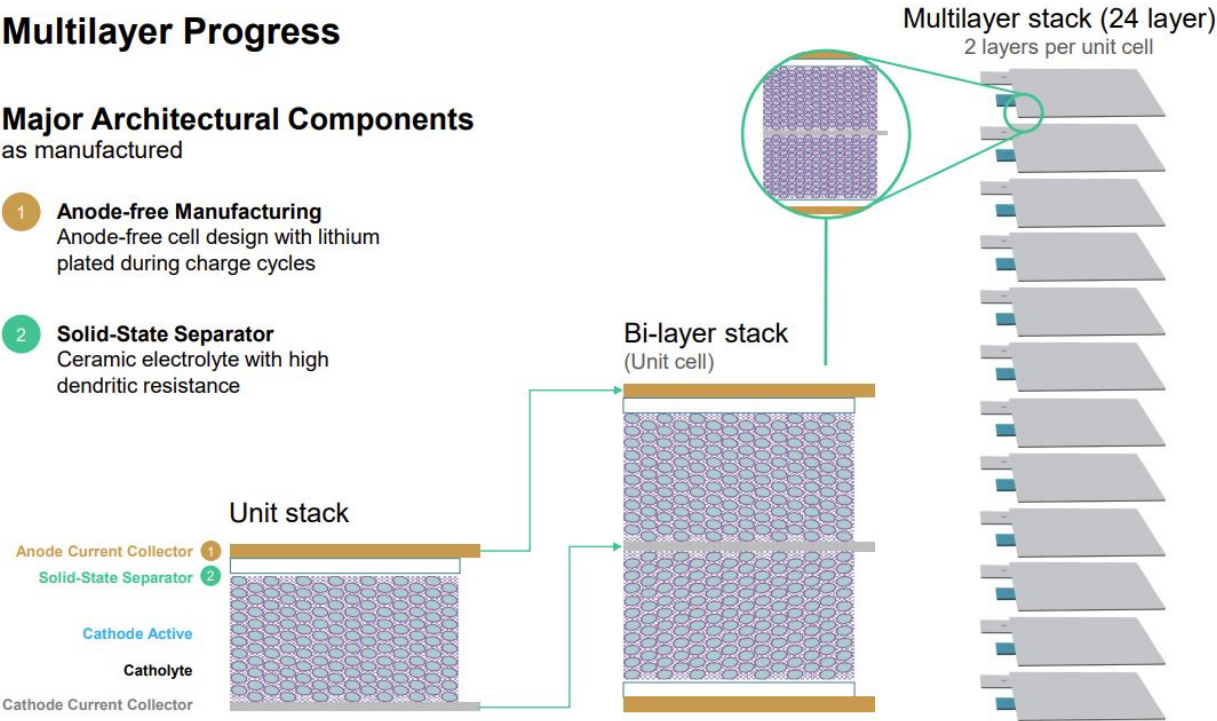
The basic building block of our designed battery package is the bilayer cell, consisting of a double-sided cathode with a separator on either side. We stack these bilayer cells together to form multi-layer cells. Our form factor for EV batteries is targeted to be roughly the size of a deck of cards.

Multi-Layer Progress

Multilayer Progress

Major Architectural Components as manufactured

- 1 **Anode-free Manufacturing**
Anode-free cell design with lithium plated during charge cycles
- 2 **Solid-State Separator**
Ceramic electrolyte with high dendritic resistance



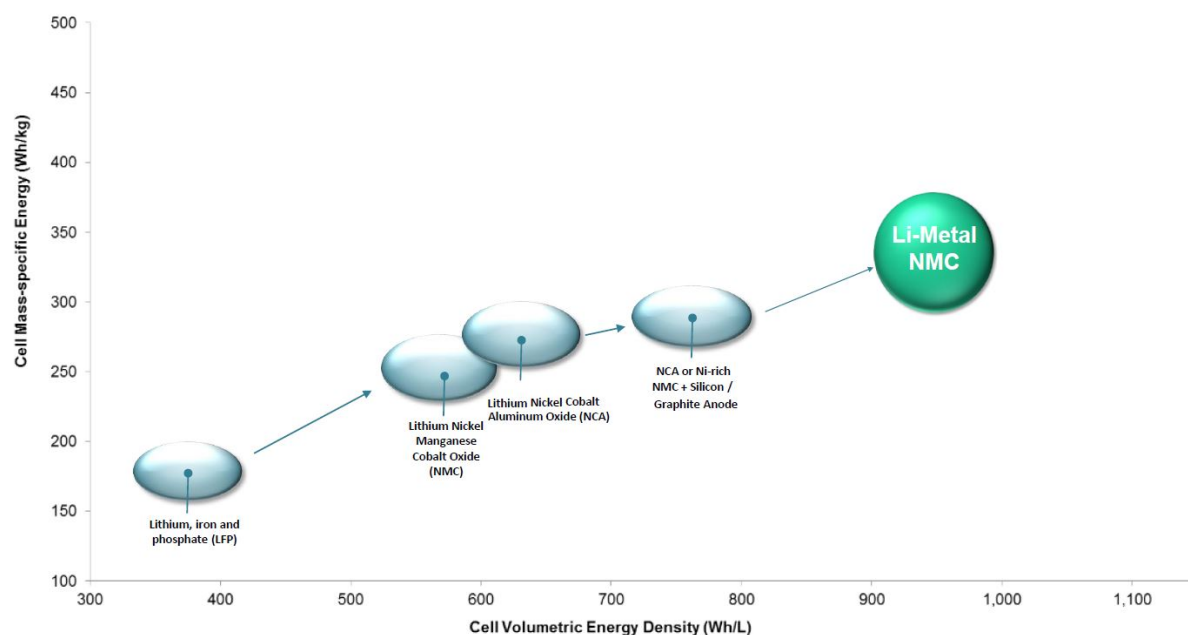
Depending upon our potential customers' requirements, our battery cell will require several dozen layers within each battery package. We have not yet built a complete multi-layer solid-state battery cell in the dimensions required for automotive applications but have announced the results of our single-layer, and multi-layer cells in commercially relevant areas, and in 2022, shipped 24-layer A0 prototype battery cells to multiple automotive OEMs for testing.

We need more production capacity to make the large number of multi-layer cells needed for testing and for process optimization, including yield improvement and reliability. We have ordered and continue to order new automation and high-volume equipment that we expect will increase both output and repeatability; the nature of the task, and the development approach that we use, involves high velocity experimentation and a large number of samples. We now plan to focus on improving the reliability of our prototype cells by reducing manufacturing defects, and increasing the energy density of these prototype cells to get closer to our commercial targets by incorporating higher capacity-loading cathodes and more efficient packaging.

Our cathodes use a combination of conventional cathode active materials such as NMC or a cobalt-free, nickel-free composition like LFP with a catholyte made of an organic polymer and organic liquid. In the future, we may use other compositions of cathode active materials. Over the years, we have developed catholytes made of differing mixtures of organic polymer and organic liquid electrolyte to optimize performance across multiple metrics such as voltage, temperature, power, and safety, among others. We continue to test solid, gel and liquid catholytes in our cells. The solid catholyte is part of our ongoing research and development investigation into inorganic catholytes. Our solid-state separator platform is being designed to enable faster charge rates for thicker cathode electrodes, which, when combined with a lithium-metal anode, may further increase cell energy densities.

We believe our battery technology may provide significant improvements in energy density compared to today’s conventional lithium-ion batteries, as shown in the figure below.

Projected Energy Density Improvement on QS Platform



Sources: Cell densities for commercialized chemistries based on Ding, Y. et al (2019) and Yang, X. et al. (2021); QuantumScape cell densities based on management estimates.

Benefits of Our Technology

We believe our battery technology will enable significant benefits across battery capacity, charging rate, safety, and life while minimizing cost. We believe these benefits will provide significant value to automotive OEMs by enabling greater customer adoption of their EVs. By solving key pain-points such as 15-minute fast charging, we believe our battery technology will enable the delivery of an EV experience that is significantly more competitive with fossil fuel vehicles than what today's EVs can achieve with conventional batteries.

Our battery technology is intended to meet the five key requirements we believe will enable mass market adoption of EVs:

- **Energy density.** Our battery design is intended to significantly increase volumetric and gravimetric energy density by eliminating the carbon/silicon anode host material found in conventional lithium-ion cells. This increased energy density will enable EV manufacturers to increase range without increasing the size and weight of the battery pack, or to reduce the size and weight of the battery pack which will reduce the cost of the battery pack and other parts of the vehicle.
- **Fast charging capability.** Our battery technology, and specifically our solid-state separator material, has been tested to demonstrate the ability to charge from 10% to 80% capacity in approximately 15 minutes or less, faster than today's conventional batteries can deliver without materially degrading life. In these conventional batteries, the limiting factor for charge rate is the rate of diffusion of lithium ions into the anode. If a conventional battery is charged at high rate, especially at high state-of-charge or low temperature, lithium can start plating on carbon particles of the anode rather than diffuse into the carbon particles. This causes a reaction between the plated lithium and liquid electrolyte which reduces cell capacity and increases the risk of dendrites that can short circuit the cell. With a lithium-metal anode, using our solid-state separator, we expect the lithium can be plated as fast as the cathode can deliver it.
- **Enhanced safety.** Our solid-state battery cell uses a ceramic separator which is not combustible and we believe is therefore safer than conventional polymer separators. This ceramic separator is also capable of withstanding temperatures considerably higher than those that would melt conventional polymer separators, providing an additional measure of safety. Although additional safety tests need to be performed, including for larger cells, in high temperature tests of our solid-state separator material with lithium, the separator material remained stable in direct contact with molten lithium without releasing heat externally, even when heated up to 250 degrees Celsius, higher than the 180 degrees Celsius melting point of lithium.

- **Battery cycle life.** We are designing our technology to enable increased battery cycle life relative to conventional lithium-ion batteries. In a conventional cell, a reason that battery capacity fades over time is the gradual irreversible loss of lithium due to side reactions between the liquid electrolyte and the anode. By eliminating the anode host material, we expect to eliminate those anode side reactions to enable longer battery cycle life. Our single-layer, four-layer, and 10-layer prototype cells have been tested to over 800 cycles (under stringent test conditions, including 100% depth-of-discharge cycles at one-hour charge and discharge rates at 25 to 30 degrees Celsius and approximately 3.4 atm of pressure with approximately 3mAh/cm² cathode loading) while still retaining over 80% of the cells' energy. This performance exceeds the cycle life and capacity retention in battery warranties for some of the best-selling EVs in the U.S. market today, which require that cells retain 70% of the rated capacity at 150,000 miles.
- **Cost.** Our battery technology eliminates the anode host material and the associated manufacturing costs, providing a structural cost advantage compared to traditional lithium-ion batteries. When comparing manufacturing facilities of similar scale, we estimate that eliminating these costs has the potential to provide a cost savings compared to the costs of building traditional lithium-ion batteries.

Our Competitive Strengths

Only lithium-metal battery technology showing capability to meet automotive requirements for power, cycle life, and temperature range to our knowledge.

We have built and tested single- and multi-layer solid-state cells, and have demonstrated that our technology shows the capability to meet automotive requirements for power, cycle life, and temperature range. In 2018, Volkswagen announced it had successfully tested certain of our single-layer, laboratory battery cells at automotive rates of power. Subsequently, Volkswagen has tested certain subsequent generations of laboratory cells, including multi-layer laboratory cells. As of December 31, 2022, we have customer sampling agreements with five other OEMs to collaborate with us in the testing and validation of our solid-state battery cells with the goal of providing such cells to the OEM for inclusion into pre-production prototype vehicles. These OEMs range from top ten manufacturers by global revenue to premium performance and luxury carmakers; additionally, they include both traditional and pure play EV companies.

Partnership with one of the world's largest automotive OEMs. We are partnered with Volkswagen, one of the largest automakers in the world. Volkswagen has been a major investor since 2012 and has invested a total of more than \$300 million in us. In addition, Volkswagen has committed additional capital to fund our 50-50 joint venture to enable an industrial-level production of our solid-state batteries for use in Volkswagen vehicles. As 50-50 partners in the joint venture with Volkswagen, we expect to share equally in the revenue and profit from the joint venture.

High barriers to entry and extensive patent and intellectual property portfolio. Since inception, we have generated more than 300 U.S. and foreign patents and patent applications – including broad fundamental patents around our core technology. Our proprietary solid-state separator uses the only material we know of that can cycle lithium at automotive current densities and room temperature without forming dendrites. We have a range of patents, including patents that cover:

- Composition of matter, including the optimal composition as well as wide-ranging coverage of a number of variations;
- Enabling battery technology covering compositions and methods required to incorporate a solid-state separator into a battery;
- Manufacturing technology, protecting the way to make the separator at scale without semiconductor-style vacuum production or batch processes used in traditional ceramics; and
- Material dimensions, including our proprietary solid-state separator, covering any separator with commercially practical thicknesses for a solid-state battery.

Significant development focused on next-gen technology for automotive applications. We have spent over a decade and over \$700 million developing our battery technology. Many of our technical team members have worked at large battery manufacturers and automotive OEMs. Through its experience, our team has significant technical know-how and is supported by extensive facilities and equipment, development infrastructure, and data analytics.

Designed for volume production. Our battery cells are designed to use earth-abundant materials and processes suitable for high volume production. Our manufacturing process for our proprietary separator uses equipment which are already used at scale in the battery or ceramics industries. While preparing for scale production, we have purchased or tested production-intent equipment from the world's leading vendors. In particular, we expect to produce our proprietary separator using scalable continuous processing. Although our separator material is proprietary, the inputs are readily available and can be sourced from multiple suppliers across geographies.

Structural cost advantage leveraging industry cost trends. Aside from the separator, our battery is being designed to use many of the materials and processes that are standard across today's lithium-ion battery manufacturers. As a result, we expect to benefit from the projected industry-wide cost declines for these materials that result from process improvements and economies of scale. We believe that the manufacturing of our solid-state battery cells provides us with a structural cost advantage because our battery cells are manufactured without an anode.

Our Growth Strategy

Continue to develop our commercial battery technology and manufacturing capabilities. We will continue developing our battery technology with the goal of enabling commercial production subsequent to the automotive qualification process, which involves several major delivery milestones — A, B and C samples. We have demonstrated capabilities of our solid-state separator and battery technology in single-layer and multi-layer, solid-state cells in commercially relevant areas (ranging from 60x75mm to 70x85mm), and in 2022, shipped 24-layer A0 prototype battery cells to multiple automotive OEMs for testing. As we move from prototypes to commercial products, we may need to increase cell layer count and will need to continue improving the quality and consistency of materials and processes for high volume manufacturing, including increased precision through automation and process control, quality of material inputs, and particle reduction across our process flow. We will continue to work to further develop and validate the volume manufacturing processes to enable high volume manufacturing and minimize manufacturing costs. We will continue to work on increasing the yield of our separators to reduce scrap and to increase utilization of manufacturing equipment. Commercialization via the production of initial C samples is first expected from QS-0, our pre-pilot production line in California, and with subsequent production expected from QS-1, a 1GWh pilot-production line, as part of our joint venture partnership with Volkswagen.

Meet Volkswagen battery demand. QS-1 is to be built and run by our 50-50 joint venture with Volkswagen and, together with the subsequent QS-1 Expansion, the full 21GWh target, would represent a small fraction of Volkswagen's demand for batteries considering vehicle volumes under 2.6% of Volkswagen's total production in 2022, assuming a 100KWh pack size. Our goal is to significantly expand the production capacity of the joint venture, in partnership with Volkswagen, to meet more of their projected demand.

Expand relationships with other automotive OEMs. While we expect Volkswagen will be the first to commercialize vehicles using our battery technology, we are, and over the next few years as we build QS-1, intend to continue, working closely with other automotive OEMs to make our solid-state battery cells widely available over time. Subject to the terms of the JV arrangements with Volkswagen, we are not prohibited from working in parallel with other automotive OEMs or other non-automotive companies to commercialize our technology. As of December 31, 2022, we have customer sampling agreements with five other OEMs, to collaborate in the testing and validation of our solid-state battery cells, with the goal of providing such cells to the OEMs for inclusion into pre-production prototype vehicles. These OEMs range from top ten manufacturers by global revenue to premium performance and luxury carmakers; additionally, they include both traditional and pure play EV companies.

Expand target markets. We are currently focused on automotive EV applications, which have the most stringent set of requirements for batteries. However, we recognize that our solid-state battery technology has applicability in other large and growing markets including stationary storage and consumer electronics such as smartphones and wearables. As of December 31, 2022, we have an agreement with Fluence Energy Inc. to evaluate our batteries for inclusion in their stationary energy storage applications, and have shipped single-layer pouch cells with zero externally applied pressure for customer testing within the consumer electronics sector.

Expand commercialization models. Our technology is being designed to enable a variety of business models. In addition to joint ventures, such as the one with Volkswagen, we may operate solely-owned manufacturing facilities or license technology to other manufacturers. Where appropriate, we may build and sell separators or cell layers rather than complete battery cells.

Manufacturing and Supply

Our battery manufacturing process is being designed to be very similar to that of conventional lithium-ion battery manufacturing, with a few exceptions:

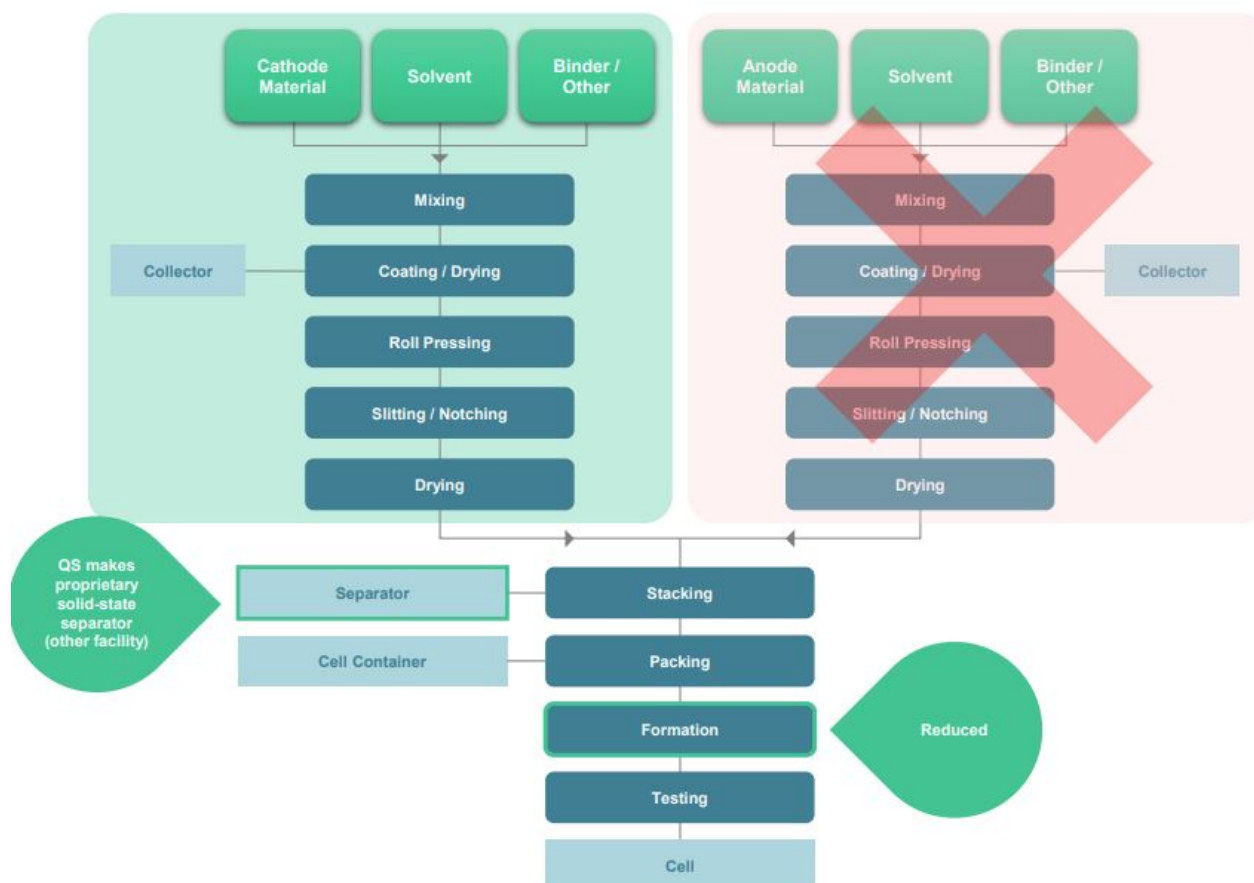
- We use a proprietary separator material instead of the polyolefin separator used in lithium-ion cells.
- Our architecture eliminates the need for anode manufacturing, reducing capital investment and lowering operating costs.
- We will build our multi-layer cells by sequentially stacking rather than winding cell materials together.

- Our cell design allows us to shorten the weeks-long aging process required for conventional lithium-ion cells, thus decreasing manufacturing cycle time and reducing working capital needs.

Our architecture depends on our proprietary separator, which we will manufacture ourselves. Though our separator design is unique, its manufacturing relies on well-established, high-volume production processes currently deployed globally in other industries.

We plan to source our input materials from industry leading suppliers to the lithium-ion battery industry, and we already have strategic relationships in place with the industry's leading vendors of cathode material, the most critical purchased input to our cell, along with leading vendors of other less critical inputs. Our separator is made from abundant materials produced at industrial scale in multiple geographies. We do not anticipate any unique supply constraints that would impede the commercialization of our product for the foreseeable future.

Relative to conventional lithium-ion cells, our technology eliminates the anode material cost (e.g., carbon/silicon host material, electrolyte in the anode) and reduces manufacturing costs (e.g., no anode related manufacturing costs, reduced formation costs). This enables savings in materials, capital equipment and manufacturing time, as illustrated in the graphic below.



Partnerships

Volkswagen Collaboration

QuantumScape has had a strong collaborative relationship with Volkswagen since 2012. Our collaboration initially focused on the testing and evaluation of QuantumScape's battery technology. Volkswagen engineers worked closely with our engineering team and oversaw the progress on our technology development efforts and battery testing. Volkswagen has made several rounds of equity investments in QuantumScape, and senior executives of Volkswagen joined our board of directors (the "Board"). During the early part of this collaboration we worked closely with members of Volkswagen's global research and development team, and now the QuantumScape team works closely with Volkswagen's Center of Excellence for Battery Center, which is tasked with commercializing battery technologies within Volkswagen. Frank Blome, the CEO of PowerCo. SE, Volkswagen's battery company, and former Head of Volkswagen's Center of Excellence for Battery Center, and Jens Wiese, the Head of Volkswagen Group M&A, Investment Advisory, and Partnerships, are members of the Board.

Joint Venture Relationship

In June 2018, we formed QSV Operations LLC ("QSV"), a 50-50 joint venture entity with Volkswagen focused on cell manufacturing, to facilitate the commercialization of our solid-state battery technology. In 2018, the parties collectively made an initial equity investment in the joint venture of approximately \$3 million. Upon the occurrence of certain development milestones and subject to the entry by QuantumScape, Volkswagen and QSV into certain related agreements, QuantumScape and Volkswagen have agreed to commit additional capital on a 50-50 basis to QSV to fund the buildout of QS-1 and QS-1 Expansion. As 50-50 partners in the cell manufacturing joint venture with Volkswagen, we expect to share equally in the revenue and profit from the joint venture, including from QS-1 and QS-1 Expansion. Under the joint venture agreements, QSV will purchase solid state separators from QuantumScape.

The joint venture agreements were amended in 2020 in connection with a further \$200 million investment by Volkswagen in QuantumScape. In connection with this equity investment, Volkswagen has the right to designate two members to our Board, who are currently Mr. Blome and Mr. Wiese.

The joint venture agreements provide for the commercialization of our solid-state battery cells to occur in two phases. The first phase is the construction of QS-1 with an annual capacity of 1GWh. QSV will begin construction of QS-1 when certain delivery and validation milestones are met for our solid-state battery cells. The second phase is QS-1 Expansion.

We believe the joint venture structure will enable Volkswagen to benefit from early access to our solid-state battery cells, but also protect our intellectual property. For example, intellectual property for certain key battery technology will continue to be owned by us and will be provided to the joint venture through a limited license for purposes of QS-1. The parties will agree on the license terms for a high-volume manufacturing facility for this battery technology. The joint venture terminates upon the earliest to occur of (i) Volkswagen exercising specified put rights in the event of, amongst others, (a) a change of control of QuantumScape, or (b) the failure by us to meet specified development milestones within certain timeframes, (ii) QuantumScape or Volkswagen exercising specified call or put rights in the event of, amongst others, if the parties cannot agree to commercial terms for QS-1 or QS-1 Expansion within certain timeframes, (iii) a certain date after commencement of production of a Volkswagen series production vehicle using our battery cells (or an alternative end date if no such production was commenced after certain technical milestones with respect to our battery cell technology were reached) and (iv) December 31, 2028.

The commercialization timeline originally contemplated in 2018 by the joint venture agreements, and by subsequent amendments, has changed, and as of the time of our filing of this annual report on Form 10-K, certain milestones contemplated by the joint venture agreements were not met. As a result, Volkswagen now has the right to exercise its put rights. If Volkswagen exercises such rights, the joint venture with Volkswagen and Volkswagen's commitments to purchase output capacity from the joint venture would terminate, and we would be obligated to purchase Volkswagen's interest in the joint venture for its book value. As of December 31, 2022, the book value of this interest was approximately \$1.7 million and is recorded as a redeemable non-controlling interest in our Consolidated Balance Sheets. To the extent that we and Volkswagen allocate additional money to the joint venture in the future, the cost to us of a decision by Volkswagen to exercise its put rights would increase. To date, Volkswagen has not informed us of any intention to exercise their put rights. There can be no assurance that Volkswagen will not decide to exercise these or any other put rights that it may have in the future with respect to its interest in the joint venture.

Volkswagen committed to purchase a certain portion of the output capacity of QS-1 at a price for the solid-state battery cells that is comparable to those of lithium-ion batteries, but with a premium for the outperformance of these battery cells based on certain key technical parameters. We will sell separators to the joint venture at a price to be agreed by the parties based on the provisions of the joint venture agreements. The joint venture agreements provide the framework for the commercial relationship. At the appropriate time, the parties will negotiate agreements covering the details of these purchase commitments.

QS-1 Expansion is subject to meeting additional technical milestones and agreement on commercial terms, including pricing for the battery cells, agreement on the terms of purchase or license for the separators, and agreement on terms of the license to our battery technology for QS-1 Expansion. We have agreed that the pricing for the battery cells sold by QS-1 Expansion and the separators purchased by QS-1 Expansion may be different from the pricing set for QS-1, and we will need to agree on pricing at the appropriate time. In addition, we will need to agree to the terms of the license to our battery technology for QS-1 Expansion.

Volkswagen is expected to have a significant role in the manufacturing ramp-up of QSV, and we have agreed that certain technology that is developed by QSV will be owned by the joint venture and licensed to each of QuantumScape and Volkswagen on a royalty-free basis. None of this intellectual property has been developed to date. Although the parties have not commenced operations on QS-1, Volkswagen has offered to assist us with supply chain, manufacturing ramp-up planning, and automation. In addition, we have collaborated with Volkswagen on enabling us to develop stronger relationships with battery component supply companies, such as cathode manufacturers and equipment supply companies.

Research and Development

We conduct research and development at our headquarters facility in San Jose, California. Research and development activities concentrate on making further improvements to our battery technology. Following the shipment of 24-layer A0 prototype battery cells, we plan to focus our research and development on subsequent generations of prototype samples incorporating advances in cell functionality, process and reliability. We are working to improve the maturity of our production processes and to bring online and scale up our pre-production QS-0 line.

Our research and development currently includes programs for the following areas:

- *Continued improvement of our prototype cells' energy density.* We believe our battery technology may provide significant improvements in energy density compared to today's conventional lithium-ion batteries. We are working to address this opportunity in several ways, including increasing the cathode capacity loading and packaging efficiency of our cells. To increase cathode capacity loading, we need to address several technical challenges, including coating thicker cathode electrodes while maintaining quality, calendaring the cathodes to the necessary thickness, optimizing cathode microstructure, and ensuring good catholyte interface with active material while still meeting our targeted charge and discharge power. To enhance packaging efficiency, we are working to improve the ratio of active materials of the battery to its inactive materials by, among other things, tightening tolerances between the individual cell components, reducing the thickness of elements of the cell stack, and minimizing or eliminating inactive materials or spaces inside the cell package — all without adversely impacting performance of the cells.

- *Continued improvement in quality, consistency and reliability.* We are working to improve the quality and uniformity of our cells, including our solid-state separators, to further improve, among other things, the cycling behavior, power, operating conditions, and reliability of our cells. For certain of our processes, we use methods of continuous processing found at scale in both the battery and ceramic industries and are working on continuous improvement of this process, including better quality, consistency, and higher throughput through automation and process control, quality of material inputs, and particle reduction across our process. We are also exploring new methods not typically used in ceramics that offer significant potential cost savings. Regarding consistency, tightening the variability of separator quality we believe results in better yield. We plan to implement process improvements and controls necessary to manufacture higher quality, more consistent materials; we believe these activities will ultimately lead to higher reliability.
- *Continued improvement in throughput.* Increasing the volume of separator production results in the increased quantities required for prototypes with higher layer counts and delivery of more test cells to prospective customers. We continue to invest and deploy resources to automate our manufacturing process, including purchasing larger-scale manufacturing equipment, that we expect will substantially improve our manufacturing processes and, as a result, increase throughput required for product qualification and to achieve the cost, performance and volume levels required for commercial shipments.
- *Multi-layering.* We have demonstrated capabilities of our solid-state separator and battery technology in single-layer and multi-layer solid-state cells in commercially relevant areas (ranging from approximately 60x75mm to 70x85mm), and in 2022, shipped 24-layer A0 prototype battery cells to multiple automotive OEMs for testing. In order to advance the maturity of our prototype cells and produce commercially-viable solid-state battery cells, we must produce battery cells with dozens of layers and may have to increase cell layer count; the exact number of layers will vary and depend upon specific customer preference, cell design considerations, and other factors. We will need to overcome production challenges to increase the layer count and implement the appropriate cell design for our solid-state battery cell.
- *Continued improvement of the cathode.* Our cathodes use a conventional cathode active material such as NMC mixed with a catholyte. We plan to benefit from industry cathode chemistry improvements and/or cost reduction, which in the future may include use of other cathode active materials, including cobalt-free compositions, including LFP, as well as cathode processing advances such as dry electrode processing. Over the years, we have developed catholytes made of differing mixtures of organic polymer and organic liquid electrolyte to optimize performance across multiple metrics such as voltage, temperature, power, and safety, among others. We continue to test solid, gel and liquid catholytes in our cells. The solid catholyte is part of our ongoing research and development investigation into inorganic catholytes. Our solid-state catholyte platform is being designed to enable high rates of charge and discharge for even thicker cathode electrodes, which when combined with a lithium-metal anode, may further increase cell energy densities.

Intellectual Property

The success of our business and technology leadership is supported by our proprietary battery technology. We rely upon a combination of patents, trademarks and trade secrets in the United States and other jurisdictions, as well as license agreements and other contractual protections, to establish, maintain and enforce rights in our proprietary technologies. In addition, we seek to protect our intellectual property through nondisclosure and invention assignment agreements with our employees and consultants and through non-disclosure agreements with business partners and other third parties. We regularly file applications for patents and have a significant number of patents in the United States and other countries where we expect to do business. Our patent portfolio is deepest in the area of solid-state separators with additional areas of strength in anodes, next-generation cathode materials, and cell, module, and pack design specific to lithium-metal batteries. Our trade secrets primarily cover manufacturing methods.

As of December 31, 2022, we owned or licensed, on an exclusive basis, 101 issued U.S. patents and 61 pending or allowed U.S. patent applications, and 165 granted foreign patents and patent applications. We have 2 registered U.S. trademarks and 5 pending U.S. trademark applications. Patents issued to us start expiring in 2033.

Competition

The EV market, and the battery segment in particular, is rapidly evolving and highly competitive. With the introduction of new technologies and the potential entry of new competitors into the market, we expect competition to increase in the future, which could harm our business, results of operations, or financial condition.

Our prospective competitors include major manufacturers currently supplying the industry, automotive OEMs and potential new entrants to the industry. Major companies now supplying batteries for the EV industry include Panasonic Corporation, Samsung SDI, Contemporary Amperex Technology Co. Limited, LG Energy Solutions and BYD Co. Limited. They supply conventional lithium-ion batteries and in many cases are seeking to develop solid-state batteries, including potentially lithium-metal batteries. In addition, because of the importance of electrification, many automotive OEMs are researching and investing in solid-state battery efforts and, in some cases, in battery development and production. For example, Tesla, Inc. is building multiple battery gigafactories and potentially could supply batteries to other automotive OEMs, and Toyota Motors and a Japanese consortium have a multi-year initiative pursuing solid-state batteries.

A number of development-stage companies such as SES, Solid Power and Enovix are also seeking to improve conventional lithium-ion batteries or to develop new technologies for solid-state and/or lithium-metal batteries. Potential new entrants are seeking to develop new technologies for cathodes, anodes, electrolytes and additives. Some of these companies have established relationships with automotive OEMs and are in varying stages of development.

We believe our ability to compete successfully with lithium-ion battery manufacturers and with other companies seeking to develop solid-state batteries will depend on a number of factors including battery price, safety, energy density, charge rate and cycle life, and on non-technical factors such as brand, established customer relationships and financial and manufacturing resources.

Many of the incumbents have, and future entrants may have, greater resources than we have and may also be able to devote greater resources to the development of their current and future technologies. They may also have greater access to larger potential customer bases and have and may continue to establish cooperative or strategic relationships amongst themselves or with third parties (including automotive OEMs) that may further enhance their resources and offerings.

Government Regulation and Compliance

There are government regulations pertaining to battery safety, transportation of batteries, use of batteries in cars, factory safety, and disposal of hazardous materials. We will ultimately have to comply with these regulations to sell our batteries into the market. The license and sale of our batteries abroad is likely to be subject to export controls in the future.

Employees and Human Capital

We pride ourselves on the quality of our world-class team and seek to hire only employees dedicated to our strategic mission. Many of our employees have significant experience working with large battery manufacturers and automotive OEMs. As of December 31, 2022, we employed approximately 850 employees, based primarily in our headquarters in San Jose, California. Many of our employees in our research and development and related functions hold engineering and scientific degrees, including many from the world's top universities.

Diversity, Equity and Inclusion

We seek team members who want to help solve a significant problem that will positively impact the world. We value diversity and recognize the importance of fostering a positive, inclusive culture. As such, we have actively taken steps towards eliminating unconscious bias in our hiring and promotion processes while enabling us to add and promote team members who demonstrate behaviors aligned with our values, including but not limited to delivering unconscious bias training to senior leaders, redesigning and enhancing hiring processes and establishing new college relationships to increase the diversity of our candidate pool.

Attraction and Retention

We are committed to maintaining equitable compensation programs including equity participation. We offer market-competitive salaries and strong equity compensation aimed at attracting and retaining team members capable of making exceptional contributions to our success. Our full-time regular employees hold equity in our company and are generally eligible for the employee stock purchase plan. Our compensation decisions are guided by the external market, role criticality, and the contributions of each team member. Our new job leveling framework and associated pay ranges allow us to maintain pay equity while offering the attractive and effective compensation needed as we grow and compete for talent.

Health and Safety

The health and safety of our employees is mission critical. We place heavy emphasis on a proactive safety culture and maintain a supportive organization that encourages personal health for our employees. Our Environmental, Health and Safety (EHS) department leads the programs that address workplace health and safety concerns through engineering controls, policies, procedures, training, monitoring and audits.

To date, we have not experienced any work stoppages and we consider our relationship with our employees to be good. None of our employees are either represented by a labor union or are subject to a collective bargaining agreement.

Available Information

Our investor relations website is located at <https://ir.quantumscape.com>, our Twitter account is @QuantumScapeCo, our investor relations Twitter account is @QuantumScapeIR, our Chief Executive Officer's Twitter account is @startupjag, our Chief Technology Officer's Twitter account @ironmantimholme, our Chief Marketing Officer's Twitter account is @HussainAsim, and our corporate LinkedIn account is located at <https://www.linkedin.com/company/quantumscape/posts/>. We use our investor relations website, aforementioned Twitter accounts and LinkedIn account to post important information for investors, including news releases, analyst presentations, and supplemental financial information, and as a means of disclosing material non-public information and for complying with our disclosure obligations under Regulation FD. Accordingly, investors should monitor our investor relations website, aforementioned Twitter accounts, and LinkedIn account in addition to following press releases, filings with the Securities and Exchange Commission (the "SEC") and public conference calls and webcasts. We also make available, free of charge, on our investor relations website under "SEC Filings," our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and any amendments to these reports as soon as reasonably practicable after electronically filing or furnishing those reports to the SEC.

Item 1A. Risk Factors.

The following summary risk factors and other information included in this Report should be carefully considered. The summary risks and uncertainties described below are not the only ones we face. Additional risks and uncertainties not currently known to us or that we currently deem less significant may also affect our business operations or financial results. If any of the following risks actually materializes, our stock price, business, operating results and financial condition could be materially adversely affected. For more information, see below for more detailed descriptions of each risk factor.

- We face significant challenges in our attempt to develop a solid-state battery cell and produce it at high volumes with acceptable performance, quality, consistency, reliability, throughput and cost. The pace of development in materials science is often not predictable, and we may encounter delays and cost overruns related to planning, permitting, construction, supply chain disruptions, equipment installation, utilities infrastructure installation and operations start-up of our manufacturing facilities. Delays or failures in accomplishing these and other development objectives, including delays in delivering battery cell samples to our customers, may delay or prevent successful commercialization of our products.
- We may not be able to establish supply relationships for necessary materials, components or equipment or may be required to pay more than anticipated for components or equipment, or external factors may negatively affect the reliability of such suppliers, all of which could delay the introduction of our product and negatively impact our business.
- If our batteries fail to perform as expected, our ability to develop, market and sell our batteries could be harmed.
- Our relationship with Volkswagen is subject to various risks which could adversely affect our business and future prospects. There are no assurances that we will be able to meet Volkswagen's time, cost, performance and volume requirements, or commercialize solid-state batteries from our joint development relationship with Volkswagen.
- We may not succeed in attracting customers during the development stage or for high volume commercial production, and our future growth and success depend on our ability to attract and retain customers.
- We may be unable to adequately control the costs associated with our operations and the components necessary to build our solid-state battery cells, and, if we are unable to control these costs and achieve cost advantages in our production of our solid-state battery cells at scale, our business will be adversely affected.
- We rely heavily on our intellectual property portfolio. If we are unable to protect or assert our intellectual property, our business and competitive position would be harmed.
- We may need to defend ourselves against intellectual property infringement claims or other litigation, which may be time-consuming and could cause us to incur substantial costs.
- We may not be able to accurately estimate the future supply and demand for our batteries, 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.
- The battery market continues to evolve, is highly competitive, and we may not be successful in competing in this industry or establishing and maintaining confidence in our long-term business prospects among current and future partners and customers.
- Our batteries and our website, systems, and data we maintain may be subject to intentional disruption, other security incidents, or alleged violations of laws, regulations, or other obligations relating to data handling that could result in liability and adversely impact our reputation and future sales.
- The trading price of our Class A Common Stock has been and may in the future continue to be subject to extreme volatility.
- We have had to restate our previously issued financial statements and in connection with such process, identified a material weakness in our internal control over financial reporting. Although this material weakness has been remediated, we cannot provide assurances that additional material weaknesses, or significant deficiencies, will not occur in the future.
- Global climate change, an increase in related legal and regulatory requirements and an increased related emphasis on ESG matters by various stakeholders could negatively affect our business.

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 financial statements and notes to the financial statements included elsewhere in this Report.

Risks Related to Our Technology Development and Scale-Up

We face significant challenges in our attempt to develop a solid-state battery cell and produce it at high volumes with acceptable performance, quality, consistency, reliability, throughput, and costs. The pace of development in materials science is often not predictable and we may encounter delays and cost overruns related to planning, permitting, construction, equipment installation, utilities infrastructure installation and operations start-up of our manufacturing facilities. Delays or failures in accomplishing these and other development objectives may delay or prevent successful commercialization of our products.

Developing lithium-metal solid-state batteries that meet the requirements for wide adoption by automotive OEMs is a difficult undertaking and, as far as we are aware, has never been done before. We are still in the development stage and face significant challenges in completing the development of our multi-layer battery cells and in producing battery cells in commercial volumes. Some of the development challenges that could prevent the introduction of our solid-state battery cell include difficulties with increasing the quality, consistency, reliability and throughput of our separators and cells, increasing the size and layer count of our multi-layer cells, increasing manufacturing to produce the volume of cells needed for our technology development and customer applications, installing, bringing up and optimizing higher volume manufacturing equipment, packaging design and engineering to ensure adequate cycle life, pressure management, cost reduction, completion of the rigorous and challenging specifications required by our automotive partners, including but not limited to, calendar life, mechanical, safety, and abuse testing and development of the final manufacturing processes.

Our solid-state separators are in the development stage. These separators have never been used before for battery applications (or to our knowledge, for any other applications) and there are significant quality, consistency, reliability and throughput, cost and manufacturing process challenges to be solved in order for the separators to be produced and used commercially. We are likely to encounter engineering challenges as we increase the lateral dimensions, reduce the thickness and increase the production volume of our solid-state separators. If we are not able to overcome these barriers in developing and producing solid-state separators at commercial volumes, our business could fail.

To achieve target energy density, we need to assemble multiple cell layers, enclose them within a single battery package, improve the cathode capacity loading, and address related technical challenges. Depending upon our customer's requirements, our battery cell may require dozens of layers within each battery package. We have tested single-layer and multi-layer cells in commercially relevant areas that measure approximately 60x75mm to 70x85mm, and shipped our first 24-layer A0 prototype battery cells in 2022; we may need additional layers for subsequent generations of our prototype battery cells – depending upon customer preference, cell design considerations, and other factors – and to produce these cells at improved yields without compromising performance, and while solving related packaging and reliability challenges in a way that is scalable and low-cost. There are significant engineering and mechanical challenges that we must overcome to advance the development of our battery cells. In addition, we will need to acquire certain equipment that we currently do not possess and develop the manufacturing process necessary to make these multi-layer battery cells in high volume. If we are not able to overcome these developmental hurdles in building our multi-layer cells, our business is likely to fail.

We are evaluating multiple cathode material compositions for inclusion in our solid-state battery cells and have not yet finalized the cathode composition or formulation, or the design of related cell assembly components. We also have not validated that the current cell design meets all automotive requirements. We have not yet validated a manufacturing process or acquired the equipment necessary to produce high volumes of our cathode electrode or related cell assembly components that meet all commercial requirements. If we are not able to overcome these developmental and manufacturing hurdles our business likely will fail.

Even if we complete development and achieve volume production of our solid-state battery, if the cost, performance characteristics or other specifications of the battery fall short of our targets or our customer requirements, our sales, product pricing and margins would likely be adversely affected.

In addition, we must advance our manufacturing processes to include more automation, such as automated film handling and stacking, and to use higher volume equipment and processes, such as moving to larger continuous flow equipment. We must also continue process development and innovation efforts towards substantially shortening cycle time, improving process control, and reducing consumables (including energy usage), towards the target end goal of increasing the quality, consistency, reliability and throughput of our solid-state separators and battery cells. We may encounter delays or unexpected challenges in the delivery, installation and operation of the new equipment. Examples include global supply chain issues that impact our equipment suppliers, supplier non-performance, equipment damage in transit, and COVID-19-related delays. These challenges may be exacerbated in situations where we source certain of our materials and equipment exclusively from one or a few suppliers. Further, we must build QS-0 to provide a sufficient quantity of solid-state separators and cells for internal development, customer sampling (including pre A-sample, A-sample, B-sample, and C-sample cells), and initial commercial production. We could encounter significant delays and cost overruns related to planning, permitting, construction, equipment installation and qualification, utilities infrastructure installation, and operations start-up of our manufacturing facilities, including those containing our QS-0 line. For example, we have experienced short-term power outages at our San Jose facilities that have been resolved but similar disruptions may occur in the future; delays associated with material shortage and backups at key shipping ports could impact the capacity at which we can run the facility; and certain of our construction contractors have previously reported delays due to labor strikes of their employees that have been resolved for now but may reoccur in the future. We must substantially improve our manufacturing processes to increase yield and throughput to achieve the cost, performance and volume levels required for commercial shipments. In addition, our multi-layer battery cells must simultaneously satisfy all of the commercial and safety requirements of our customers.

Any delay in the development or manufacturing scale-up of our solid-state battery cells would negatively impact our business as it will delay time to revenue and negatively impact our customer relationships. Additionally, we may encounter delays in obtaining the necessary regulatory approvals or launching our solid-state battery on the market, including delays in entering into agreements for the supply of component parts and manufacturing equipment and supplies. Delays in the launching of our product would materially damage our business, prospects, financial condition, operating results and brand.

We may not be able to establish supply relationships for necessary materials, components or equipment or may be required to pay more than anticipated for components or equipment, which could delay the introduction of our product and negatively impact our business.

We rely on third-party suppliers for components and equipment necessary to develop and manufacture our solid-state batteries, including key supplies, such as our cathode material and manufacturing equipment for both our separator and solid-state battery cells. We are collaborating with key suppliers but have not yet entered into agreements for the supply of production quantities for many of these materials. To the extent that we are unable to enter into commercial agreements with these suppliers on beneficial terms, or these suppliers experience difficulties or delays ramping up their supply of materials to meet our requirements, the introduction of our battery will be delayed. For example, we have previously experienced minor disruptions to the supply of process gas due to the shortage of truck drivers related to the COVID-19 pandemic and have also experienced disruption to the supply of petroleum-derived products as a result of certain weather and geopolitical events. The war in Ukraine and resulting sanctions against Russia by certain countries has also led to an increase in the price of petroleum and petroleum-derived products, which in turn could adversely affect the cost of manufacturing, input material pricing and logistics costs.

We expect to incur significant costs related to procuring materials required to manufacture and assemble our batteries. We expect to use various materials in our batteries that will require us to negotiate purchase agreements and delivery lead-times on advantageous terms. We may not be able to control fluctuation in the prices for these materials or negotiate agreements with suppliers on terms that are beneficial to us. Our business depends on the continued supply of certain proprietary materials for our products. We are exposed to multiple risks relating to the availability and pricing of such materials and components, including reliance upon our vendors to construct and produce equipment to increase volumes, which may lead to delays or the requirement that we make additional upfront payments. Substantial increases in the prices for our raw materials or components, which may be expected, particularly if inflation rates continue at the high levels seen in 2022, would increase our operating costs and negatively impact our prospects. For example, our shipping costs have increased as suppliers have applied fuel surcharges. Costs for certain key raw materials and components have also increased due to fluctuations in global commodity prices. Our suppliers' increasing labor costs have also contributed to rising prices. Given that we have yet to generate any revenue from our business operations, we are also limited in our ability to pass on the cost of any such increases to our customers.

In addition, the cost of mass-producing battery cells, depends in part upon the prices and availability of raw materials such as lithium, nickel, cobalt and/or other metals. The prices for these materials fluctuate and their available supply may be unstable, depending on market conditions and global demand for these materials. Demand for lithium has increased dramatically in recent years, and is expected to continue to increase, due to the ongoing rapid increase in lithium batteries in portable electronics and the growing EV and energy storage markets. Furthermore, significant deposits of certain of our raw materials, such as lithium, are available in countries that may be subject to political, economic and social instability or where there is an ongoing risk of tariffs or other prohibitions being imposed by the United States or the European Union on the import of such materials from such countries. There can be no assurance that suppliers of these raw materials may be able to meet our volume needs at reasonable prices, particularly as we ramp up our commercial operations.

Any disruption in the supply of components, equipment or materials could temporarily disrupt research and development activities or production of our batteries until an alternative supplier is able to supply the required material. Changes in business conditions, unforeseen circumstances, governmental changes, disruptions caused by power outages, climate change and other natural disasters, and other factors beyond our control or which we do not presently anticipate, could also affect our suppliers' ability to deliver components or equipment to us on a timely basis. Any of the foregoing could materially and adversely affect our results of operations, financial condition and prospects.

Currency fluctuations, trade barriers, tariffs or shortages and other general economic or political conditions may limit our ability to obtain key components or equipment for our solid-state batteries or significantly increase freight charges, raw material costs and other expenses associated with our business, which could further materially and adversely affect our results of operations, financial condition and prospects.

In addition, as the war in Ukraine continues or possibly escalates, this may lead to further disruption, instability and volatility in global markets and industries 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 the global economy, our business, supply chain, partners or customers. Outbreaks of coronavirus cases in China during 2022 and the resultant lockdowns in some cities, including Shenzhen and Shanghai, has also adversely affected supply chains and may impact our ability to access materials timely in the event such supply chain disruptions continue or are not fully resolved. In addition, current U.S. restrictions on trade with China have impacted our ability to source certain production equipment. Should there be economic disruption resulting from the dynamics of geopolitical relations between the U.S. and China, there may be volatility of prices and lead times of equipment and materials sourced from or with a supply chain passing through China.

We may be unable to adequately control the costs associated with our operations and the components necessary to build our solid-state battery cells, and, if we are unable to control these costs and achieve cost advantages in our production of our solid-state battery cells at scale, our business will be adversely affected.

We require significant capital to 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 batteries, and general and administrative costs as we scale our operations. For example, there has been volatility in prices and availability of raw material such as cobalt, nickel, and lithium and such material may face industry-wide shortages. Our ability to become profitable in the future will not only depend on our ability to successfully market our solid-state batteries and services, but also to control our costs and achieve our target cost projections, including our projected cost advantage when compared to the costs of building traditional lithium-ion batteries at scale or the costs of building solid-state batteries by other market players. If we are unable to cost efficiently design, manufacture, market, sell and distribute our solid-state batteries and services, our margins, profitability and prospects would be materially and adversely affected. We have not yet produced any solid-state battery cells at commercial capacity or in volume and our forecasted cost advantage for the production of these cells at scale, compared to conventional lithium-ion cells, will require us to achieve rates of throughput, use of electricity and consumables, yield, and levels of automation that we have not yet achieved. If we are unable to achieve these targeted rates, our business will be adversely impacted.

In particular, while we have estimated that eliminating the anode host material and the associated manufacturing costs will provide a savings in production at scale compared to the costs of building traditional lithium-ion batteries at leading manufacturers, that estimate is subject to numerous assumptions and uncertainties. To achieve those savings, we will need to achieve significant cost savings in battery design and manufacturing, in addition to the cost savings associated with the elimination of an anode from our solid-state battery cells, while controlling costs associated with the manufacturing of our solid-state separator, including achieving substantial improvements in throughput and yield required to hit commercial targets. Further, we will need to capture industry-wide cost savings in the materials, components, equipment, and processes that we share, notably in the cathode, cell design, and factory. We cannot be certain that we will achieve these cost savings or that future efficiency improvements in lithium-ion battery manufacturing will not reduce or eliminate these estimated cost savings.

We rely on complex machinery for our operations, and production 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 solid-state battery cells, and this equipment has not yet been qualified to operate at large-scale manufacturing. The work required to integrate this equipment into the production of our solid-state battery cells is time intensive and requires us to work closely with the equipment provider to ensure that it works properly for our unique 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 battery cells.

To achieve our commercialization goals, we will require large-scale machinery. Such machinery is likely to suffer unexpected malfunctions from time to time and may require repairs and spare parts to resume operations, which may not be available when needed, particularly if global supply chain disruptions continue or are not fully resolved. Unexpected malfunctions of our production equipment may significantly affect the intended operational efficiency. In addition, because this equipment has not been used to build our solid-state battery cells before, 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 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. These operational problems could have a material adverse effect on our business, results of operations, cash flows, financial condition or prospects.

Customer Risks and Risks Related to Our Partnership with Volkswagen

Our relationship with Volkswagen 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 solid-state batteries from our joint development relationship with Volkswagen.

We and Volkswagen have formed a joint venture to collaborate on the manufacturing ramp up of our solid-state battery cell.

There is no assurance that we will be able to complete the development of the solid-state battery cells in the time frame required by the joint venture arrangements or to satisfy Volkswagen's business needs. If we do not complete this development in a timely manner, Volkswagen may terminate its participation in the joint venture. Our joint venture arrangements with Volkswagen provide a framework for our cooperation and requires that we and Volkswagen enter into certain additional arrangements regarding the purchase by the joint venture of solid-state separators from us, the purchase and pricing of the solid-state battery cells that will be produced by the joint venture and sold to Volkswagen, and the terms for licensing our technology to the joint venture. There can be no assurance that we will be able to agree with Volkswagen on these key elements on terms that are financially beneficial for us or that we will be able to enter into the additional arrangements, including any purchase orders, with Volkswagen for commercialization under the joint venture arrangements.

The commercial terms of the purchase by Volkswagen of the output of the joint venture will depend on the performance of our solid-state battery and the demand for the vehicles that Volkswagen develops to utilize the solid-state battery cells that will be produced by the joint venture. If we cannot complete the development of our solid-state battery cells, if Volkswagen does not select our solid-state battery cell for commercialization or if there is a delay in the introduction of the Volkswagen vehicles that intend to use our solid-state battery cells, our business will be harmed.

The strong relationship that we have developed with Volkswagen and rights under the joint venture agreements may deter other automotive OEMs from working closely with us. If we are not able to expand our other customer relationships, or if we become too dependent on Volkswagen for our revenue, our business could be harmed.

Volkswagen may have economic, business or legal interests or goals that are inconsistent with our goals. Any significant disagreements with Volkswagen may impede our ability to maximize the benefits of our partnerships and slow the commercialization of our solid-state battery. Our joint venture arrangements may require us, among other things, to pay certain costs or to make certain capital investments or to seek Volkswagen's consent to take certain actions. In addition, if Volkswagen is unable or unwilling to meet its economic or other obligations under the joint venture arrangements, we may be required to either fulfill those obligations alone to ensure the ongoing success of the joint venture or to dissolve and liquidate the joint venture. These factors could result in a material adverse effect on our business and financial results. In 2022, Volkswagen announced the formation of PowerCo. SE, a company intended to consolidate its activities along the value chain for batteries – from processing raw materials to developing a unified Volkswagen battery to managing the European gigafactories. We cannot predict the extent to which PowerCo's activities may pose a competitive risk to, or otherwise be in conflict with, our business.

If our batteries fail to perform as expected, our ability to develop, market, and sell our batteries could be harmed.

Once commercial production of our solid-state battery cells commences, our batteries may contain defects in design and manufacture that may cause them to not perform as expected or that may require repairs, recalls, and design changes. Our batteries are inherently complex and incorporate technology and components that have not been used for other applications and that may contain defects and errors, particularly when first introduced. We have a limited frame of reference from which to evaluate the long-term performance of our solid-state batteries. There can be no assurance that we will be able to detect and fix any defects in our solid-state batteries prior to the sale to potential consumers. If our batteries fail to perform as expected, we could lose design wins and customers may delay deliveries, terminate further orders or initiate product recalls, each of which could adversely affect our sales and brand and could adversely affect our business, prospects, and results of operations.

We may not succeed in attracting customers during the development stage or for high volume commercial production, and our future growth and success depend on our ability to attract and retain customers.

We may not succeed in attracting customers during the development stage or for high volume commercial production. For example, we may be unsuccessful at attracting additional customers for QS-0, in which case we may have excess capacity. In addition, if we are unable to attract new customers in need of high-volume commercial production of our products, whether due to inadequate product-market fit or for other reasons, our business may suffer.

Many of our potential customers tend to be large enterprises. Therefore, our future success will depend on our ability to effectively sell 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, including a greater ability to push back on attempts to pass on increased operating and procurement costs, 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.

Our potential customers that are 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.

If the Put or Call Rights under our joint venture agreements with Volkswagen are exercised, the joint venture and Volkswagen's purchase commitment will be terminated and our business could be harmed.

The joint venture structure we agreed to with Volkswagen is intended, in part, to protect our intellectual property. Certain key battery technology will continue to be owned by us and will be provided to the joint venture through a limited license for purposes of QS-1. We and Volkswagen still need to agree on the license terms for this battery technology license for QS-1 Expansion. The joint venture terminates upon the earliest to occur of (i) Volkswagen exercising specified put rights in the event of, amongst others, (a) a change of control of our company, or (b) the failure by us to meet specified development milestones within certain timeframes, (ii) us exercising specified call rights or Volkswagen exercising specified put rights if, among other things, the parties cannot agree to commercial terms for QS-1 or QS-1 Expansion within certain timeframes, (iii) a certain date after commencement of production of a Volkswagen series production vehicle using our battery cells (or an alternative end date if no such production was commenced after certain technical milestones with respect to our battery cell technology were reached) and (iv) December 31, 2028.

The commercialization timeline originally contemplated in 2018 by the joint venture agreements, and by subsequent amendments, has changed, and as of the time of our filing of this annual report on Form 10-K, certain milestones contemplated by the joint venture agreements were not met. As a result, Volkswagen now has the right to exercise its put rights. If Volkswagen exercises such rights, the joint venture with Volkswagen and Volkswagen's commitments to purchase output capacity from the joint venture would terminate, and we would be obligated to purchase Volkswagen's interest in the joint venture for its book value. As of December 31, 2022, the book value of this interest was approximately \$1.7 million and is recorded as a redeemable non-controlling interest in our Consolidated Balance Sheets. To the extent that we and Volkswagen allocate additional money to the joint venture in the future, the cost to us of a decision by Volkswagen to exercise its put rights would increase. There can be no assurance that Volkswagen will not decide to exercise these or any other put rights that it may have in the future with respect to its interest in the joint venture.

In the event that Volkswagen exercises its put rights and the joint venture and Volkswagen's purchase commitment are terminated, our ability to ramp up our production capabilities, our reputation, investors' perception of us, and the price of our Class A Common Stock could be adversely impacted, and our business could be harmed.

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

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 forecasts 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 batteries or our ability to develop, manufacture, and deliver 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 requirements, our suppliers may have inadequate inventory, 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 operating results.

Our future growth and success are dependent upon consumers' willingness to adopt EVs.

Our growth and future demand for our products is highly dependent upon the adoption by consumers of alternative fuel vehicles in general and EVs in particular. In response to the Russian invasion of Ukraine, many countries, companies and consumers have accelerated targets with respect to decreasing dependency on fossil fuels, which in turn is expected to increase demand for EVs; however, the market for new EVs continues to evolve rapidly and is also characterized by rapidly changing technologies, competitive pricing and other competitive factors, evolving government regulation and industry standards, and changing consumer demands and behaviors. If the market for EVs in general does not develop as expected, or develops more slowly than expected, our business, prospects, financial condition and operating results could be harmed.

Concentration of ownership among a few stockholders and our executive officers, directors and their affiliates may prevent other stockholders from influencing significant corporate decisions.

As of December 31, 2022, our executive officers, directors and their affiliates as a group and each of our stockholders who own 5% or more of our outstanding Class A Common Stock or our Class B Common Stock, in the aggregate, beneficially own approximately 28.1% of our Class A Common Stock and 95.7% of our Class B Common Stock outstanding, representing approximately 74.4% of the vote. As a result, these stockholders, including Volkswagen, will be able to exercise a significant level of control over all matters requiring stockholder approval, including the election of directors, any amendment of our Amended and Restated Certificate of Incorporation (the “Certificate of Incorporation”) and approval of significant corporate transactions. In addition, Volkswagen holds the right to designate two directors to our Board. This control could have the effect of delaying or preventing a change of control or changes in our management and will make the approval of certain transactions difficult or impossible without the support of these stockholders and of their votes.

Our Intellectual Property Risks

We rely heavily on our intellectual property portfolio. If we are unable to protect or assert our intellectual property, our business and competitive position would be harmed.

We may not be able to prevent unauthorized use of our intellectual property, which could harm our business and competitive position. We rely upon a combination of the intellectual property protections afforded by patents, trademarks and trade secrets in the United States and other jurisdictions, as well as license agreements and other contractual protections, to establish, maintain and enforce rights in our proprietary technologies. In addition, we seek to protect our intellectual property through nondisclosure and invention assignment agreements with our employees and consultants, and through non-disclosure agreements with business partners and other third parties. Despite our efforts to protect our proprietary rights, third parties, including our business partners, may attempt to copy or otherwise obtain, use or practice our intellectual property without our consent. Monitoring unauthorized use of our intellectual property is difficult and costly, and the steps we have taken or will take to prevent misappropriation may not be sufficient. Any enforcement efforts we undertake, including litigation, could be time-consuming and expensive and could divert management’s attention, which could harm our business, results of operations and financial condition. In addition, existing intellectual property laws and contractual remedies may afford less protection than needed to safeguard our intellectual property portfolio.

Patent, trademark and trade secret laws vary significantly throughout the world. A number of foreign countries do not protect intellectual property to the same extent as do the laws of the United States. Government actions may also undermine our intellectual property. For example, a decree was adopted by the Russian government in March 2022, allowing Russian companies and individuals to exploit inventions owned by patentees from the United States without consent or compensation. Therefore, our intellectual property may not be as strong or as easily enforced outside of the United States and efforts to protect against the unauthorized use of our intellectual property, technology and other proprietary rights may be more expensive and difficult outside of the United States. Failure to adequately protect our intellectual property could result in our competitors using our intellectual property to offer products, potentially resulting in the loss of some of our competitive advantage and a decrease in our revenue which would adversely affect our business, prospects, financial condition and operating results.

We may need to defend ourselves against intellectual property infringement claims, which may be time-consuming and could cause us to incur substantial costs.

Companies, organizations or individuals, including our current and future competitors, may hold or obtain patents, trademarks or other proprietary rights that would prevent, limit or interfere with our ability to make, use, develop or sell our products, which could make it more difficult for us to operate our business. From time to time, we may receive requests from third parties inquiring whether we are infringing their intellectual property and/or seek court declarations that they do not infringe upon our intellectual property. Companies holding patents or other intellectual property relating to batteries, ceramics, electric motors or electronic power management systems may bring suits alleging infringement of such rights or otherwise asserting their rights and seeking licenses. In addition, if we are determined to have infringed upon a third party’s intellectual property, we may be required to do one or more of the following:

- cease selling, incorporating or using products or methods that incorporate or otherwise infringe or misappropriate the challenged intellectual property;
- pay substantial damages;
- obtain a license from the holder of the infringed intellectual property, which license may not be available on reasonable terms or at all; or
- redesign our batteries.

In the event of a successful claim of infringement against us and our failure or inability to obtain a license to the infringed technology on reasonable terms, our business, prospects, operating results and financial condition could be materially adversely affected. In addition, any litigation or claims, whether or not well-founded, could result in substantial costs and diversion of resources and management's attention.

We also license patents and other intellectual property and technology from third parties, and we may face claims that our use of this intellectual property infringes the rights of others. In such cases, we may seek indemnification from our licensors under our license contracts with them. However, our rights to indemnification may be unavailable or insufficient to cover our costs and losses, depending on our use of the technology, whether we choose to retain control over conduct of the litigation, and other factors.

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 our 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. Any of our existing or pending patents may be challenged by others on the basis that they are 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, these patents may still 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 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, prospects, financial condition and operating results.

Our Business Risks

The battery market continues to evolve, is highly competitive, and we may not be successful in competing in this industry or establishing and maintaining confidence in our long-term business prospects among current and future partners and customers.

The battery market in which we compete continues to evolve and is highly competitive. To date, we have focused our efforts on our lithium-metal solid-state battery technology, which is being designed to outperform conventional lithium-ion battery technology. However, lithium-ion battery technology has been widely adopted and our current competitors have, and future competitors may have, greater resources than we do and may also be able to devote greater resources to the development of their current and future technologies. These competitors also may have greater access to customers and may be able to establish cooperative or strategic relationships amongst themselves or with third parties that may further enhance their resources and competitive positioning. In addition, lithium-ion battery manufacturers may continue to reduce cost and expand supply of conventional batteries and therefore reduce the prospects for our business or negatively impact the ability for us to sell our products at a market-competitive price and yet at sufficient margins.

Many automotive OEMs and a number of battery technology companies are researching and investing in solid-state battery efforts and, in some cases, in battery development and production. There are a number of companies seeking to develop alternative approaches to solid-state battery technology, including lithium-metal batteries. In 2022, Volkswagen announced the formation of PowerCo. SE, a company intended to consolidate its activities along the value chain for batteries – from processing raw materials to developing a unified Volkswagen battery to managing the European gigafactories. We expect competition in battery technology and EVs to intensify due to increased demand for these vehicles and a regulatory push for EVs, continuing globalization, and consolidation in the worldwide automotive industry. Developments in alternative technologies or improvements in battery technologies made by competitors may materially adversely affect the sales, pricing and gross margins of our batteries. If a competing technology is developed that has superior operational or price performance, our business will be harmed. Similarly, if we fail to accurately predict and ensure that our battery technology can address customers' changing needs or emerging technological trends, or if our customers fail to achieve the benefits expected from our solid-state batteries, our business will be harmed.

We must continue to commit significant resources to develop our battery technology to establish a competitive position, and these commitments will be made without knowing whether such investments will result in products potential customers will accept. There is no assurance we will successfully identify new customer requirements, develop and bring our batteries to market on a timely basis, or that products and technologies developed by others will not render our batteries obsolete or noncompetitive, any of which would adversely affect our business and operating results.

Customers will be less likely to purchase our batteries if they are not convinced that our business will succeed in the long term. Similarly, suppliers and other third parties will be less likely to invest time and resources in developing business relationships with us if they are not convinced that our business will succeed in the long term. Accordingly, to build and maintain our business, we must maintain confidence among current and future partners, customers, suppliers, analysts, ratings agencies and other parties in our long-term financial viability and business prospects. Maintaining such confidence may be particularly complicated by certain factors including those that are largely outside of our control, such as our limited operating history, market unfamiliarity with our products, any delays in scaling manufacturing, delivery and service operations to meet demand, competition and uncertainty regarding the future of EVs and our eventual production and sales performance compared with market expectations.

We are an early-stage company with a history of financial losses and expect to incur significant expenses and continuing losses from operations for the foreseeable future.

We incurred a loss from operations of approximately \$420.6 million, a net loss of approximately \$411.9 million for the year ended December 31, 2022, respectively, and an accumulated deficit of approximately \$2.4 billion from our inception in 2010 through the year ended December 31, 2022. We believe that we will continue to incur operating losses each quarter until at least the time we begin significant production of our lithium-metal solid-state batteries, and such production is not expected to occur in the near future.

We expect the rate at which we will incur losses to be significantly higher in future periods as we, among other things, continue to incur significant expenses in connection with the design, development and manufacturing of our batteries; expand our research and development activities; invest in manufacturing capabilities; build up inventories of components for our batteries; increase our sales and marketing activities; develop our distribution infrastructure; and increase our general and administrative functions to support our growing operations. We may find that these efforts are more expensive than we currently anticipate or that these efforts may not result in revenues, which would further increase our losses.

Our expectations and targets regarding the times when we will achieve various technical, pre-production and production objectives depend in large part upon assumptions and analyses developed by us. If these assumptions or analyses prove to be incorrect, we may not achieve these milestones when expected or at all.

Our expectations and targets regarding the times when we will achieve various technical, pre-production and production objectives reflect our current expectations and estimates. Whether we will achieve these objectives when we expect depends on a number of factors, many of which are outside our control, including, but not limited to:

- success and timing of development activity;
- unanticipated technical or manufacturing challenges or delays;
- technological developments relating to lithium-ion, lithium-metal solid-state or other batteries that could adversely affect the commercial potential of our technologies;
- whether we can obtain sufficient capital to build our manufacturing facilities and sustain and grow our business;
- adverse developments in our joint venture relationship with Volkswagen, including termination of the joint venture or delays in negotiating commercial terms for QS-1 or QS-1 Expansion;
- our ability to manage our growth;
- whether we can manage relationships with key suppliers;
- our ability to retain existing key management, integrate recent hires and attract, retain and motivate qualified personnel; and
- the overall strength and stability of domestic and international economies.

Unfavorable changes in any of these or other factors, most of which are beyond our control, could materially and adversely affect our ability to achieve our objectives when planned and our business, results of operations and financial results.

We may be negatively impacted by epidemics, pandemics, and other outbreaks.

We face various risks related to epidemics, pandemics, and other outbreaks. For example, the COVID-19 pandemic resulted in changes in consumer and business behavior, a severe market downturn, and restrictions on business and individual activities, as well as in significant volatility in the global economy and reduced economic activity. The spread of COVID-19 also impacted our potential customers and our suppliers by disrupting the manufacturing, delivery and overall supply chain of battery, EV and equipment manufacturers and suppliers and led to a global decrease in battery and EV sales in markets around the world. Specifically, we experienced minor disruptions to the supply of process gas due to the shortage of truck drivers related to the COVID-19 pandemic. In response to the pandemic, government authorities initially implemented numerous measures to try to contain the virus, such as travel bans and restrictions, quarantines, stay-at-home or shelter-in-place orders, and business shutdowns, and later vacillated between the easing of restrictive measures and reinstating such measures or threatening to do so based on the severity of the pandemic. Employees at our headquarters located in San Jose, California were subject to a stay-at-home order from the state and local governments. These measures limited operations in our San Jose headquarters and adversely impacted our employees, research and development activities and operations (especially since various aspects of our business cannot be conducted remotely, including many aspects of the development and manufacturing of our solid-state material and our battery cells) and the operations of our suppliers, vendors and business partners.

In the event of a further epidemic, pandemic or other outbreak, including a resurgence of COVID-19 or a related strain of such virus, we may face similar adverse effects as experienced during the COVID-19 pandemic. For example, we may be required to take a variety of measures as may be required by government authorities or that we determine are in the best interests of our employees, suppliers, vendors and business partners, and any such measures may adversely affect our future manufacturing plans, supply chain sales and marketing activities, business and results of operations.

The extent to which any such epidemic, pandemic or other outbreak would impact our business, prospects and results of operations will depend on future developments, which are highly uncertain and cannot be predicted, including the duration and spread of any such epidemic, pandemic or other outbreak, the actions to contain the outbreak or treat its impact, including the development, distribution and administration of effective vaccines, a waning immunity among persons already vaccinated, an increase in fatigue or skepticism with respect to initial or booster vaccinations, the severity of breakthrough cases and variants, including potentially vaccine-resistant variants, and how quickly and to what extent normal economic and operating activities can resume. Even after any such epidemic, pandemic or other outbreak has subsided, we may continue to experience an adverse impact to our business as a result of the global economic impact, including any recession that has occurred or may occur in the future, or due to changes in consumer behavior, for example an increase in remote work leading to a decrease in demand for automobiles.

Global climate change, an increase in related legal and regulatory requirements and an increased related emphasis on ESG matters by various stakeholders could negatively affect our business.

Increased public awareness and concern over climate change may result in new or increased legal and regulatory requirements to reduce or mitigate the effects of climate change on the environment. Increased costs of energy or compliance with emissions standards due to increased legal or regulatory requirements may cause disruptions in or increased costs associated with our development and manufacturing operations. Any failure to achieve our goals with respect to reducing our impact on the environment or a perception (whether or not valid) of our failure to act responsibly with respect to the environment or to effectively respond to new, or changes in, legal or regulatory requirements concerning climate change or other sustainability concerns could adversely affect our business and reputation.

From time to time, we may be involved in litigation, regulatory actions or government investigations and inquiries, which could have an adverse impact on our profitability and consolidated financial position.

We may be involved in a variety of litigation, other claims, suits, regulatory actions or government investigations and inquiries and commercial or contractual disputes that, from time to time, are significant. See Note 7, Commitments and Contingencies, to the consolidated financial statements elsewhere in this Report for a description of pending litigation matters that we are involved in.

In addition, from time to time, we may also be involved in legal proceedings and investigations arising in the normal course of business including, without limitation, commercial or contractual disputes, including warranty claims and other disputes with potential customers and suppliers; intellectual property matters; personal injury claims; environmental issues; tax matters; and employment matters.

It is difficult to predict the outcome or ultimate financial exposure, if any, represented by these matters, and there can be no assurance that any such exposure will not be material. Such claims may also negatively affect our reputation.

We may become subject to product liability claims, which could harm our financial condition and liquidity if we are not able to successfully defend or insure against such claims.

We may become subject to product liability claims, even those without merit, which could harm our business, prospects, operating results, and financial condition. We face inherent risk of exposure to claims in the event our batteries do not perform as expected, fail to meet relevant safety standards or requirements, or malfunction resulting in personal injury or death. Our risks in this area are particularly pronounced given our batteries have not yet been commercially tested or mass produced. 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.

Our batteries and our website, systems, and data we maintain may be subject to intentional disruption, other security incidents, or alleged violations of laws, regulations, or other obligations relating to data handling that could result in liability and adversely impact our reputation and future sales.

The research, development, and manufacturing of our batteries, supporting information systems (including internal systems such as research and development systems or external systems such as our website or third-parties' systems), and data that we maintain may be subject to intentional or inadvertent disruption, security incidents, or violations of laws, regulations, or other obligations relating to data handling. Any such matters, or the perceptions that any of them have occurred, that could result in private claims, demands and litigation, regulatory investigations and other proceedings, and fines and other liabilities and adversely impact our reputation and future sales. 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. Advances in technology, an increased level of sophistication, and an increased level of expertise of hackers, new discoveries in the field of cryptography or other factors can result in a compromise or breach of, or other security incident with respect to, the systems used in our business or of security measures used in our business to protect confidential information, personal information, and other data. Additionally, remote working further increases the security threats that we and our third-party service providers, suppliers, and customers face.

The availability and effectiveness of our batteries, and our ability to conduct our business and operations, depend on the continued operation of information technology and communications systems, some of which we have yet to develop or otherwise obtain the ability to use. Systems used in our business by us and our and our third-party service providers, suppliers, and customers, including data centers and other information technology systems, may be vulnerable to damage or interruption. Such systems could also be subject to break-ins, corporate sabotage or state-sponsored espionage, and intentional acts of vandalism, infection by ransomware, viruses, or other malware, 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, suppliers, customers or others, to among other things, properly implement our software and related security patches and updates. We use service providers to help provide certain services, and any such service providers face similar security and system disruption risks as us. Some of the systems used in our business are not and will not be fully redundant, and our disaster recovery planning cannot account for all eventualities. Any data security incidents or other disruptions to any data centers or other systems used in our business by us and our and our third-party service providers, suppliers, and customers could result in lengthy interruptions in our service and may adversely affect our business, prospects, financial condition and operating results.

Significant capital and other resources may be required in efforts to protect against information security breaches, security incidents, and system disruptions, or to alleviate problems caused by actual or suspected information security breaches and other data security 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, the risk of cyberattacks may be heightened in connection with the Russian invasion of Ukraine. Such cyberattacks could disrupt the economy more generally and could also impact our operations either directly or indirectly.

Security breaches and/or incidents can also remain undetected for an extended period, including situations in which hackers mine data over time or optimize the timing and potency of their cyberattacks or disruptions. Any failure or perceived failure by us or our service providers to prevent information security breaches or other security incidents or system disruptions, or to comply with privacy policies or any actual or asserted legal obligations relating to privacy or information security, or any compromise of security that results in or is perceived or reported to result in unauthorized access to, or loss, theft, alteration, release, transfer, unavailability, or other processing of, our information, or any personal information or other customer data or confidential information, that we or our service providers maintain or otherwise process, could cause our potential customers to lose trust in us, 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, demands, and litigation, regulatory investigations and proceedings, and fines, penalties, and other liability. Any such actual or perceived security breach, security incident or disruption could also divert the efforts of our technical and management personnel and could require us to incur significant costs and operational consequences in connection with investigating, remediating, eliminating and putting in place additional equipment and devices designed to prevent actual or perceived security breaches and other incidents and system disruptions.

Additionally, our handling of data relating to individuals is subject to a variety of laws and regulations relating to privacy, data protection, and data security, and may become subject to additional obligations, including contractual obligations, relating to our maintenance and other processing of this data. Laws, regulations, and other actual and potential obligations relating to privacy, data protection, and data security 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, and 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. Any failure or perceived failure to comply with any applicable laws, regulations, or other obligations relating to privacy, data protection, or data security could also result in regulatory investigations and proceedings, and misuse of or failure to secure data relating to individuals could also result in claims and proceedings against us by governmental entities or others, penalties and other liability, and damage to our reputation and credibility, and could have a negative impact on potential future revenues and profits.

Our insurance policies may not cover all or any of the potential losses arising from any such disruption, failure, security breach, or incident impacting our systems or data or third-party systems where information important to our business operations is maintained.

Our ability to manage our business and monitor results is highly dependent upon IT systems. A failure of these systems or our newly implemented ERP system, or our planned MES implementation could have a material adverse effect on our business.

We are highly dependent upon a variety of IT systems to operate our business. To continue to support our growth, we are making significant technological upgrades to our information systems. We implemented a new ERP system in the second quarter of 2022, and we will continue to make investment in improving and adding new functionality to the ERP system. We will also implement a new manufacturing execution system (“MES”) to perform various functions and improve on the efficiency of our business. These implementations are complicated, lengthy processes that have already required and will continue to require significant human investment, which diverts resources from other operations. Delays in the execution of these project plans, or any divergence from it, may result in cost overruns and, business interruptions. In addition, any divergence from our project plan could negatively impact the timing and/or extent of productivity and process enhancement we expect to achieve from the operation and enhancements to our ERP system and the implementation of our MES system. Failure to properly or adequately address any unaccounted for or unforeseen issues in successfully replacing our legacy systems could negatively impact our ability to support necessary business operations, including, without limitation, fulfilling federal, state and local reporting and filing requirements in a timely or accurate manner, or otherwise operate our business and production lines effectively. In addition, if any issues concerning the new systems result in, or contribute to, a delay in our timely reporting of our results of operations for any period or our not filing one or more periodic reports with the SEC on time, the price of our Class A Common Stock could decline substantially, and we could face costly lawsuits, including securities class actions, and also could impair our ability to raise necessary capital to run our operations and progress our product development efforts. Further, as we are dependent upon our ability to gather and promptly transmit accurate information to key decision makers, our business, results of operations and financial condition may be adversely affected if our information systems do not allow us to transmit accurate information, even for a short period of time. Failure to properly or adequately address these issues could negatively impact our ability to perform necessary business operations, which could adversely affect our reputation, competitive position, business, results of operations and financial condition.

The operation of our new ERP system, and the planned implementation of our MES system could negatively impact the effectiveness of business operations.

Our ERP system is critical to our ability to accurately maintain books and records, provide important information to our management and prepare our consolidated financial statements. Use of our ERP system requires new business and financial processes, and any such changes involve risks, including potential errors, processing inefficiencies and loss of data. If the transition to our ERP system is not successful, and the new system and new processes do not operate as intended, the effectiveness of our internal control over financial reporting could be adversely affected and our ability to assess it adequately could be further impacted. If difficulties in operating our ERP system or related processes result in a material weakness in our internal control over financial reporting, a failure to remediate the material weakness could also negatively impact our ability to prepare our future financial statements in conformity with U.S. GAAP. If we experience ongoing disruptions with such implementation and/or are unable to remediate any such material weakness, such events could have a material adverse effect on our reputation, competitive position, business, results of operations and financial condition.

An MES is an information system that monitors and tracks the process of producing manufactured and research and development goods on the factory floor. The overall goal of the MES is to make certain that manufacturing operations are effectively executed to ensure development and production milestones and deliveries stay on schedule. Any impacts to our MES execution implementation timeline will prevent us from tracking and gathering accurate data associated with our production processes. Delays in our MES deployment could prevent us from accurately predicting product shipments and could result in negative impacts on our factory scaling efforts. If we experience ongoing disruptions with our MES implementation and/or are unable to remediate challenges as they arise, this could affect our reputation with customers, our competitive position, and could impact our ability to scale and grow our manufacturing operation.

The continued investment in ramping up our operations, enhancements to the ERP systems and implementation of our MES will involve substantial expenditures, as well as design, development and implementation activities. Until the new systems are fully implemented and operational, we expect to incur additional expenses and capital expenditures to implement and test the systems, and there can be no assurance that issues relating to the systems will not occur or be identified. Our business and results of operations may be adversely affected if we experience operating problems, additional costs, or cost overruns during the implementation process, or if the systems or any related processes change significantly.

We are subject to anti-corruption, anti-bribery, anti-money laundering, financial and economic sanctions and similar laws, and non-compliance with such laws can subject us to administrative, civil and criminal fines and penalties, collateral consequences, remedial measures and legal expenses, all of which could adversely affect our business, results of operations, financial condition and reputation.

We are subject to anti-corruption, anti-bribery, anti-money laundering, financial and economic sanctions and similar laws and regulations in various jurisdictions in which we conduct or in the future may conduct activities, including the U.S. Foreign Corrupt Practices Act (“FCPA”), the U.K. Bribery Act 2010, and other anti-corruption laws and regulations. The FCPA and the U.K. Bribery Act 2010 prohibit us and our officers, directors, employees and business partners acting on our behalf, including agents, from corruptly offering, promising, authorizing or providing anything of value to a “foreign official” for the purposes of influencing official decisions or obtaining or retaining business or otherwise obtaining favorable treatment. The FCPA also requires companies to make and keep books, records and accounts that accurately reflect transactions and dispositions of assets and to maintain a system of adequate internal accounting controls. The U.K. Bribery Act also prohibits non-governmental “commercial” bribery and soliciting or accepting bribes. A violation of these laws or regulations could adversely affect our business, results of operations, financial condition and reputation. Our policies and procedures designed to ensure compliance with these regulations may not be sufficient and our directors, officers, employees, representatives, consultants, agents, and business partners could engage in improper conduct for which we may be held responsible.

Non-compliance with anti-corruption, anti-bribery, anti-money laundering or financial and economic sanctions laws could subject us to whistleblower complaints, adverse media coverage, investigations, and severe administrative, civil and criminal sanctions, collateral consequences, remedial measures and legal expenses, all of which could materially and adversely affect our business, results of operations, financial condition and reputation. In addition, changes in economic sanctions laws in the future could adversely impact our business and investments in our Class A Common Stock.

Recent and potential tariffs imposed by the U.S. government or a global trade war could increase costs and inhibit future sales of our products, which could have a material adverse effect on our business, financial condition and results of operations.

The U.S. government has and continues to make significant changes in U.S. trade policy and has taken certain actions that could negatively impact U.S. trade, including imposing tariffs on certain imported goods and prohibiting certain imports into the United States. In retaliation, China has implemented, and continues to evaluate imposing additional tariffs on a wide range of American products. There is also a concern that the imposition of additional tariffs by the United States could result in the adoption of tariffs by other countries as well, leading to a global trade war. More specifically, the U.S. government has from time to time imposed significant tariffs on and prohibited imports of certain product categories imported from China. Such tariffs and prohibitions, if expanded to other categories, could have a significant impact on our business, particularly the importation of parts of our batteries and certain production equipment that is manufactured in, or with inputs from, China. If we attempt to renegotiate prices with suppliers or diversify our supply chain in response to tariffs, such efforts may not yield immediate results or may be ineffective. We might also consider increasing prices to the end consumer; however, this could reduce the competitiveness of our products and adversely affect net sales. If we fail to manage these dynamics successfully, gross margins and profitability could be adversely affected. As of the date of this report, tariffs have not had a material impact on our business, but increased tariffs or trade restrictions implemented by the United States or other countries in connection with a global trade war could have a material adverse effect on our business, financial condition and results of operations. We cannot predict what actions may ultimately be taken with respect to tariffs or trade relations between the United States and China or other countries, what products may be subject to such actions, or what actions may be taken by the other countries in retaliation. Any further deterioration in the relations between the United States and China could exacerbate these actions and other governmental intervention.

The U.S. or foreign governments may take additional administrative, legislative, or regulatory action that could materially interfere with our ability to sell products in certain countries. Sustained uncertainty about, or worsening of, current global economic conditions and further escalation of trade tensions between the United States and its trading partners, especially China, could result in a global economic slowdown and long-term changes to global trade, including retaliatory trade restrictions which may have an adverse effect on our business, financial condition and results of operations. Any alterations to our business strategy or operations made in order to adapt to or comply with any such changes would be time-consuming and expensive, and certain of our competitors may be better suited to withstand or react to these changes.

Our management has limited experience in operating a public company.

Some of our executive officers have limited experience in the management of a publicly traded company. As a public company, we are subject to significant regulatory oversight and reporting obligations under federal securities laws, and certain executives' limited experience in dealing with the increasingly complex laws pertaining to public companies could be a significant disadvantage in that it is likely that an increasing amount of their time may be devoted to these activities which will result in less time being devoted to the management and growth of our Company. 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.

Our Regulatory Risks

We are subject to substantial regulation and unfavorable changes to, or failure by us to comply with, these regulations could substantially harm our business and operating results.

Our batteries, and the sale of EVs and motor vehicles in general, are subject to substantial regulation under international, federal, state and local laws, including export control laws. We expect to incur significant costs in complying with these regulations. Regulations related to the battery and EV industry and alternative energy are currently evolving and we face risks associated with changes to these regulations as well as potentially also to heightened regulatory scrutiny. For example, laws and regulations may be passed that make manufacturers financially responsible for the collection, treatment, recycling and disposal of certain products, including batteries for EVs. The costs of complying with such requirements, as they now exist or as may be introduced in the future, and the associated administrative burden could adversely affect our financial condition and results of operations, particularly if we are unable to pass on such costs to our customers.

As a result of the Company's status as a special purpose acquisition company before the Business Combination, we are also subject to regulations and legal circumstances that differ from other publicly traded companies that did not complete a business combination.

Internationally, there may be laws and regulations in 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. The laws in this area can be complex, difficult to interpret and may change over time. Continued regulatory limitations and other obstacles that may interfere with our ability to commercialize our products could have a negative and material impact on our business, prospects, financial condition and results of operations.

To the extent regulations change, we may not comply with applicable international, federal, state or local regulations, which would have an adverse effect on our business. Compliance with changing regulations could be burdensome, time consuming, and expensive. To the extent compliance with new regulations is cost prohibitive, our business, prospects, financial condition and operating results would be adversely affected.

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, including used battery recycling, recovery and reuse requirements, may become more stringent in the future, which could increase costs of compliance or require us to manufacture our products using 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 will have 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 safety incidents that damage machinery or our products, 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.

Risks Related to Ownership of Our Common Stock and Our Certificate of Incorporation and Bylaws Provisions

Our Class A Common Stock has been and may in the future continue to be subject to extreme volatility.

The trading price of our Class A Common Stock has been and may in the future continue to be subject to extreme volatility. For example, from November 27, 2020, the date our Class A Common Stock began trading on the New York Stock Exchange ("NYSE"), through December 31, 2022, our Class A Common Stock has experienced an intra-day trading high of \$132.73 per share and an intra-day trading low of \$5.11 per share. At certain times during such period, the daily fluctuations in the trading price of our Class A Common Stock were substantially greater than 10%. We cannot predict the magnitude of future fluctuations in the trading price of our Class A Common Stock. The trading price of our Class A Common Stock may be affected by a number of factors, including events described in the risk factors set forth in this Report and in our other reports filed with the SEC from time to time, as well as our operating results, financial condition and other events or factors. Any of the factors listed below could have a material adverse effect on your investment in our securities. Factors affecting the trading price of our securities may include:

- announcements by us or our competitors regarding technical developments and levels of performance achieved by our or their battery technologies;
- announcements by us regarding the timing of our production objectives, including regarding QS-0, QS-1, and QS-1 Expansion;
- announcements by us or Volkswagen regarding developments in our relationship with Volkswagen;
- our ability to bring our products and technologies to market on a timely basis, or at all;
- our operating results or development efforts failing to meet the expectation of securities analysts or investors in a particular period;
- actual or anticipated fluctuations in our quarterly financial results or the quarterly financial results of companies perceived to be similar to it;
- changes in the market's expectations about our operating results or the EV industry;
- success of competitors actual or perceived development efforts;
- changes in financial estimates and recommendations by securities analysts concerning the Company or the battery industry in general;
- operating and share price performance of other companies that investors deem comparable to the Company;
- disputes or other developments related to proprietary rights, including patents, litigation matters and our ability to obtain intellectual property protection for our technologies;
- changes in laws and regulations affecting our business;
- our ability to meet compliance requirements;

- commencement of, or involvement in, litigation involving the Company;
- changes in our capital structure, such as future issuances of securities or the incurrence of additional debt;
- the volume of shares of Class A Common Stock available for public sale;
- the level of demand for our stock, including the amount of short interest in our Class A Common Stock;
- any major change in our Board or management;
- sales of substantial amounts of the shares of Class A Common Stock by our directors, executive officers or significant stockholders or the perception that such sales could occur;
- changes in the estimates and assumptions that we make in the preparation of our financial statements may result in the fluctuation of our results of operations; and
- general economic and political conditions such as recessions, interest rates, fuel prices, international currency fluctuations, acts of terrorism, hostilities or the perception that hostilities may be imminent, and military conflict and acts of war.

Broad market and industry factors may materially harm the market price of our securities irrespective of our operating performance. The stock market has experienced price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of the particular companies affected. The trading prices and valuations of securities may not be predictable. A loss of investor confidence in the market or the securities of other companies which investors perceive to be similar to the Company could depress the market price of our securities regardless of our business, prospects, financial conditions or results of operations. A decline in the market price of our securities also could adversely affect our ability to issue additional securities and our ability to obtain additional financing in the future.

Following certain periods of volatility in the market price of our securities, we may become the subject of securities litigation. We have experienced and may in the future experience additional litigation following periods of volatility. This type of litigation may result in substantial costs and a diversion of management's attention and resources.

Sales of substantial amounts of our Class A Common Stock in the public markets, or the perception that such sales could occur, could reduce the price that our Class A Common Stock might otherwise attain.

Sales of a substantial number of shares of our Class A Common Stock in the public market, or the perception that such sales could occur, could adversely affect the market price of our Class A Common Stock and may make it more difficult for you to sell your Class A Common Stock at a time and price that you deem appropriate.

In connection with the Business Combination Agreement and the transactions contemplated by the Business Combination Agreement, certain holders of our securities entered into certain lock-up agreements, pursuant to which they agreed to certain restrictions on the transfer of our securities.

In addition, we have filed registration statements with the SEC to register shares for certain stockholders to sell such shares. We have also filed a registration statement with the SEC to register shares reserved for future issuance under our equity compensation plans. Subject to there being effective registration statements covering the sales of such shares, the satisfaction of applicable exercise periods and expiration of the lock-up agreements referred to above, the shares issued upon exercise of outstanding stock options and settlement of outstanding restricted stock units ("RSUs") will be available for immediate resale in the open market.

Our business model of manufacturing solid-state batteries is capital-intensive, and we may not be able to raise additional capital on attractive terms, if at all, which could be dilutive to stockholders. If we cannot raise additional capital when needed, our operations and prospects could be materially and adversely affected.

The development, design, manufacture and sale of batteries is a capital-intensive business, which we have financed through joint venture arrangements, other third-party financings and issuance of additional equity. As a result of the capital-intensive nature of our business, we can be expected to continue to sustain substantial operating expenses without generating sufficient revenues to cover expenditures. Over time, we expect that we will need to raise additional funds, including through entry into new or extending existing joint venture arrangements, through the issuance of equity, equity-related or debt securities or through obtaining credit from financial institutions to fund, together with our principal sources of liquidity, ongoing costs such as research and development relating to our batteries, the construction of large factories, any significant unplanned or accelerated expenses, and new strategic investments. We cannot be certain that additional capital will be available on attractive terms, if at all, when needed, which could be dilutive to stockholders, and our financial condition, results of operations, business and prospects could be materially and adversely affected.

Short sellers may engage in manipulative activity that could drive down the market price of our Class A Common Stock.

Short selling is the practice of selling securities that the seller does not own but rather has borrowed or intends to borrow from a third party with the intention of later buying lower priced identical securities to return to the lender. Accordingly, it is in the interest of a short seller of our Class A Common Stock for the price to decline. Some short sellers publish, or arrange for the publication of, opinions about or characterizations of our business which may create negative market momentum. Issuers, like us, whose securities have historically had limited trading history or volumes and/or have been susceptible to relatively high volatility levels can be particularly vulnerable to such short seller attacks. No assurances can be made that similar declines in the market price of our Class A Common Stock will not occur in the future, in connection with the activities of short sellers.

We are required to use judgments in making estimates and assumptions in the preparation of our consolidated financial statements, and our results of operations may fluctuate significantly as a result of changes to our estimates and assumptions.

Certain of our accounting policies require the application of subjective or complex judgments, often requiring us to make estimates about the effects of matters that are inherently uncertain and may change in subsequent periods, or for which the use of different estimates that could have reasonably been used in the current period would have had a material impact on our financial condition and results of operations.

All stock-based awards are required to be recognized based on their estimated grant date fair values. The amount recognized could vary depending on a number of assumptions or changes that may occur. We have granted stock-based awards to our Chief Executive Officer and other members of our management team pursuant to the Extraordinary Performance Award Program (the “EPA Program”). EPA Program awards have a vesting schedule based on the attainment of both performance (e.g., business milestones) and market conditions (e.g., stock price target).

For awards containing service, performance and market conditions, where all conditions must be satisfied prior to vesting, such as the EPA Program awards, compensation expense is recognized over the requisite service period, which is based on management’s estimate of the probability and timing of the performance condition being satisfied, assessed at each reporting period. These estimates require management’s judgments and changes in the probability-based assumptions can materially affect the timing of recognition of stock-based compensation expense and consequently, the related amount recognized in our statements of operations and comprehensive income.

The dual class structure of our Common Stock has the effect of concentrating voting control with the current holders of Class B Common Stock. This will limit or preclude the ability of other stockholders to influence corporate matters, including the outcome of important transactions, including a change in control.

Shares of Class B Common Stock have 10 votes per share, while shares of Class A Common Stock have one vote per share. As of December 31, 2022, the holders of the Class B Common Stock (excluding the voting power of any shares of Class A Common Stock beneficially owned by such holders) control approximately 68.5% of the voting power of our capital stock and therefore collectively control matters submitted to our stockholders for approval, including the election of directors, amendments of our organizational documents and any merger, consolidation, sale of all or substantially all of our assets or other major corporate transactions. Even though these holders are not party to any agreement that requires them to vote together, they may have interests that differ from yours and may vote in a way with which you disagree, and which may be adverse to your interests. This concentrated control may have the effect of delaying, preventing or deterring a change in control of us, could deprive our stockholders of an opportunity to receive a premium for their capital stock as part of a sale of us, and might ultimately affect the market price of shares of our Class A Common Stock.

Our dual class structure may depress the trading price of the Class A Common Stock.

We cannot predict whether our dual class structure will result in a lower or more volatile market price of the Class A Common Stock or in adverse publicity or other adverse consequences. For example, certain index providers have announced restrictions on including companies with multiple-class share structures in certain of their indexes. S&P Dow Jones and FTSE Russell have announced changes to their eligibility criteria for inclusion of shares of public companies on certain indices, including the S&P 500, pursuant to which companies with multiple classes of shares of common stock are excluded. In addition, several stockholder advisory firms have announced their opposition to the use of multiple class structures. As a result, the dual class structure of our Common Stock may cause stockholder advisory firms to publish negative commentary about our corporate governance practices or otherwise seek to cause us to change our capital structure. Any such exclusion from indices or any actions or publications by stockholder advisory firms critical of our corporate governance practices or capital structure could adversely affect the value and trading market of the Class A Common Stock.

Anti-takeover provisions in our Certificate of Incorporation or Bylaws and Delaware law could make an acquisition of us more difficult, limit attempts by our stockholders to replace or remove our management and limit the market price of our Class A Common Stock.

Our Certificate of Incorporation, our amended and restated Bylaws (the “Bylaws”) and Delaware law contain provisions which could have the effect of rendering more difficult, delaying or preventing an acquisition deemed undesirable by our Board. These provisions include:

- authorizing “blank check” preferred stock, which could be issued by our Board without stockholder approval and may contain voting, liquidation, dividend and other rights superior to the Common Stock;
- limiting the liability of, and providing indemnification to, our directors and officers;
- prohibiting cumulative voting in the election of directors;
- providing that vacancies on our Board may be filled only by majority of directors then in office of our Board, even though less than a quorum;
- prohibiting the ability of our stockholders to call special meetings;
- establishing advance notice procedures for stockholder proposals to be brought before an annual meeting, including proposed nominations of persons for election to our Board;
- requiring that, once there are no longer any outstanding shares of the Class B Common Stock, any action to be taken by our stockholders be effected at a duly called annual or special meeting and not by written consent;
- specifying that special meetings of our stockholders can be called only by a majority of our Board, the chair of our Board, or our Chief Executive Officer;
- requiring the approval of holders of at least two-thirds of the outstanding voting securities to amend the Bylaws and certain provisions of the Certificate of Incorporation once there are no longer any outstanding shares of Class B Common Stock; and
- reflecting two classes of Common Stock.

These provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our Board, which is responsible for appointing the members of our management. In addition, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law (“DGCL”), which generally prohibits a Delaware corporation from engaging in any of a broad range of business combinations with any “interested” stockholder for a period of three years following the date on which the stockholder became an “interested” stockholder.

Our Bylaws provide, subject to limited exceptions, that the Court of Chancery of the State of Delaware and the federal district courts of the United States will be the sole and exclusive forum for certain stockholder litigation matters, which could limit our stockholders’ ability to obtain a chosen judicial forum for disputes with us or our directors, officers, employees or stockholders.

Our Bylaws provide that, unless otherwise consented to by us in writing, the Court of Chancery of the State of Delaware (or, if the Court of Chancery does not have jurisdiction, another State court in Delaware or the federal district court for the District of Delaware) shall, to the fullest extent permitted by law, be the sole and exclusive forum for the following types of actions or proceedings: (i) any derivative action or proceeding brought on behalf of the Company; (ii) any action asserting a claim of breach of a fiduciary duty owed by, or otherwise wrongdoing by, any of our directors, officers, or other employees to us or our stockholders; (iii) any action arising pursuant to any provision of the DGCL or the Certificate of Incorporation or the Bylaws; (iv) any action to interpret, apply, enforce or determine the validity of the Certificate of Incorporation or the Bylaws; or (v) any other action asserting a claim that is governed by the internal affairs doctrine, in all cases subject to the court having jurisdiction over indispensable parties named as defendants. The Bylaws further provide that, unless otherwise consented to by the Company in writing, the federal district courts of the United States will be the sole and exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act against any person in connection with any offering of the Company’s securities, including any auditor, underwriter, expert, control person or other defendant. These provisions would not apply to suits brought to enforce a duty or liability created by the Exchange Act.

Any person or entity purchasing, holding or otherwise acquiring any interest in our securities shall be deemed to have notice of and consented to these provisions. These choice of forum provisions may limit a stockholder’s ability to bring a claim in a judicial forum of its choosing for disputes with the Company or any of our directors, officers, other employees or stockholders, which may discourage lawsuits with respect to such claims. 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. It is possible that a court could find these types of provisions to be inapplicable or unenforceable, and if a court were to find the choice of forum provisions contained in the Bylaws to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could harm our business, operating results and financial condition.

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 never occur, as the only way to realize any future gains on their investment.

General Risk Factors

If we are unable to attract and retain key employees and qualified personnel, our ability to compete could be harmed.

Our success depends on our ability to attract and retain our executive officers, key employees and other qualified personnel, and our operations may be severely disrupted if we lose their services. As we build our brand and become more well known, there is increased risk that competitors or other companies will seek to hire our personnel. None of our employees are bound by a non-competition agreement. The failure to attract, integrate, train, motivate and retain these personnel could seriously harm our business and prospects.

In addition, we are highly dependent on the services of Jagdeep Singh, our Chief Executive Officer, and other senior technical and management personnel, including our executive officers, who would be difficult to replace. If Mr. Singh or other key personnel were to depart, this could negatively impact our prospects, triggering further departures and limiting the Company's ability to operate and grow our business.

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, epidemics, pandemics, and other calamities. We cannot assure you that any backup systems will be adequate to protect us 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.

Any financial or economic crisis, or perceived threat of such a crisis, including a significant decrease in consumer confidence, may materially and adversely affect our business, financial condition, and results of operations.

In recent years, the United States and global economies suffered dramatic downturns as the result of the COVID-19 pandemic, a deterioration in the credit markets and related financial crisis as well as a variety of other factors including, among other things, extreme volatility in security prices, severely diminished liquidity and credit availability, ratings downgrades of certain investments and declining valuations of others. The United States and certain foreign governments have taken unprecedented actions in an attempt to address and rectify these extreme market and economic conditions by providing liquidity and stability to the financial markets. If in future crises governments refuse to take such actions or if the actions taken by these governments are not successful, the resulting adverse economic conditions may negatively impact the demand for our solid-state battery cells and may negatively impact our ability to raise capital, if needed, on a timely basis and on acceptable terms or at all.

Our results of operations and financial condition could be materially affected by the enactment of legislation implementing changes in the U.S. or foreign taxation of business activities or the adoption of other tax reform policies.

As we expand the scale of our business activities, any changes in the U.S. or foreign taxation of such activities may increase our worldwide effective tax rate and harm our business, results of operations, and financial condition. For example, the current administration has proposed to increase the U.S. corporate income tax rate, increase U.S. taxation of international business operations, and impose a global minimum tax which has agreement from many countries and the Organisation for Economic Co-operation and Development. In addition, the Inflation Reduction Act of 2022 signed into law on August 16, 2022 (the "IRA") includes numerous incentives and tax credits aimed at reducing the effects of climate change, such as the extension of electric vehicle charging infrastructure tax credits under Section 30C and tax credits for electric vehicles under Section 30D of the Internal Revenue Code of 1986 (the "Code"), the expansion of advanced manufacturing tax credits under Section 48C and enactment of advanced manufacturing production credits for eligible component production in the United States under Section 48X of the Code. Such tax credits may potentially benefit incumbents more than new entrants, and consequently have adverse competitive effects for new entrants. However, the full impact of the IRA cannot be known, and many of the IRA's provisions 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. These incentives may also 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. Any other reduction in rebates, tax credits or other financial incentives could materially reduce the demand for EVs, which could adversely impact the battery demand for EVs, or materially reduce the amount of incentives available for the manufacture of our products and have an adverse impact on our business. The impact of future changes to U.S. and foreign tax law on our business is uncertain and could be adverse, and we will continue to monitor and assess the impact of any such changes.

Our ability to use our deferred tax assets to offset future taxable income is subject to certain limitations, which may have a material impact on our business, financial condition or results of operations.

In general, under Section 382 of the Code, a corporation that undergoes an “ownership change” is subject to limitations on its ability to use its pre-change net operating loss carryforwards (“NOLs”), to offset future taxable income. The limitations apply if a corporation undergoes an “ownership change,” which is generally defined as a greater than 50 percentage point change (by value) in its equity ownership by certain stockholders over a three-year period. If we have experienced an ownership change at any time since our incorporation, we may already be subject to limitations on our ability to utilize our existing NOLs and other tax attributes to offset taxable income or tax liability. In addition, future changes in our stock ownership, which may be outside of our control, may trigger an ownership change. Similar provisions of state tax law may also apply to limit our use of accumulated state tax attributes. As a result, even if we earn net taxable income in the future, our ability to use it or our pre-change NOL carryforwards and other tax attributes to offset such taxable income or tax liability may be subject to limitations, which could potentially result in increased future income tax liability to us.

There is also a risk that changes in law or regulatory changes, including suspensions on the use of net operating losses or tax credits, possibly with retroactive effect, may result in our existing net operating losses or tax credits expiring or otherwise being unavailable to offset future income tax liabilities.

Due to such limitations and changes in law, certain of our deferred tax assets may expire unutilized or underutilized, which could prevent us from offsetting future taxable income. We continue to assess the realizability of our deferred tax assets in the future. Future adjustments in our valuation allowance may be required, which may have a material impact on our quarterly and annual operating results.

Our insurance coverage may not be adequate to protect us from all business risks.

We may be subject, in the ordinary course of business, to losses resulting from products liability, accidents, acts of God, and other claims against us, for which we may have no insurance coverage. As a general matter, the policies that we do have may include significant deductibles or self-insured retentions, and we cannot be certain that our insurance coverage will be sufficient to cover all future losses or claims against us. A loss that is uninsured or which exceeds policy limits may require us to pay substantial amounts, which could adversely affect our financial condition and operating results.

We have incurred and will continue to incur significant expenses and administrative burdens as a public company, which could have an adverse effect on our business, financial condition and results of operations.

Our Class A Common Stock is listed on the NYSE under the symbol “QS”. As a public company, we incur significant legal, accounting, administrative and other costs and expenses associated with corporate governance requirements and listing standards that are applicable to public companies. If we were to fail to meet such requirements and standards and if the NYSE were to consequently delist our Class A Common Stock from trading on its exchange 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.

In addition, the Sarbanes-Oxley Act of 2002 (the “Sarbanes-Oxley Act”), including the requirements of Section 404, as well as rules and regulations subsequently implemented by the SEC, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 and any rules and regulations promulgated and to be promulgated thereunder, the PCAOB and the securities exchanges, impose additional reporting and other obligations on public companies. Meeting the standards and controls required of a public company in the United States requires significant ongoing costs. It is possible that we will be required to further expand our employee base and hire additional employees to support our operations, particularly as such standards and controls continue to change over time, which will increase our operating costs in future periods.

Compliance with evolving public company requirements may continue to increase costs and make certain activities more time-consuming. For example, we have created new Board committees and adopted new internal controls and disclosure controls and procedures. In addition, expenses associated with SEC reporting requirements already have been and will continue to be incurred. Furthermore, if any issues in complying with those requirements are identified, such as material weakness in our internal controls that require a restatement of previously issued consolidated financial statements, we could incur additional costs rectifying those or new issues, and the existence of these issues could adversely affect our reputation or investor perceptions of it. It has also become more expensive to obtain director and officer liability insurance. Risks associated with our status as a public company may make it more difficult to attract and retain qualified persons to serve on our Board or as executive officers. The reporting and other obligations imposed by these rules and regulations have resulted in and may continue to result in significant accounting, administrative, financial compliance and legal costs. These costs have required and may continue to require us to divert a significant amount of money that could otherwise be used to expand the business and achieve strategic objectives. Advocacy efforts by stockholders and third parties may also prompt additional changes in governance and reporting requirements, which could further increase costs.

If we experience material weaknesses in the future or otherwise fail to maintain an effective system of internal controls in the future, our business could be adversely affected, and we may not be able to accurately report our financial condition or results of operations which may adversely affect investor confidence in us and, as a result, the value of our Class A Common Stock.

As a public company, we are required, under Section 404 of the Sarbanes-Oxley Act, to furnish annual reports by management on, among other things, the effectiveness of our internal control over financial reporting. This assessment needs to include disclosure of any material weaknesses identified by our management in our internal control over financial reporting. A material weakness is a deficiency or combination of deficiencies in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of a company's annual and interim financial statements will not be detected or prevented on a timely basis. If we identify one or more material weaknesses in our internal control over financial reporting, we will be unable to assert that our internal controls are effective. The effectiveness of our controls and procedures may be limited by a variety of factors, including:

- faulty human judgment and simple errors, omissions or mistakes;
- fraudulent action of an individual or collusion of two or more people;
- inappropriate management override of procedures; and
- the possibility that any enhancements to controls and procedures may still not be adequate to assure timely and accurate financial control.

Pursuant to the Sarbanes-Oxley Act and the rules and regulations promulgated by the SEC, we are required to furnish in this Report a report by our management regarding the effectiveness of our internal control over financial reporting. The report includes, among other things, an assessment of the effectiveness of our internal control over financial reporting as of the end of our fiscal year, including a statement as to whether or not our internal control over financial reporting is effective. This assessment must include disclosure of any material weaknesses in our internal control over financial reporting identified by management. As of September 30, 2021, we remediated the material weakness that was identified in connection with the restatement of previously issued consolidated financial statements as of and for the period ended December 31, 2020. While we believe our internal control over financial reporting is currently effective, the effectiveness of our internal controls in future periods is subject to the risk that our controls may become inadequate because of changes in conditions. Establishing, testing and maintaining an effective system of internal control over financial reporting requires significant resources and time commitments on the part of our management and our finance staff, may require additional staffing and infrastructure investments and would increase our costs of doing business.

In addition, under the federal securities laws, our auditors are required to express an opinion on the effectiveness of our internal controls. If we are unable to confirm that our internal control over financial reporting is effective, or if our independent registered public accounting firm is unable to express an opinion on the effectiveness of our internal controls, we could lose investor confidence in the accuracy and completeness of our financial reports, which could cause the price of our Class A Common Stock to decline.

Our disclosure controls and procedures may not prevent or detect all errors or acts of fraud.

We are subject to the periodic reporting requirements of the Exchange Act. We designed our disclosure controls and procedures to provide reasonable assurance that information we must disclose in reports we file or submit under the Exchange Act is accumulated, communicated to management, recorded, processed, summarized and reported within the time periods specified in the rules and forms of the SEC. We believe that any disclosure controls and procedures, no matter how well-conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met.

These inherent limitations include the realities that judgments in decision-making can be faulty, and that breakdowns can occur because of simple error or mistake. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people or by an unauthorized override of the controls. Accordingly, because of the inherent limitations in our control system, misstatements due to error or fraud may occur and not be detected.

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

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

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

We are headquartered in San Jose, California. Our facilities, which are primarily in San Jose, California include various leased properties for our offices and engineering, research and development, and pre-pilot manufacturing activities.

Item 3. Legal Proceedings.

Information regarding legal proceedings is available in Note 7, Commitments and Contingencies, to the consolidated financial statements in this Report.

Item 4. Mine Safety Disclosures.

Not applicable.

PART II

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

Market Information

Our Class A Common Stock is listed on NYSE under the symbol “QS”. Our Class B Common Stock is neither listed nor traded.

Holders

As of February 21, 2023, there were approximately 59 holders of record of our shares of Class A Common Stock and approximately 10 holders of record of our shares of Class B Common Stock. 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.

Dividends

We have never declared or paid cash dividends on our common stock. We currently do not anticipate declaring any cash dividends to holders of our common stock in the foreseeable future.

Recent Sales of Unregistered Equity Securities

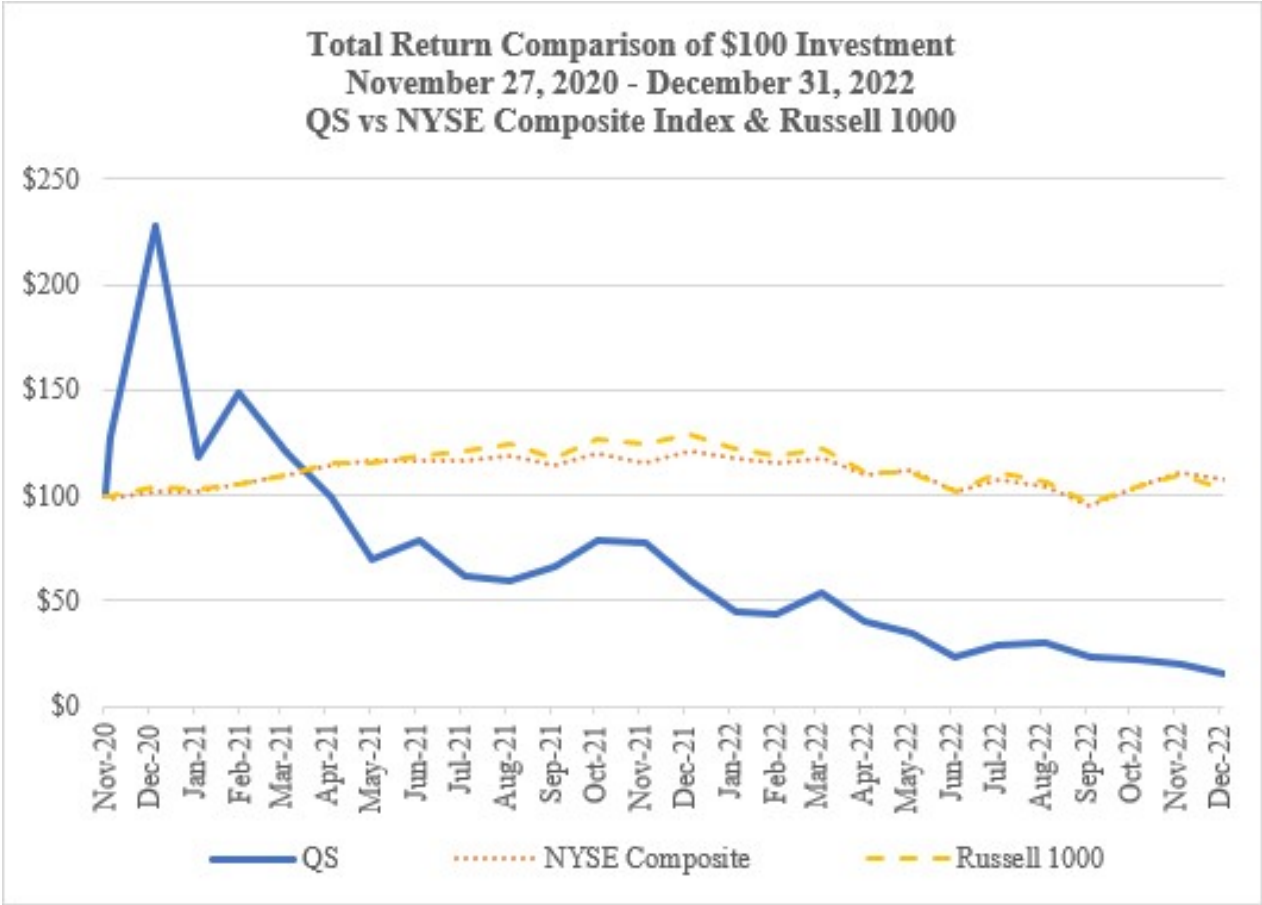
None.

Issuer Purchases of Equity Securities

None.

Performance Graph

The following chart compares the changes in cumulative total return on our Class A Common Stock with the changes in cumulative total returns on the New York Stock Exchange Composite Index and the total returns on Russell 1000 Index for the period from November 27, 2020 (the first date our Class A Common Stock began trading on the NYSE) through December 31, 2022. The chart assumes \$100 was invested in each of the Company's common stock, the New York Stock Exchange Composite Index and the Russell 1000 Index on November 27, 2020. The comparisons in this chart are required by the SEC and are not intended to forecast or be indicative of the possible future performance of our common stock.



Item 6. [Reserved]

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

On November 25, 2020, Kensington acquired us. The Business Combination was accounted for as a reverse recapitalization in accordance with U.S. GAAP. Under this method of accounting, Kensington was treated as the “acquired” company for financial reporting purposes. Except as otherwise provided herein, our financial statement presentation includes (1) the results of Legacy QuantumScape and its consolidated subsidiaries as our accounting predecessor for periods prior to the completion of the Business Combination, and (2) the results of the Company (including the consolidation of Legacy QuantumScape and its subsidiaries) for periods after the completion of the Business Combination.

The following discussion and analysis should be read in conjunction with our audited consolidated financial statements and the related notes appearing elsewhere in this Report. This discussion may contain forward-looking statements based upon current expectations that involve risks and uncertainties. Our actual results may differ materially from those anticipated in these forward-looking statements as a result of various factors, including those set forth in the section titled “*Risk Factors*” as set forth in this Report. Unless the context otherwise requires, references in this “*Management’s Discussion and Analysis of Financial Condition and Results of Operations*” to “Legacy QuantumScape”, “the Company”, “we”, “us” and “our” refer to the business and operations of Legacy QuantumScape and its consolidated subsidiaries prior to the Business Combination and to QuantumScape Corporation and its consolidated subsidiaries, following the closing of the Business Combination.

Overview

We are developing next-generation battery technology for EVs and other applications. We believe that our technology will enable a new category of battery that meets the requirements for broader market adoption. The lithium-metal solid-state battery technology that we are developing is being designed to offer greater energy density, faster charging, and greater safety when compared to today’s conventional lithium-ion batteries.

We are a development stage company with no revenue to date, have incurred a net loss from operations of approximately \$420.6 million for the year ended December 31, 2022, and an accumulated deficit of approximately \$2.4 billion from our inception through December 31, 2022. We expect to incur significant expenses and continuing losses for the foreseeable future.

Key Trends, Opportunities and Uncertainties

We are a pre-revenue company. We believe that our performance and future success depend on several factors that present significant opportunities for us but also pose significant risks and challenges, including those discussed below and in the section titled “*Risk Factors*” appearing elsewhere in this Report.

Product Development

We are developing our battery technology with the goal of commercialization via the production of C-sample battery cells made available for sale to a third party. We have demonstrated capabilities of our solid-state separator and battery technology in single-layer and multi-layer cell cycling data, and in 2022, shipped our first 24-layer A0 prototype battery cells to multiple automotive OEMs for testing. Following such shipment, we plan to focus our research and development on subsequent generations of prototype samples incorporating advances in cell functionality, process and reliability, as well as bringing online the manufacturing capability of our QS-0 line, as further described under the “Research and Development” section in Item 1 above. Our team of scientists, engineers, technicians, and other staff is highly motivated and committed to solving these challenges ahead. However, any delays in the completion of our research and development programs will require additional cash use and delay market entry. As we expand the capabilities of our engineering line, and build-out and bring up QS-0 and QS-1, we expect our rate of cash utilization to also increase significantly.

Process Development

Our architecture depends on our proprietary solid-state ceramic separator which we plan to manufacture ourselves. Though our separator’s design is unique, its manufacturing relies on established or similar, high-volume production processes already deployed in other industries.

The solid-state separator is being designed to enable our ‘anode-free’ architecture. As manufactured, our solid-state battery cell has no anode; the lithium-metal anode is formed during the first charge of the cell; the lithium that forms the anode comes from the cathode material we purchase. Eliminating the anode bill of materials and associated manufacturing costs found in conventional lithium-ion cells could result in a meaningful cost of goods sold (COGS) advantage for us. In addition, our solid-state battery cell is being designed to reduce the time and capital-intensity of the formation and aging process step as compared to conventional lithium-ion manufacturing.

We are focused on the throughput and capability of our San Jose, California engineering line as well as the planning and setup of QS-0 and planning for QS-1. As part of the continued expansion of our throughput we are automating our manufacturing process and purchasing larger-scale battery-cell manufacturing equipment. We will need to substantially improve our battery cell manufacturing processes to increase throughput required for higher numbers of battery cells and to achieve the cost, performance and volume levels required for commercial shipments.

QS-0 is intended to serve three purposes. First, QS-0 is intended to provide a sufficient quantity of solid-state separators and cells for internal development, customer sampling (including pre A-sample, A-sample, and B-sample cells). Second, QS-0 is intended to provide the basis for continued manufacturing process development and to help inform for QS-1 equipment selection and specifications. Delays in the successful buildout of QS-0 may impact both our development and the QS-1 timelines. And third, as we continue to buildout our manufacturing capabilities, we are targeting the start of commercialization via the initial production of C-sample battery cells at QS-0 to be made available for sale to a third party.

We will need to achieve significant cost savings in battery design and manufacturing, in addition to the cost savings associated with the elimination of an anode from our solid-state battery cells, while controlling costs associated with the manufacture of our solid-state separator, including achieving substantial improvements in quality, consistency, reliability and throughput required to hit commercial targets. Further, we will need to capture industry cost savings in the materials, components, equipment, and processes that we share, notably in the cathode, cell design, and factory.

Commercialization and Market Focus

Delivery of the A sample represents the beginning of the automotive qualification process, which involves several major delivery milestones — A, B and C samples — followed by the start of production. Each major sampling stage may consist of several generations of increasingly mature prototypes. The timelines for each stage involve uncertainty and will be influenced by a number of factors, including product and process development risks; the specification, ordering, and qualification of production equipment; other supply chain dynamics; and OEM validation timeframes.

We are currently targeting the initial production of C-sample battery cells at QS-0. We have demonstrated the performance capabilities of our solid-state separator and battery technology in single-layer and multi-layer solid-state cells in commercially relevant areas (ranging approximately from 60x75mm to 70x85mm), and in 2022, shipped our first 24-layer A0 prototype battery cells to multiple automotive original equipment manufacturers (“OEM”). We will work to continue improving quality, consistency, reliability and throughput and optimize all components of the cell. We will continue to work to further develop and validate the volume manufacturing processes to enable high volume manufacturing and minimize manufacturing costs. Finally, we intend to continue to use and expand on our engineering line in San Jose to prepare for high volume manufacturing, to continue to order QS-0 equipment and prepare QS-0, and to plan QS-1 through our joint venture partnership with Volkswagen.

QS-1, to be built and run by QSV, and the subsequent QS-1 Expansion, would represent a small fraction of Volkswagen’s demand for batteries and implies vehicle volumes under 2.6% of Volkswagen’s total production in 2022, assuming a 100kWh battery pack size. Our goal is to significantly expand the production capacity of the joint venture, in partnership with Volkswagen, to meet more of their projected demand. While Volkswagen is the first automotive OEM that we signed an agreement with the goal of commercializing vehicles using our battery technology, we intend to work closely with other OEMs to make our solid-state battery cells widely available over time. In addition to Volkswagen, we have signed customer sampling agreements with five other OEMs, ranging from top ten manufacturers by global revenue to premium performance and luxury carmakers, to collaborate with us in the testing and validation of our solid-state battery cells with the goal of providing such cells to the OEM for inclusion into pre-production prototype vehicles and ultimately into serial production vehicles. The agreement follows testing of the Company’s early-stage cells by the OEM in its labs. We are currently focused on automotive EV applications, which have among the most stringent sets of requirements for batteries. However, we recognize that our solid-state battery technology has applicability in other large and growing markets including stationary storage and consumer electronics such as smartphones and wearables and intend to explore opportunities in those areas as appropriate.

We believe that our technology enables a variety of business models. In addition to joint ventures, such as the one with Volkswagen, we may operate solely-owned manufacturing facilities or license technology to other manufacturers. We intend to continue to invest in research and development to improve battery cell performance, improve manufacturing processes, and reduce cost.

Access to Capital

Based on our current business plan, we believe that our cash resources will last into the second half of 2025. However, any changes to our technology development and scale-up could materially impact us and the availability of our capital resources.

Regulatory Landscape

We operate in an industry that is subject to many established environmental regulations, which have generally become more stringent over time, particularly in hazardous waste generation and disposal and pollution control. Regulations in our target markets include economic incentives to purchasers of EVs, tax credits for EV manufacturers, and economic penalties that may apply to a car manufacturer based on its fleet-wide emissions which may indirectly benefit us to the extent that the regulations expand the market size of EVs. While we also expect environmental regulations to provide a tailwind to our growth, it is possible for certain regulations to result in margin pressures. Trade restrictions and tariffs, while historically minimal between the European Union and the United States where most of our production and sales are initially expected, are subject to unknown and unpredictable change that could impact our ability to meet projected sales or margins.

COVID-19

The COVID-19 pandemic (or epidemics) has been unpredictable and unprecedented and may continue to result in significant national and global economic disruption, which may adversely affect our business. The magnitude of its impact on our supply chain, productivity, results of operations and financial position, and its disruption to our business and battery development and timeline, will depend in part, on the length and severity of COVID-related restrictions and delays, on our ability to conduct business in the ordinary course and on the phasing out of government support measures.

Basis of Presentation

We currently conduct our business through one operating segment. As a pre-revenue company with no commercial operations, our activities to date have been limited and were conducted primarily in the United States. Our historical results are reported under U.S. GAAP and in U.S. dollars. Upon commencement of commercial operations, we expect to expand our global operations substantially, including in the United States and the European Union, and as a result we expect our future results to be sensitive to foreign currency transaction and translation risks and other financial risks that are not reflected in our historical financial statements. As a result, we expect that the financial results we report for periods after we begin commercial operations will not be comparable to the financial results included in this Report.

Components of Results of Operations

We are a research and development stage company and we have not generated any revenues to date. Our historical results may not be indicative of our future results for reasons that may be difficult to anticipate. Accordingly, the drivers of our future financial results, as well as the components of such results, may not be comparable to our historical or projected results of operations.

Operating Expenses

Research and Development Expense

To date, our research and development expenses have consisted primarily of personnel-related expenses for scientists, experienced engineers and technicians as well as costs associated with the expansion and ramp up of our engineering and facilities supporting QS-0 in San Jose, including the material and supplies to support the product development and process engineering efforts. As we ramp up our engineering operations to complete the development of our solid-state, lithium-metal batteries and required process engineering to meet automotive cost targets, we anticipate that research and development expenses will increase significantly for the foreseeable future as we continue to invest in additional plant and equipment for product development (e.g., multi-layer cell stacking, packaging engineering), building prototypes, and testing of battery cells as our team works to meet the full set of automotive product requirements. We also recognize significant non-cash stock-based compensation to employees directly involved in research and development activities. For stock-based compensation awards with performance and market conditions, such as the awards granted under our Extraordinary Performance Award Program (the “EPA Program”) in December 2021, the non-cash expense recognized is based on a probability assessment of the performance conditions, and as such, we expect research and development expenses to fluctuate in the future as the performance conditions are re-assessed at each reporting period. Further, should the stated market conditions of the EPA Program grants be achieved prior to the expected achievement period, we may accelerate the stock-based compensation expense recognized, which could result in significant fluctuations in research and development expense recognized in the future. For more information on the EPA Program and grants thereunder, see Note 9, Stockholders' Equity, to our consolidated financial statements elsewhere in this Report.

As we ramp up towards commercial manufacturing operations, we will begin to incur expenses that are directly associated with manufacturing, including allocation of indirect costs from research and development.

General and Administrative Expense

General and administrative expenses consist mainly of personnel-related expenses for our executive, sales and marketing, insurance and other administrative functions as well as outside professional services, including legal, accounting and other advisory services. We have expanded our personnel headcount and we are continuing to expand our supporting systems, in anticipation of planning for and supporting the ramp up of commercial manufacturing operations and due to the ongoing requirements of being a public company. Accordingly, we expect our general and administrative expenses to increase significantly in the near term and for the foreseeable future. Upon commencement of commercial operations, we also expect general and administrative expenses to include customer and sales support and advertising costs. We also recognize significant non-cash stock-based compensation to executives and certain employees. The non-cash expense recognized for EPA Program grants is based on a probability assessment of the performance conditions, and as such, we expect general and administrative expenses to fluctuate in the future as the performance conditions are re-assessed at each reporting period. Further, should the stated market conditions of the EPA Program awards be achieved prior to the expected achievement period, we may accelerate the stock-based compensation expense recognized, which could result in significant fluctuations in general and administrative expense recognized in the future.

As we ramp up towards commercial manufacturing operations, we will begin to incur expenses that are directly associated with manufacturing, including allocation of indirect costs from general and administrative activities.

Other Income (Expense)

Change in Fair Value of Assumed Common Stock Warrant Liability

The change in fair value of Assumed Common Stock Warrant liabilities consists of the change in non-cash fair value of the Public Warrants and the private placement warrants assumed in connection with the Business Combination (the “Private Placement Warrants”). As all Assumed Common Stock Warrants were exercised or redeemed during the year ended December 31, 2021, there is no remaining liability for Assumed Common Stock Warrants.

Change in Fair Value of Series F Convertible Preferred Stock Tranche Liability

A portion of the Series F convertible preferred stock tranche liabilities (as defined below) were settled upon the issuance of the shares of Series F Preferred Stock concurrent with the Business Combination, and the remaining commitment to issues shares of Class A Common Stock pursuant to the Series F Stock Purchase Agreements became equity classified upon the consummation of the Business Combination. Accordingly, we have not incurred incremental fair value adjustments related to the Series F convertible preferred stock tranche liabilities subsequent to November 2020.

Interest Expense

Interest expense consists primarily of interest expense associated with our QS-0 campus lease and includes expense related to fair value adjustments for convertible preferred stock warrants prior to the Business Combination. Concurrent with the Business Combination, the Legacy QuantumScape convertible preferred stock warrants became equity classified. Accordingly, we have not incurred incremental fair value adjustments related to the Legacy QuantumScape convertible preferred stock warrants subsequent to November 2020.

Interest Income

Interest income consists primarily of interest income from marketable securities.

Other Income (Expense)

Our other income (expense) consists of miscellaneous income and expenses.

Income Tax Expense / Benefit

Our income tax provision consists of an estimate for U.S. federal and state income taxes based on enacted rates, as adjusted for allowable credits, deductions, uncertain tax positions, changes in deferred tax assets and liabilities, and changes in tax law. We maintain a valuation allowance against the full value of our U.S. and state net deferred tax assets because we believe the recoverability of the tax assets is not more likely than not.

Results of Operations

In this section, we discuss the results of our operations for the year ended December 31, 2022 compared to the year ended December 31, 2021. For a discussion of the year ended December 31, 2021 and the year ended December 31, 2020, please refer to Part II, Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in our Annual Report on Form 10-K for the year ended December 31, 2021.

The following table sets forth our historical operating results for the periods indicated (amounts in thousands):

	Year Ended December 31,			2022 vs. 2021		2021 vs. 2020	
	2022	2021	2020	\$ Change	% Change	\$ Change	% Change
Operating expenses:							
Research and development	\$ 297,435	\$ 151,496	\$ 65,103	\$ 145,939	96 %	\$ 86,393	133 %
General and administrative	123,183	63,770	15,918	59,413	93 %	47,852	301 %
Total operating expenses	420,618	215,266	81,021	205,352	95 %	134,245	166 %
Loss from operations	(420,618)	(215,266)	(81,021)	(205,352)	95 %	(134,245)	166 %
Other income (loss):							
Interest expense	(2,399)	(1,419)	(20,765)	(980)	69 %	19,346	(93) %
Interest income	10,905	1,883	1,093	9,022	479 %	790	72 %
Change in fair value of Series F convertible preferred stock tranche liabilities	—	—	(999,987)	—	0 %	999,987	(100) %
Change in fair value of assumed common stock warrant liabilities	—	168,674	(581,863)	(168,674)	(100) %	750,537	(129) %
Other income	216	151	760	65	43 %	(609)	(80) %
Total other income (loss)	8,722	169,289	(1,600,762)	(160,567)	(95) %	1,770,051	(111) %
Net loss	(411,896)	(45,977)	(1,681,783)	(365,919)	796 %	1,635,806	(97) %
Less: Net loss attributable to non-controlling interest	11	(11)	(6)	22	(200) %	(5)	83 %
Net loss attributable to common stockholders	\$ (411,907)	\$ (45,966)	\$ (1,681,777)	\$ (365,941)	796 %	\$ 1,635,811	(97) %

Research and Development

The increase in research and development expense in the year ended December 31, 2022 compared to the year ended December 31, 2021 primarily resulted from the \$46.5 million increase in personnel cost due to the growth in research and development headcount to support our battery technology development, an increase of \$16.7 million related to depreciation and amortization, \$16.5 million impairment charges related to equipment write-off and cancellations to focus on process and equipment development designed to deliver higher throughput with fewer processing steps, an increase of \$12.7 million in consulting fees, outside services and administrative expenses related to engineering and research and development, an increase of \$12.0 million in facility expenses primarily related to the QS-0 campus, and an increase of \$8.3 million in material supplies and equipment maintenance to support the growth in product development and manufacturing engineering efforts. Additionally, non-cash stock-based compensation expense increased by \$33.2 million from \$29.7 million for the year ended December 31, 2021 to \$62.9 million for the year ended December 31, 2022 primarily due to a \$12.6 million increase for stock options granted under the EPA Program, with the remainder primarily due to RSUs granted in fiscal 2022.

General and Administrative

The increase in general and administrative expenses in the year ended December 31, 2022 compared to the year ended December 31, 2021 primarily resulted from the \$10.0 million increase in professional fees and other corporate expenses due to costs associated with business growth and an increase of \$5.8 million in personnel costs due to the headcount increase to support business growth. Additionally, non-cash stock-based compensation expense increased by \$41.7 million, from \$22.5 million for the year ended December 31, 2021 to \$64.2 million for the year ended December 31, 2022, primarily due to a \$34.4 million increase for stock options granted under the EPA Program, with the remainder primarily due to RSUs granted in fiscal 2022.

Other Income (Expense)

Interest Expense

Interest expense during the year ended December 31, 2022 was due to the interest expense associated with a finance lease, which commenced in May 2021.

Interest Income

The increase in interest income during the year ended December 31, 2022 compared to the year ended December 31, 2021 was due to an increase in interest rates.

Other Income

Other income for the year ended December 31, 2022 consisted of foreign currency exchange gain and other miscellaneous gains. Other income for the year ended December 31, 2021 consisted of the gain on the disposal of fixed assets and foreign currency exchange gain.

Other Comprehensive Loss

Unrealized Loss on Marketable Securities

During the year ended December 31, 2022 and December 31, 2021, we had unrealized loss on marketable securities of \$13.7 million and \$4.2 million in other comprehensive loss. The unrealized loss were attributable to changes in interest rates that impacted the value of the investments, and not increased credit risk. The unrealized loss was considered temporary as of December 31, 2022, as we do not intend to sell the investments that are in an unrealized loss position, nor is it more likely than not that we will be required to sell the investments before the recovery of the amortized cost basis, which may be its maturity.

Liquidity and Capital Resources

As of December 31, 2022, our principal sources of liquidity were our cash and cash equivalents and marketable securities in the amount of approximately \$1.1 billion. Our cash equivalents are invested in U.S. money market funds, U.S. Treasury bonds and commercial paper. Our marketable securities are invested in U.S. Treasury notes and bonds, commercial paper, and corporate notes and bonds.

We have yet to generate any revenue from our business operations. To date, we have funded our capital expenditure and working capital requirements through equity as further discussed below. Our ability to successfully develop our products, commence commercial operations and expand our business 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.

Prior to the Business Combination, we financed our operations primarily from the sales of redeemable convertible preferred stock. In connection with the Business Combination, we received net cash proceeds of approximately \$676.9 million. Additionally, after the Business Combination, during the year ended December 31, 2020, we received proceeds of approximately \$99.8 million from the Series F Preferred Stock Purchase Agreements.

During the year ended December 31, 2021, we completed the March 2021 Public Offering for aggregate net cash proceeds of \$462.9 million, received \$100 million from VGA pursuant to our achievement of the technical milestone specified in the Series F Preferred Stock Purchase Agreements, and received net proceeds of \$151.4 million for all Assumed Common Stock Warrants exercised or redeemed.

During the year ended December 31, 2022, we received net proceeds of \$124.1 million from investing activities, mainly due to the maturities of marketable securities.

We believe that our cash on hand will be sufficient to meet our working capital and capital expenditure requirements for a period of at least twelve months from the date of this Report. Based on our current business plan, we believe that our cash resources will last into the second half of 2025. However, any changes to our technology development and scale-up could materially impact us and the availability of our capital resources. We may, however, need additional cash resources due to changed business conditions or other developments, including unanticipated delays in negotiations with automotive OEMs and tier-one automotive suppliers or other suppliers, supply chain challenges, disruptions due to the COVID-19 pandemic, competitive pressures, inflation, and regulatory developments, among others. To the extent that our current resources are insufficient to satisfy our cash requirements, we may need to 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.

On July 29, 2022, we filed a shelf registration statement on Form S-3 with the SEC (File No. 333-266419) (the “Form S-3”), which the SEC declared effective on August 10, 2022, for the offer and sale of Class A Common Stock, preferred stock, depositary shares, debt securities, warrants, subscription rights, purchase contracts and units in one or more offerings and in any combination for an aggregate offering price up to \$1,000,000,000. Such securities may be offered pursuant to the base prospectus contained in the shelf registration statement and a prospectus supplement that would be prepared and filed at the time of any offering.

Cash Flows and Material Cash Requirements

The following table provides a summary of our cash flow data for the periods indicated (amounts in thousands):

	Year Ended December 31,		
	2022	2021	2020
Net cash used in operating activities	\$ (218,024)	\$ (127,909)	\$ (61,263)
Net cash (used in) provided by investing activities	124,119	(385,834)	(802,648)
Net cash provided by financing activities	8,598	736,557	953,724

Operating Activities

Our cash flows used in operating activities to date have been primarily driven by the growth in our underlying business to support the research and development of battery technology. Ahead of starting pre-pilot and pilot line operations, we expect our cash used in operating activities to increase significantly before we start to generate any material cash flows from our business. To support our research and development activities and our plan to expand our pre-pilot manufacturing capability, we are expecting cash payments of \$7.5 million during the next twelve months and \$82.5 million thereafter for the operating lease commitments as of December 31, 2022. From time to time we also enter into non-cancellable service and purchase commitments. We are expecting cash used in operating activities to include payments of approximately \$2.8 million in the next twelve months and approximately \$9.0 million thereafter through 2027 for our non-cancellable commitments as of December 31, 2022. As we complete the development of our solid-state, lithium-metal batteries and required process engineering to meet automotive cost targets, we anticipate that research and development operating expenses will increase significantly for the foreseeable future.

Cash used in operating activities for the year ended December 31, 2022 was primarily driven by a net loss of \$411.9 million offset by non-cash expenses including \$127.1 million related to stock-based compensation, \$28.3 million related to depreciation and amortization, \$13.7 million related to the impairment of fixed assets, \$7.8 million related to lease expense and amortization of right-of-use assets, and \$4.0 million related to amortization of premiums and accretion of discounts on marketable securities. This was partially offset by an increase of \$5.6 million in accounts payable and accrued liabilities mainly driven by higher period-over-period spending in payroll, materials and supplies, professional services and general and administrative to support the growth of the business, specifically in the research and development of our battery technology, a \$5.0 million decrease in prepaid and other assets and an increase of \$2.3 million in other long-term liabilities.

Cash used during the year ended December 31, 2021 was primarily driven by a net loss of \$46.0 million adjusted by non-cash income of \$168.7 million related to the change in fair value of Assumed Common Stock Warrant liabilities and offset by non-cash expenses including \$52.2 million related to stock-based compensation, \$11.8 million related to amortization of premiums and accretion of discounts on marketable securities, and \$11.2 million related to depreciation and amortization. This was partially offset by an increase of \$13.2 million in accrued compensation, accounts payable and accrued liabilities due to spending in materials and supplies, professional services, personnel and general and administrative.

Cash used during the year ended December 31, 2020 was primarily driven by a net loss of \$1,681.8 million, offset by non-cash expenses including \$581.9 million for the change in fair value of the Assumed Common Stock Warrants, \$20.8 million for the change in the fair value of Legacy QuantumScape convertible preferred stock warrants, \$999.9 million for the issuance and change in the fair value of the Series F convertible preferred stock tranche liabilities, \$17.0 million related to stock-based compensation and \$7.5 million related to depreciation and amortization.

Investing Activities

Our cash flows from investing activities to date have been comprised of purchases of property and equipment and purchases, maturities and sales of our marketable securities. We expect the level of capital investment to increase substantially in the near future as we fully build out our engineering line capability as well as acquire the property and equipment for QS-0.

Cash provided by investing activities for the year ended December 31, 2022 primarily consists of the maturity and sale of marketable securities of \$837.4 million and \$15.1 million, respectively, offset by \$569.6 million used for the purchase of marketable securities. Cash provided by investing activities also reflects \$158.8 million of cash used for various property and equipment, primarily to support our research and development activities.

Cash used in investing activities for the year ended December 31, 2021 primarily consisted of \$127.2 million for various equipment purchases to primarily support our research and development activities and \$1.4 billion for the purchase of marketable securities, offset in part by the proceeds received from the maturity and sale of marketable securities of \$894.2 million and \$224.1 million, respectively.

Cash used in investing activities for the year ended December 31, 2020 primarily consisted of \$24.1 million for various equipment purchases and \$891.6 million for the purchase of marketable securities, offset in part by the proceeds received from the maturity of marketable securities of \$99.0 million and the sales of marketable securities of \$14.0 million.

Financing Activities

Our cash flows from financing activities primarily consist of proceeds from the exercise of stock options and from purchases under our employee stock purchase plan. Finance lease commitment for QS-0 will result in net cash payments of \$3.8 million in the next twelve months and payments of \$49.4 million thereafter.

Cash provided by financing activities during the year ended December 31, 2022 is primarily due to \$9.4 million received from the exercise of stock options and our employee stock purchase plan.

The cash provided by financing activities during the year ended December 31, 2021 was primarily due to \$462.9 million in net proceeds received from the March 2021 Public Offering, \$151.4 million received from the exercise of Public Warrants and Private Placement Warrants, \$99.9 million in net proceeds received from the Series F Preferred Stock Agreements, and approximately \$17.8 million received from the exercise of stock options and our employee stock purchase plan.

The cash provided by financing activities during the year ended December 31, 2020 was primarily due to \$676.9 million in net proceeds received from the Business Combination and related PIPE financing, as well as \$276.3 million in net proceeds received from the Legacy QuantumScape Series F Preferred Stock agreements discussed above.

Critical Accounting Policies and Estimates

Our consolidated financial statements have been prepared in accordance with U.S. GAAP. In the preparation of these consolidated financial statements, we are required to use judgment in making estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities as of the date of the consolidated financial statements, as well as the reported expenses incurred during the reporting periods.

We consider an accounting judgment, estimate or assumption to be critical when (1) the estimate or assumption is complex in nature or requires a high degree of judgment and (2) the use of different judgments, estimates and assumptions could have a material impact on the consolidated financial statements. Our significant accounting policies are described in Note 2, Summary of Significant Accounting Policies, to our audited consolidated financial statements included elsewhere in this Report. We believe that the following accounting estimates are the most critical to fully understand and evaluate our reported financial results, as they require our most subjective or complex management judgments, resulting from the need to make estimates about the effect of matters that are inherently uncertain and unpredictable.

Stock-Based Compensation

The share-based awards under our equity plans include stock options, RSU and performance-based awards under the EPA Program. We recognize the cost of share-based awards granted to employees and directors based on the estimated grant-date fair value of the awards, and compensation expense is recognized on a straight-line basis over the requisite service period. For share-based awards with only service conditions, the requisite service period is generally the vesting period. We reverse previously recognized costs for unvested awards in the period that forfeitures occur.

The fair value of RSUs is measured on the grant date based on the closing fair market value of our common stock.

The fair values of options granted with performance (e.g., business milestone) and market conditions (e.g., stock price target) are estimated at the grant date using a Monte Carlo simulation model. The model determined the grant date fair value of each vesting tranche and the future time when the market condition for such tranche is expected to be achieved. The Monte Carlo valuation requires the Company to make assumptions and judgements about the variables used in the calculation including the expected term, volatility of our common stock, an assumed risk-free interest rate, and cost of equity.

For performance-based awards with a vesting schedule based entirely on the attainment of both performance and market conditions, each quarter the Company assesses whether it is probable that it will achieve each performance condition that has not previously been achieved or deemed probable of achievement and if so, the future time when the Company expects to achieve that business milestone, or its “expected business milestone achievement time.” When the Company first determines that a business milestone has become probable of being achieved, the Company allocates on a straight-line basis the entire expense for the related tranche over the number of quarters between the grant date and the then-applicable “expected vesting date,” which represents the requisite service period. The requisite service period at any given time is generally the period between the grant date and the later of (i) the expected time when the performance condition will be achieved (if the related performance condition has not yet been achieved) and (ii) the expected time when the market condition will be achieved (if the related market condition has not yet been achieved). The Company immediately recognizes a cumulative catch-up expense for all accumulated expense for the quarters from the grant date through the quarter in which the performance condition was first deemed probable of being achieved. Each quarter thereafter, the Company recognizes the then-remaining expense for the tranche through the end of the requisite service period except that upon vesting of a tranche, all remaining expense for that tranche is immediately recognized. The Company accounts for forfeitures when they occur. The fair value of such awards is estimated on the grant date using Monte Carlo simulations, which is impacted by the following assumptions:

- *Expected Term*—We estimated the expected term based on the midpoint between the time of vesting and the remaining time to expiration.
- *Expected Volatility*—Given the limited market trading history of our common stock, volatility is based on a weighted blend of (i) the average volatility of peer companies within the automotive and energy storage industries multiplied by a ratio of our volatility based on available stock price data as compared to the average volatility of our peer companies over the same period and (ii) our implied volatility from exchange traded options.
- *Cost of Equity*—Cost of equity is calculated using (i) risk-free rate, (ii) average peer group market beta and (iii) the market-risk premium.

As the stock-based compensation expense is based on the probability assessment of the performance conditions, we may experience significant fluctuation in the non-cash stock-based compensation recognized quarter over quarter. Although the potential stock-based compensation expense that may be recognized over the remaining term of the performance award may be estimated at each of the applicable grant date and the amount is expected to be material to the financial statements in the aggregate, the actual expense recognized may range from zero to the maximum; the actual expense may be recognized over a period less than the remaining term of the performance award; and the amount recognized quarter over quarter is expected to be material and may significantly fluctuate.

Assumed Common Stock Warrant Liabilities

The Company assumed 11,499,989 Public Warrants and 6,650,000 Private Placement Warrants upon the Business Combination, all of which were issued in connection with Kensington's initial public offering (other than 75,000 Private Placement Warrants that were issued in connection with the closing of the Business Combination, which are referred to as the Working Capital Warrants) and entitled each holder to purchase one share of Class A Common Stock at an exercise price of \$11.50 per share.

The Company evaluated the Assumed Common Stock Warrants under ASC 815-40, *Derivatives and Hedging—Contracts in Entity's Own Equity*, and concluded they did not meet the criteria to be classified in stockholders' equity. Specifically, the exercise of the Assumed Common Stock Warrants could have been settled in cash upon the occurrence of a tender offer or exchange that involved 50% or more of our Class A stockholders. Because not all of the voting stockholders needed to participate in such tender offer or exchange to trigger the potential cash settlement and the Company would not have controlled the occurrence of such an event, the Company concluded that the Assumed Common Stock Warrants did not meet the conditions to be classified in equity. Since the Assumed Common Stock Warrants meet the definition of a derivative under ASC 815, the Company recorded these warrants as liabilities on the Consolidated Balance Sheet at fair value, with subsequent changes in their respective fair values recognized in the Change in fair value of assumed common stock warrant liabilities within the Consolidated Statement of Operations and Comprehensive Income (Loss) at each reporting date prior to exercise or redemption. The Public Warrants were publicly traded and thus had an observable market price to estimate fair value, and the Private Placement Warrants were effectively valued similar to the Public Warrants when the Public Warrants were publicly traded, and consistent with the intrinsic value of the Company's common stock subsequent to the redemption of the Public Warrants, as described in Note 5, Balance Sheet Components, to the consolidated financial statements. As all Assumed Common Stock Warrants were exercised or redeemed during the year ended December 31, 2021, there was no remaining liability for Assumed Common Stock Warrants as of December 31, 2021 or December 31, 2022.

Recent Accounting Pronouncements

See Note 3, Recent Accounting Pronouncements, to the audited consolidated financial statements elsewhere in this Report for more information about recent accounting pronouncements, the timing of their adoption, and, to the extent it has made one, of their potential impact on our financial condition and its results of operations and cash flows.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

We are exposed to a variety of markets and other risks including the effects of change in interest rates, inflation and foreign currency translation and transaction risks as well as risks to the availability of funding sources, hazard events and specific asset risks.

Interest Rate Risk

The market interest risk in our financial instruments and our financial positions represents the potential loss arising from adverse changes in interest rates. As of December 31, 2022, we had cash and cash equivalents and marketable securities of \$1.1 billion, consisting of interest-bearing money market accounts and marketable securities, for which the fair market value would be affected by change in the general level of U.S. interest rates. As of December 31, 2022, an immediate increase of 100 basis points in interest rates would have resulted in a decline in the fair value of our marketable securities of approximately \$5.3 million. This estimate is based on a sensitivity model that measures market value changes when changes in interest rates occur. Such losses would only be realized if we sold the investments prior to maturity.

Inflation Risk

Our operations could be adversely impacted by inflation, primarily from higher material, labor, and construction costs. To date, we do not believe that inflation has had a material impact to our results of operations, capital resources or liquidity, however, we have experienced increases in prices of raw materials, components and labor costs. Our future mitigation strategies may include considering alternative vendors, vertically integrating certain aspects of our supply chain and redesigning our product or production process. At this time, it is difficult to determine what impact these inflationary pressures will have on our long-term growth strategies, as there is uncertainty regarding how long higher levels of inflation may persist, and to what level we will be successful in passing these increased costs to our customers upon commercialization of our product. If we are not able to fully offset higher costs through price increases or other corrective measures, this may adversely affect our business, financial condition and results of operations.

Foreign Currency Risk

Our functional currency is the U.S. dollar, while certain of our future subsidiaries may have other functional currencies, reflecting their principal operating markets. Once we commence QS-1 operations, we expect to be exposed to both currency transaction and translation risk. To date, we have not had material exposure to foreign currency fluctuations and have not hedged such exposure, although we may do so in the future.

Item 8. Financial Statements and Supplementary Data.

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Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of QuantumScape Corporation

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of QuantumScape Corporation (the Company) as of December 31, 2022 and 2021, the related consolidated statements of operations and comprehensive income (loss), redeemable non-controlling interest and stockholders' equity and cash flows for each of the three 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 three years in the period ended December 31, 2022, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated February 27, 2023 expressed an unqualified opinion thereon.

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 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. 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.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of the critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Accounting for the Extraordinary Performance Program (EPA program) – stock-based compensation

Description of the Matter

As discussed in Notes 2 and 9 to the consolidated financial statements, the Company granted stock options of the Company's Class A common stock to the Chief Executive Officer and other members of the Company's management team pursuant to the Extraordinary Performance Award Program "EPA Program" in December 2021 and December 2022. The options vest upon the achievement of performance (business milestones) and market (stock price target) conditions under five tranches. When the Company determines achievement of the related performance condition is considered probable then the stock-based compensation expense is recognized over the expected vesting period which is the longer of the time to achieve the performance or market condition for each tranche. The Company recorded stock-based compensation expense of \$49.4 million during the year-ended December 31, 2022 and had \$65.6 million of unrecognized stock-based compensation expense as of December 31, 2022 for the tranches that were considered probable.

Auditing the Company's accounting for option awards under the EPA program is complex and judgmental due to the subjectivity of management's assessment of the probability and timing of performance conditions being met for each tranche of the award.

How We Addressed the Matter in Our Audit

We obtained an understanding, evaluated the design, and tested the operating effectiveness of controls over the Company's assessment of the probability and timing of performance conditions being met.

Our substantive audit procedures included, among others, evaluation of the judgments made by management in determining the estimated probability and timing of each performance condition by discussing status with internal operational personnel and comparing the achievement of the business milestones to the Company's annual plan.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2012.

San Jose, California

February 28, 2023

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of QuantumScape Corporation

Opinion on Internal Control Over Financial Reporting

We have audited QuantumScape Corporation's internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, QuantumScape Corporation (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2022, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the 2022 consolidated financial statements of the Company and our report dated February 27, 2023 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting 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.

/s/ Ernst & Young LLP

San Jose, California

February 28, 2023

QuantumScape Corporation
Consolidated Balance Sheets

(In Thousands, Except per Share Amounts)

	As of December 31,	
	2022	2021
Assets		
Current assets		
Cash and cash equivalents (\$3,395 and \$3,382 as of December 31, 2022 and 2021, respectively, for joint venture)	\$ 235,393	\$ 320,700
Marketable securities	826,340	1,126,975
Prepaid expenses and other current assets	10,591	15,757
Total current assets	1,072,324	1,463,432
Property and equipment, net	295,934	166,183
Right-of-use assets - finance lease	28,013	30,886
Right-of-use assets - operating lease	60,782	36,913
Other assets	18,353	18,234
Total assets	\$ 1,475,406	\$ 1,715,648
Liabilities, redeemable non-controlling interest and stockholders' equity		
Current liabilities		
Accounts payable	\$ 21,420	\$ 14,182
Accrued liabilities	7,477	6,078
Accrued compensation and benefits	13,061	9,119
Operating lease liability, short-term	3,478	1,209
Finance lease liability, short-term	1,373	19
Total current liabilities	46,809	30,607
Operating lease liability, long-term	62,560	36,760
Finance lease liability, long-term	38,005	39,378
Other liabilities	8,488	315
Total liabilities	155,862	107,060
Commitment and contingencies (see Note 7)		
Redeemable non-controlling interest	1,704	1,693
Stockholders' equity		
Preferred stock- \$0.0001 par value; 100,000 shares authorized, none issued and outstanding as of December 31, 2022 and 2021	—	—
Common stock - \$0.0001 par value; 1,250,000 shares authorized (1,000,000 Class A and 250,000 Class B); 358,505 Class A and 79,454 Class B shares issued and outstanding as of December 31, 2022, 332,869 Class A and 95,450 Class B shares issued and outstanding as of December 31, 2021	44	43
Additional paid-in-capital	3,771,181	3,634,665
Accumulated other comprehensive loss	(17,873)	(4,208)
Accumulated deficit	(2,435,512)	(2,023,605)
Total stockholders' equity	1,317,840	1,606,895
Total liabilities, redeemable non-controlling interest and stockholders' equity	\$ 1,475,406	\$ 1,715,648

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

QuantumScape Corporation
Consolidated Statements of Operations and Comprehensive Income (Loss)

(In Thousands, Except per Share Amounts)

	Year Ended December 31,		
	2022	2021	2020
Operating expenses:			
Research and development	\$ 297,435	\$ 151,496	\$ 65,103
General and administrative	123,183	63,770	15,918
Total operating expenses	420,618	215,266	81,021
Loss from operations	(420,618)	(215,266)	(81,021)
Other income (loss):			
Interest expense	(2,399)	(1,419)	(20,765)
Interest income	10,905	1,883	1,093
Change in fair value of Series F convertible preferred stock tranche liabilities	—	—	(999,987)
Change in fair value of assumed common stock warrant liabilities	—	168,674	(581,863)
Other income	216	151	760
Total other income (loss)	8,722	169,289	(1,600,762)
Net loss	(411,896)	(45,977)	(1,681,783)
Less: Net income (loss) attributable to non-controlling interest, net of tax of \$0	11	(11)	(6)
Net loss attributable to common stockholders	\$ (411,907)	\$ (45,966)	\$ (1,681,777)
Net loss	\$ (411,896)	\$ (45,977)	\$ (1,681,783)
Other comprehensive income (loss):			
Unrealized loss on marketable securities	(13,665)	(4,177)	(121)
Total comprehensive loss	(425,561)	(50,154)	(1,681,904)
Less: Comprehensive income (loss) attributable to non-controlling interest	11	(11)	(6)
Comprehensive loss attributable to common stockholders	\$ (425,572)	\$ (50,143)	\$ (1,681,898)
Net loss per share of common stock attributable to common stockholders			
Basic	\$ (0.95)	\$ (0.11)	\$ (6.67)
Diluted	\$ (0.95)	\$ (0.52)	\$ (6.67)
Weighted-average shares used in computing net loss per share of common stock			
Basic	432,973	404,259	252,144
Diluted	432,973	409,509	252,144

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

QuantumScape Corporation
Consolidated Statements of Redeemable Non-Controlling Interest and Stockholders' Equity

(In Thousands)

	Redeemable Non- Controlling Interest	Common Stock		Additional Paid-In Capital	Accumulated Deficit	Accumulated Other Comprehensive Income (Loss)	Total Stockholders' Equity
		Shares	Amount				
Balance as of December 31, 2019	\$ 1,710	239,777	\$ 24	\$ 444,440	\$ (295,862)	\$ 90	\$ 148,692
Issuance of Series F preferred stock, net of issuance costs of \$11.5 million, and settlement of associated convertible preferred stock tranche liability	—	28,616	3	660,930	—	—	660,933
Issuance of Class A Common Stock pursuant to Legacy QuantumScape Series F Preferred Stock Purchase Agreement, net of issuance costs of \$0.2 million	—	15,221	1	99,799	—	—	99,800
Business Combination, net of redemptions and equity issuance costs of \$53.0 million	—	78,735	8	568,595	—	—	568,603
Reclassification of Legacy QuantumScape convertible preferred stock tranche liability	—	—	—	515,394	—	—	515,394
Reclassification of Legacy QuantumScape convertible preferred stock warrants	—	—	—	22,625	—	—	22,625
Exercise of stock option	—	646	—	599	—	—	599
Exercise of warrants	—	998	—	—	—	—	—
Stock-based compensation	—	—	—	17,024	—	—	17,024
Net loss	(6)	—	—	—	(1,681,777)	—	(1,681,777)
Unrealized loss on marketable securities	—	—	—	—	—	(121)	(121)
Balance as of December 31, 2020	\$ 1,704	363,994	\$ 36	\$ 2,329,406	\$ (1,977,639)	\$ (31)	\$ 351,772
Exercise of stock option and employee stock purchase plan	—	16,620	2	17,777	—	—	17,779
Shares issued upon vesting of restricted stock units	—	5,027	—	—	—	—	—
Exercise of warrants	—	15,497	2	672,454	—	—	672,456
Issuance of Class A Common Stock, net of issuance costs of \$15.5 million	—	11,960	1	462,925	—	—	462,926
Issuance of Class A Common Stock pursuant to Legacy QuantumScape Series F Preferred Stock Purchase Agreement, net of issuance costs of \$0.1 million	—	15,221	2	99,928	—	—	99,930
Stock-based compensation	—	—	—	52,175	—	—	52,175
Net loss	(11)	—	—	—	(45,966)	—	(45,966)
Unrealized loss on marketable securities	—	—	—	—	—	(4,177)	(4,177)
Balance as of December 31, 2021	\$ 1,693	428,319	\$ 43	\$ 3,634,665	\$ (2,023,605)	\$ (4,208)	\$ 1,606,895
Exercise of stock option and employee stock purchase plan	—	4,343	—	7,555	—	—	7,555
Shares issued upon vesting of restricted stock units	—	5,297	1	1,851	—	—	1,852
Stock-based compensation	—	—	—	127,110	—	—	127,110
Net loss	11	—	—	—	(411,907)	—	(411,907)
Unrealized loss on marketable securities	—	—	—	—	—	(13,665)	(13,665)
Balance as of December 31, 2022	\$ 1,704	437,959	\$ 44	\$ 3,771,181	\$ (2,435,512)	\$ (17,873)	\$ 1,317,840

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

QuantumScape Corporation
Consolidated Statements of Cash Flows
(In Thousands)

	Year Ended December 31,		
	2022	2021	2020
Operating activities			
Net loss	\$ (411,896)	\$ (45,977)	\$ (1,681,783)
Adjustments to reconcile net loss to net cash used in operating activities:			
Depreciation and amortization	28,280	11,207	6,851
Amortization of right-of-use assets and non-cash lease expense	7,843	3,492	1,229
Amortization of premiums and accretion of discounts on marketable securities	3,989	11,845	1,201
Stock-based compensation expense	127,110	52,175	17,024
Change in fair value of convertible preferred stock warrant liabilities	—	—	20,765
Change in fair value of convertible preferred stock tranche liabilities	—	—	999,865
Change in fair value of assumed common stock warrant liabilities	—	(168,674)	581,863
Impairment of fixed assets	13,695	—	—
Other	840	899	3
Changes in operating assets and liabilities:			
Prepaid expenses and other assets	5,048	(4,852)	(9,648)
Accounts payable, accrued liabilities and accrued compensation	5,611	13,178	2,447
Other long-term liabilities	2,300	—	—
Operating lease liability	(844)	(1,202)	(1,080)
Net cash used in operating activities	(218,024)	(127,909)	(61,263)
Investing activities			
Purchases of property and equipment	(158,845)	(127,178)	(24,093)
Proceeds from maturities of marketable securities	837,410	894,225	99,000
Proceeds from sales of marketable securities	15,105	224,058	14,006
Purchases of marketable securities	(569,551)	(1,376,939)	(891,561)
Net cash (used in) provided by investing activities	124,119	(385,834)	(802,648)
Financing activities			
Proceeds from exercise of stock options and employee stock purchase plan	9,407	17,779	599
Proceeds from exercise of warrants	—	151,431	—
Proceeds from issuance of common stock, net of issuance costs paid	—	462,926	—
Proceeds from issuance of Series F preferred stock, net of issuance costs	—	—	176,462
Proceeds from issuance of Class A Common Stock pursuant to Legacy QuantumScape Series F Preferred Stock Purchase Agreement, net of issuance costs	—	99,930	99,800
Business Combination, net of issuance costs paid	—	(1,016)	676,863
Principal payment for finance lease, net of credit	(809)	5,507	—
Net cash provided by financing activities	8,598	736,557	953,724
Net increase (decrease) in cash, cash equivalents and restricted cash	(85,307)	222,814	89,813
Cash, cash equivalents and restricted cash at beginning of period	338,223	115,409	25,596
Cash, cash equivalents and restricted cash at end of period	\$ 252,916	\$ 338,223	\$ 115,409
Supplemental disclosure of cash flow information			
Cash paid for interest	\$ 1,610	\$ 330	\$ —
Fair value of assumed common stock warrants exercised	\$ —	\$ 521,025	\$ —
Purchases of property and equipment, not yet paid	\$ 18,192	\$ 11,073	\$ 4,170
Business Combination transaction costs, accrued but not paid	\$ —	\$ —	\$ 1,016
Net assets assumed from Business Combination	\$ —	\$ —	\$ 592

The following table presents the Company's cash, cash equivalents and restricted cash by category in the Company's Consolidated Balance Sheets (amounts in thousands):

	December 31,		
	2022	2021	2020
Cash and cash equivalents	\$ 235,393	\$ 320,700	\$ 113,216
Other assets	17,523	17,523	2,193
Total cash, cash equivalents and restricted cash	\$ 252,916	\$ 338,223	\$ 115,409

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

QuantumScape Corporation
Notes to Consolidated Financial Statements

December 31, 2022

Note 1. Nature of Business

Organization

The original QuantumScape Corporation, now named QuantumScape Battery, Inc. (“Legacy QuantumScape”), a wholly owned subsidiary of the Company (as defined below), was founded in 2010 with the mission to revolutionize energy storage to enable a sustainable future.

On November 25, 2020 (the “Closing Date”), Kensington Capital Acquisition Corp. (“Kensington”), a special purpose acquisition company, consummated the Business Combination Agreement (the “Business Combination Agreement”) dated September 2, 2020, by and among Kensington, Kensington Merger Sub Corp., a Delaware corporation and wholly owned subsidiary of Kensington (“Merger Sub”), and Legacy QuantumScape.

Pursuant to the terms of the Business Combination Agreement, a business combination between Kensington and Legacy QuantumScape was effected through the merger of Merger Sub with and into Legacy QuantumScape, with Legacy QuantumScape surviving as the surviving company and as a wholly-owned subsidiary of Kensington (the “Merger” and, collectively with the other transactions described in the Business Combination Agreement, the “Business Combination”). On the Closing Date, Kensington changed its name to QuantumScape Corporation, (the “Company”).

The Company is focused on the development and commercialization of its solid-state lithium-metal batteries. Planned principal operations have not yet commenced. As of December 31, 2022, the Company had not derived revenue from its principal business activities.

Note 2. Summary of Significant Accounting Policies

Basis of Presentation

The Company’s consolidated financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America (“U.S. GAAP”) as determined by the Financial Accounting Standards Board (“FASB”) Accounting Standards Codification (“ASC”) and pursuant to the regulations of the U.S. Securities and Exchange Commission (“SEC”).

On November 25, 2020, the Company consummated the Business Combination Agreement dated September 2, 2020, with Legacy QuantumScape surviving the merger as a wholly owned subsidiary of the Company. At the effective time of the Merger, and subject to the terms and conditions of the Business Combination Agreement, each share of Legacy QuantumScape Class A common stock, par value \$0.0001 per share, and each share of the Legacy QuantumScape Preferred Stock that was convertible into a share of Legacy QuantumScape Class A Common Stock, was canceled and converted into the right to receive the number of shares of the Company’s Class A Common Stock, \$0.0001 par value per share (the “Class A Common Stock”), equal to 4.02175014920 (the “Exchange Ratio”), and each share of Legacy QuantumScape Class B Common Stock, par value \$0.0001 per share, and each share of the Legacy QuantumScape Preferred Stock that was convertible into a share of Legacy QuantumScape Class B Common Stock was canceled and converted into the right to receive the number of shares of the Company’s Class B Common Stock, \$0.0001 par value per share equal to the Exchange Ratio.

Pursuant to the Business Combination Agreement, the merger between Merger Sub and Legacy QuantumScape was accounted for as a reverse recapitalization in accordance with U.S. GAAP (the “Reverse Recapitalization”). Under this method of accounting, Kensington was treated as the “acquired” company and Legacy QuantumScape was treated as the acquirer for financial reporting purposes.

QuantumScape Corporation
Notes to Consolidated Financial Statements — Continued

December 31, 2022

Legacy QuantumScape was determined to be the accounting acquirer based on the following predominant factors:

- Legacy QuantumScape's shareholders have the largest portion of voting rights in the Company;
- the Company's Board of Directors (the "Board") and management are primarily composed of individuals associated with Legacy QuantumScape; and
- Legacy QuantumScape was the larger entity based on historical operating activity and Legacy QuantumScape has the larger employee base at the time of the Business Combination.

Accordingly, for accounting purposes, the Reverse Recapitalization was treated as the equivalent of Legacy QuantumScape issuing stock for the net assets of Kensington, accompanied by a recapitalization. The net assets of Kensington were stated at historical cost, with no goodwill or other intangible assets recorded.

Principles of Consolidation

The Company's policy is to consolidate all entities that it controls by ownership of a majority of the outstanding voting stock. In addition, the Company consolidates entities that meet the definition of a variable interest entity ("VIE") for which the Company is the related party most closely associated with and is the primary beneficiary. The primary beneficiary is the party who has the power to direct the activities of a VIE that most significantly impact the entity's economic performance and who has an obligation to absorb losses of the entity or a right to receive benefits from the entity that could potentially be significant to the entity. For consolidated entities that are less than wholly owned, the third party's holding of an equity interest is presented as redeemable non-controlling interests in the Company's Consolidated Balance Sheets and Consolidated Statements of Redeemable Non-Controlling Interest and Stockholders' Equity. The portion of net earnings (loss) attributable to the redeemable non-controlling interests is presented as net income (loss) attributable to non-controlling interests in the Company's Consolidated Statements of Operations and Comprehensive Income (Loss).

The Company was a single-legal entity prior to becoming a partner with Volkswagen in QSV Operations LLC ("QSV"). As noted in the section titled "*Joint Venture and Redeemable Non-Controlling Interest*" below, the Company determined QSV was a VIE for which it was required to consolidate the operations upon its formation in 2018. The Company continued to consolidate the operations of the QSV in 2022 as the determination of the VIE has not changed.

All intercompany accounts and transactions are eliminated in consolidation.

Use of Estimates

The preparation of financial statements in accordance with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of commitments and contingencies at the date of the financial statements as well as reported amounts of expenses during the reporting periods. Estimates made by the Company include, but are not limited to, those related to the valuation of common stock prior to the Business Combination, valuation of awards under the Extraordinary Performance Award Program (the "EPA Program"), and valuation of Assumed Common Stock Warrants among others. The Company bases these estimates on historical experience and on various other assumptions that it believes are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying amounts of assets and liabilities that are not readily apparent from other sources. Actual results could differ materially from those estimates.

Joint Venture and Redeemable Non-Controlling Interest

QSV was incorporated as a limited liability company in 2018. Volkswagen Group of America, Inc. ("VWGoA"), Volkswagen Group of America Investments, LLC ("VGA") and QuantumScape executed a Joint Venture Agreement ("JVA"), effective September 2018, with the goal of jointly establishing a manufacturing facility to produce the pilot line of the Company's product through QSV. In connection with this agreement, the parties also have entered into two operating agreements: (i) the Limited Liability Company Agreement of QSV to govern the respective rights and obligations as members of QSV and (ii) the Common IP License Agreement for the Company to license certain intellectual property pertaining to automotive battery cells as defined in the JVA to VWGoA, VGA and QSV.

Volkswagen is a related party stockholder (approximately 21.5% and 19.8% voting interest holder of the Company as of December 31, 2022 and 2021, respectively). Upon the effectiveness of the JVA, each party contributed \$1.7 million in cash to capitalize QSV in exchange for 50% equity interests.

QuantumScape Corporation
Notes to Consolidated Financial Statements — Continued

December 31, 2022

The joint venture is considered a VIE with a related party and therefore the related party whose business is more closely related to the planned operations of the joint venture is required to consolidate the operations.

The Company determined its operations were most closely aligned with the operations of the joint venture and therefore has consolidated the results of QSV's operations in its Consolidated Balance Sheets, Consolidated Statements of Operations and Comprehensive Income (Loss) and Consolidated Statements of Redeemable Non-Controlling Interest and Stockholders' Equity. QSV had minimal operations through December 31, 2022.

The Company classifies non-controlling interests with redemption features that are not solely within the control of the Company within temporary equity on the Company's Consolidated Balance Sheets in accordance with ASC 480-10-S99-3A, SEC Staff Announcement: Classification and Measurement of Redeemable Securities ("ASC 480-10-S99-3A"). The non-controlling interest was recorded outside of stockholders' equity because the non-controlling interest provides the holder with put rights in the event of, amongst others, (i) the failure by the Company to meet specified development milestones within certain timeframes, (ii) the parties to the JVA cannot agree to certain commercial terms within certain timeframes, or (iii) a change of control of the Company, which such events are considered not solely within the Company's control. The Company adjusts redeemable non-controlling interests for the portion of net loss attributable to the redeemable non-controlling interests. As of December 31, 2022, the redeemable non-controlling interest is equivalent to the value of Volkswagen's interest in the joint venture. The commercialization timeline originally contemplated in 2018 by the joint venture agreements, and by subsequent amendments, has changed, and as of the time of our filing of this annual report on Form 10-K, certain milestones contemplated by the joint venture agreements were not met. As a result, Volkswagen now has the right to exercise its put rights. If Volkswagen exercises such rights, the joint venture with Volkswagen and Volkswagen's commitments to purchase output capacity from the joint venture would terminate, and we would be obligated to purchase Volkswagen's interest in the joint venture for its book value. As of December 31, 2022, the book value of this interest was approximately \$1.7 million and is recorded as a redeemable non-controlling interest in our Consolidated Balance Sheets. To date, Volkswagen has not informed us of any intention to exercise their put rights.

Concentrations of Credit Risk

Financial instruments that potentially subject the Company to credit risk consist principally of cash and cash equivalents and marketable securities. As of December 31, 2022 and 2021, approximately \$107.4 million and \$227.8 million of our total cash and cash equivalents and marketable securities, are held in U.S. money market funds, and \$610.5 million and \$722.3 million are invested in U.S. government and agency securities, respectively. The Company seeks to mitigate its credit risk with respect to cash and cash equivalents and marketable securities by making deposits with large, reputable financial institutions and investing in high credit rated shorter-term instruments.

Cash and Cash Equivalents and Restricted Cash

Management considers all highly liquid investments with original maturities of three months or less to be cash equivalents.

Restricted cash is maintained under an agreement that legally restricts the use of such funds and is reported within other assets as the date of availability or disbursement for all restricted cash is more than one year from December 31, 2022.

Restricted cash is comprised of \$17.5 million, as of both December 31, 2022 and December 31, 2021, all of which is pledged as a form of security for the Company's lease agreements for its headquarters and pre-pilot manufacturing facilities.

Marketable Securities

The Company's investment policy is consistent with the definition of available-for-sale securities. The Company does not buy and hold securities principally for the purpose of selling them in the near future. The Company's policy is focused on the preservation of capital, liquidity, and return. From time to time, the Company may sell certain securities, but the objectives are generally not to generate profits on short-term differences in price.

These securities are carried at estimated fair value with unrealized gains and losses included in other comprehensive gain/loss in stockholders' equity until realized. Gains and losses on marketable security transactions are reported on the specific-identification method. Dividend and interest income are recognized when earned.

QuantumScape Corporation
Notes to Consolidated Financial Statements — Continued

December 31, 2022

Fair Value Measurement

The Company applies fair value accounting for all financial assets and liabilities measured on a recurring and nonrecurring basis. Fair value is defined as an exit price, representing the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. As such, fair value is a market-based measurement that should be determined based on assumptions that market participants would use in pricing an asset or a liability. The accounting guidance established a fair value hierarchy based on three levels of inputs, of which the first two are considered observable and the last unobservable, used to determine the fair value of its financial instruments. A financial instrument's level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement.

- Level 1 – Quoted prices in active markets for identical assets or liabilities that the entity has the ability to access.
- Level 2 – Inputs other than Level 1 that are observable, either directly or indirectly, such as quoted prices for similar assets or liabilities, quoted prices 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 and liabilities.
- Level 3 – Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets and liabilities.

Property and Equipment

Property and equipment are recorded at historical cost, less accumulated depreciation. Depreciation is computed using the straight-line method over the estimated useful life of the related asset. Improvements that increase functionality of the fixed asset are capitalized and depreciated over the asset's remaining useful life. Deposits for purchases of property and equipment are included in construction-in-progress. Construction-in-progress is not depreciated until the asset is placed in service. Fully depreciated assets are retained in property and equipment, net, until removed from service.

The estimated useful lives of assets are generally as follows:

Computer equipment, hardware, and software	3 - 5 years
Furniture and fixtures	7 - 10 years
Machinery and equipment	3 - 10 years
Leasehold improvements	Shorter of the lease term (including estimated renewals) or the estimated useful lives of the improvements

Impairment of Long-Lived Assets

The Company evaluates the carrying value of long-lived assets when indicators of impairment exist. The carrying value of a long-lived asset is considered impaired when the estimated separately identifiable, undiscounted cash flows from such an asset are less than the carrying value of the asset. In that event, a loss is recognized based on the amount by which the carrying value exceeds the fair value of the long-lived asset. Fair value is determined primarily using the estimated cash flows discounted at a rate commensurate with the risk involved. The long-lived assets outside of U.S. are not material as of December 31, 2022. There was no material impairment charge in the year ended December 31, 2021, or December 31, 2020.

During the year ended December 31, 2022, the Company wrote off approximately \$13.7 million of equipment and incurred cancellation charges of approximately \$2.8 million to focus on process and equipment development designed to deliver higher throughput with fewer processing steps. These charges are recorded in Research and Development expense in the Consolidated Statements of Operations and Comprehensive Income (Loss).

QuantumScape Corporation
Notes to Consolidated Financial Statements — Continued

December 31, 2022

Leases

The Company classifies arrangements meeting the definition of a lease as operating or financing leases, and leases are recorded on the Consolidated Balance Sheets as both a right-of-use (“ROU”) asset and lease liability, calculated by discounting fixed lease payments over the lease term at the rate implicit in the lease or the Company’s incremental borrowing rate which is the rate incurred to borrow on a collateralized basis over a similar term. Lease liabilities are increased by interest and reduced by payments each period, and the ROU asset is reduced over the lease term. For operating leases, interest on the lease liability and the non-cash lease expense result in straight-line rent expense over the lease term. For finance leases, interest on the lease liability and the amortization of the ROU asset results in front-loaded expense over the lease term. Variable lease expenses, including common maintenance fees, insurance and property tax, are recorded when incurred.

In calculating the right-of-use asset and lease liability, the Company elects to combine lease and non-lease components for all classes of assets, and elects to exclude short-term leases having terms of 12 months or less.

Assumed Common Stock Warrants Liability

The Company assumed 11,499,989 Public Warrants and 6,650,000 Private Placement Warrants upon the Business Combination, all of which were issued in connection with Kensington’s initial public offering (other than 75,000 Private Placement Warrants that were issued in connection with the closing of the Business Combination, which are referred to as the Working Capital Warrants) and entitled each holder to purchase one share of Class A Common Stock at an exercise price of \$11.50 per share.

The Company evaluated the Assumed Common Stock Warrants under ASC 815-40, *Derivatives and Hedging—Contracts in Entity’s Own Equity* (“ASC 815-40”), and concluded they did not meet the criteria to be classified in stockholders’ equity. Specifically, the exercise of the Assumed Common Stock Warrants could have been settled in cash upon the occurrence of a tender offer or exchange that involves 50% or more of our holders of Class A Common Stock. Because not all of the voting stockholders need to participate in such tender offer or exchange to trigger the potential cash settlement and the Company does not control the occurrence of such an event, the Company concluded that the Assumed Common Stock Warrants did not meet the conditions to be classified in equity. Since the Assumed Common Stock Warrants meet the definition of a derivative under ASC 815, the Company recorded these warrants as liabilities on the Consolidated Balance Sheets at fair value, with subsequent changes in their respective fair values recognized in the change in fair value of Assumed Common Stock Warrant liabilities within the Consolidated Statement of Operations and Comprehensive Income (Loss) at each reporting date prior to exercise or redemption.

As described in Note 7, Commitments and Contingencies, below, the Company announced that it had elected to redeem its outstanding Public Warrants and Private Placement Warrants in July and August 2021, respectively. As of December 31, 2021, no Public Warrants or Private Placement Warrants were outstanding. As of December 31, 2020, 11,499,989 Public Warrants and 6,650,000 Private Placement Warrants were outstanding.

Segments

Operating segments are defined as components of an entity for which separate financial information is available and that is regularly reviewed by the Chief Operating Decision Maker (“CODM”) in deciding how to allocate resources to an individual segment and in assessing performance. The Company’s CODM is its Chief Executive Officer. The Company has determined that it operates in one operating segment and one reportable segment, as the CODM reviews financial information presented on a consolidated basis for purposes of making operating decisions, allocating resources, and evaluating financial performance.

Research and Development Cost

Costs related to research and development are expensed as incurred.

General and Administrative Expenses

General and administrative expenses represent costs incurred by the Company in managing the business, including salary, benefits, incentive compensation, marketing, insurance, professional fees and other operating costs associated with the Company’s non-research and development activities.

QuantumScape Corporation
Notes to Consolidated Financial Statements — Continued

December 31, 2022

Stock-Based Compensation

The Company measures and recognizes compensation expense for all stock-based awards made to employees, directors, and non-employees, including stock options, restricted share units and restricted shares, based on estimated fair values recognized over the requisite service period.

The fair values of options granted with only service conditions are estimated on the grant date using the Black-Scholes option pricing model. This valuation model for stock-based compensation expense requires the Company to make assumptions and judgments about the variables used in the calculation, including the expected term (weighted-average period of time that the options granted are expected to be outstanding), the volatility of the Company's common stock, and an assumed risk-free interest rate. The Company accounts for forfeitures when they occur.

The fair values of options granted with performance (e.g., business milestone) and market conditions (e.g., stock price target) are estimated at the grant date using a Monte Carlo simulation model. The model determined the grant date fair value of each vesting tranche and the future date when the market condition for such tranche is expected to be achieved. The Monte Carlo valuation requires the Company to make assumptions and judgments about the variables used in the calculation including the expected term, volatility of the Company's common stock, an assumed risk-free interest rate, and cost of equity.

For performance-based awards with a vesting schedule based entirely on the attainment of both performance and market conditions, each quarter the Company assesses whether it is probable that it will achieve each performance condition that has not previously been achieved or deemed probable of achievement and if so, the future time when the Company expects to achieve that business milestone, or its "expected business milestone achievement time." When the Company first determines that a business milestone has become probable of being achieved, the Company allocates the entire expense for the related tranche over the number of quarters between the grant date and the then-applicable "expected vesting date," which represents the requisite service period. The requisite service period at any given time is generally the period between the grant date and the later of (i) the expected time when the performance condition will be achieved (if the related performance condition has not yet been achieved) and (ii) the expected time when the market condition will be achieved (if the related market condition has not yet been achieved). The Company immediately recognizes a cumulative catch-up expense for all accumulated expense for the quarters from the grant date through the quarter in which the performance condition was first deemed probable of being achieved. Each quarter thereafter, the Company recognizes the then-remaining expense for the tranche through the end of the requisite service period except that upon vesting of a tranche, all remaining expense for that tranche is immediately recognized. The Company accounts for forfeitures when they occur.

The Company estimates the fair value of restricted stock units based on the closing price of the Company's Class A Common Stock on the date of grant.

The Company's 2020 Employee Stock Purchase Plan ("ESPP") is compensatory in accordance with ASC 718-50-25. The Company measures and recognizes compensation expense for shares to be issued under the ESPP based on estimated grant date fair value recognized on a straight-line basis over the offering period.

The first offering period for the ESPP commenced in June 2021. The ESPP provides eligible employees with the opportunity to purchase shares of the Company's Class A Common Stock at a discount through payroll deductions. A participant may purchase a maximum of 1,000 shares of Class A Common Stock during each six-month offering period. As of December 31, 2022, 11.3 million shares of Class A Common Stock were reserved for future issuance under the ESPP. There were 510,993 shares purchased under the ESPP during the year ended December 31, 2022.

Income Taxes

The Company accounts for income taxes under an asset and liability approach. 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 and operating loss carryforwards, measured by applying currently enacted tax laws. Valuation allowances are provided when necessary to reduce net deferred tax assets to an amount that is more likely than not to be realized.

The Company recognizes tax liabilities based upon its estimate of whether, and the extent to which, additional taxes will be due when such estimates are more likely than not to be sustained. An uncertain income tax position will not be recognized if it has less than a 50% likelihood of being sustained.

QuantumScape Corporation
Notes to Consolidated Financial Statements — Continued

December 31, 2022

Net Loss per Share of Common Stock

Basic net income (loss) per share is computed by dividing the net loss attributable to common stockholders by the weighted-average number of shares of common stock outstanding during the period.

Diluted earnings (loss) per share adjusts basic earnings per share for the potentially dilutive impact of stock options and warrants. For warrants that are liability-classified, during periods when the impact is dilutive, the Company assumes share settlement of the instruments as of the beginning of the reporting period and adjusts the numerator to remove the change in fair value of the warrant liability and adjusts the denominator to include the dilutive shares calculated using the treasury stock method.

Note 3. Recent Accounting Pronouncements

In August 2020, the FASB issued ASU 2020-06, *Debt—Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging—Contracts in Entity's Own Equity (Subtopic 815-40): Accounting for Convertible Instruments and Contracts in an Entity's Own Equity*, which simplifies accounting for convertible instruments by removing major separation models required under current U.S. GAAP. The ASU removes certain settlement conditions that are required for equity contracts to qualify for the derivative scope exception and it also simplifies the diluted earnings per share calculation in certain areas. The ASU is effective for fiscal years beginning after December 15, 2023, including interim periods within those fiscal years. Early adoption is permitted, but no earlier than for fiscal years beginning after December 15, 2021, and adoption must be as of the beginning of the Company's annual fiscal year. The Company adopted this guidance in the first quarter of fiscal 2022. The adoption of such guidance had no impact on the Company's consolidated financial statements as the Company does not have any convertible instruments as of December 31, 2022.

In November 2021, the FASB issued ASU 2021-10, *Government Assistance (Topic 832), Disclosures by Business Entities About Government Assistance*, which requires entities to provide disclosures on material government transactions for annual reporting periods. The disclosures include information around the nature of the assistance, the related accounting policies used to account for government assistance, the effect of government assistance on the entity's financial statements, and any significant terms and conditions of the agreements, including commitments and contingencies. The ASU is effective for financial statements issued for annual periods beginning after December 15, 2021, with early adoption permitted. The Company adopted this guidance in the first quarter of fiscal 2022. The adoption of such guidance had no material impact on the Company's consolidated financial statements as of December 31, 2022.

In December 2022, the FASB issued ASU 2022-06, *Reference Rate Reform (Topic 848), Deferral of the Sunset Date of Topic 848*, which defers the sunset date of Topic 848 from December 31, 2022 to December 31, 2024, after which entities will no longer be permitted to apply the relief in Topic 848 that provides optional guidance to ease the potential burden in accounting for (or recognizing the effects of) reference rate reform on financial reporting. The ASU is effective for all entities upon issuance. The Company adopted the guidance in December 2022. The adoption of such guidance had no impact on the Company's consolidated financial statements as of December 31, 2022.

QuantumScape Corporation
Notes to Consolidated Financial Statements — Continued

December 31, 2022

Note 4. Fair Value Measurement

The Company's financial assets and liabilities subject to fair value measurements on a recurring basis and the level of inputs used for such measurements were as follows (amounts in thousands):

	Fair Value Measured as of December 31, 2022		Total
	Level 1	Level 2	
Assets included in:			
Money market funds ⁽¹⁾	\$ 107,439	\$ —	\$ 107,439
Commercial paper ⁽²⁾	—	104,231	104,231
U.S. government and agency securities ⁽²⁾	—	610,450	610,450
Corporate notes and bonds ⁽²⁾	—	188,658	188,658
Total fair value	<u>\$ 107,439</u>	<u>\$ 903,339</u>	<u>\$ 1,010,778</u>

	Fair Value Measured as of December 31, 2021		Total
	Level 1	Level 2	
Assets included in:			
Money market funds ⁽¹⁾	\$ 227,826	\$ —	\$ 227,826
Commercial paper ⁽²⁾	—	233,400	233,400
U.S. government securities ⁽²⁾	—	722,310	722,310
Corporate notes and bonds ⁽²⁾	—	257,384	257,384
Total fair value	<u>\$ 227,826</u>	<u>\$ 1,213,094</u>	<u>\$ 1,440,920</u>

(1) Money market funds are included in cash and cash equivalents on the Consolidated Balance Sheets.

(2) Marketable securities consist of commercial paper, U.S. government and agency securities, corporate notes and bonds. As of December 31, 2022 and 2021, marketable securities with original maturities of three months or less of \$77.0 million and \$86.1 million, respectively, are included in cash and cash equivalents on the Consolidated Balance Sheets.

Level 1 assets and liabilities: Money market funds are classified as Level 1 within the fair value hierarchy, as fair value is based on unadjusted quoted prices in active markets for identical assets and liabilities.

Level 2 assets and liabilities: Investments in government securities, corporate bonds and commercial paper are classified as Level 2 as they were valued based upon quoted market prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, and model-based valuation techniques for which all significant inputs are observable in the market or can be corroborated by observable market data for substantially the full term of the assets.

The Company had no financial liabilities subject to fair value measurements on a recurring basis as of December 31, 2022 and December 31, 2021.

There have been no changes to the valuation methods utilized during the year ended December 31, 2022. As of December 31, 2022 and 2021, the carrying values of cash and cash equivalents, accounts payable and accrued liabilities approximate their respective fair values due to their short-term nature.

QuantumScape Corporation
Notes to Consolidated Financial Statements — Continued

December 31, 2022

Marketable Securities

The following table summarizes, by major security type, the Company's assets that are measured at fair value on a recurring basis and are categorized using the fair value hierarchy. Amortized cost net of unrealized gain (loss) is equal to fair value as of December 31, 2022 and 2021. The fair value as of December 31, 2022 and 2021, are as follows (amounts in thousands):

	December 31, 2022			Fair Value
	Amortized Cost	Gross Unrealized Gain	Gross Unrealized Loss	
Level 1 securities				
Money market funds	\$ 107,439	\$ —	\$ —	\$ 107,439
Level 2 securities				
Commercial paper	104,231	—	—	104,231
U.S. government and agency securities	620,660	24	(10,234)	610,450
Corporate notes and bonds	196,321	—	(7,663)	188,658
Total	<u>\$ 1,028,651</u>	<u>\$ 24</u>	<u>\$ (17,897)</u>	<u>\$ 1,010,778</u>

	December 31, 2021			Fair Value
	Amortized Cost	Gross Unrealized Gain	Gross Unrealized Loss	
Level 1 securities				
Money market funds	\$ 227,826	\$ —	\$ —	\$ 227,826
Level 2 securities				
Commercial paper	233,400	—	—	233,400
U.S. government securities	724,554	—	(2,244)	722,310
Corporate notes and bonds	259,348	—	(1,964)	257,384
Total	<u>\$ 1,445,128</u>	<u>\$ —</u>	<u>\$ (4,208)</u>	<u>\$ 1,440,920</u>

Any realized gains and losses and interest income are included in interest income.

The Company regularly reviews its available-for-sale marketable securities in an unrealized loss position and evaluate the current expected credit loss by considering factors such as historical experience, market data, issuer-specific factors, and current economic conditions. The following tables display additional information regarding gross unrealized losses and fair value by major security type for the 95 and 118 marketable securities in unrealized loss position as of December 31, 2022 and 2021, respectively (amounts in thousands):

	December 31, 2022					
	Less than 12 Consecutive Months		12 Consecutive Months or Longer		Total	
	Gross Unrealized Loss	Fair Value	Gross Unrealized Loss	Fair Value	Gross Unrealized Loss	Fair Value
U.S. government and agency securities	\$ (521)	\$ 231,047	\$ (9,713)	\$ 336,517	\$ (10,234)	\$ 567,564
Corporate notes and bonds	(261)	18,585	(7,402)	170,073	(7,663)	188,658
Total	<u>\$ (782)</u>	<u>\$ 249,632</u>	<u>\$ (17,115)</u>	<u>\$ 506,590</u>	<u>\$ (17,897)</u>	<u>\$ 756,222</u>

	December 31, 2021					
	Less than 12 Consecutive Months		12 Consecutive Months or Longer		Total	
	Gross Unrealized Loss	Fair Value	Gross Unrealized Loss	Fair Value	Gross Unrealized Loss	Fair Value
U.S. government securities	\$ (2,239)	\$ 700,318	\$ (5)	\$ 17,011	\$ (2,244)	\$ 717,329
Corporate notes and bonds	(1,964)	257,384	—	—	(1,964)	257,384
Total	<u>\$ (4,203)</u>	<u>\$ 957,702</u>	<u>\$ (5)</u>	<u>\$ 17,011</u>	<u>\$ (4,208)</u>	<u>\$ 974,713</u>

QuantumScape Corporation
Notes to Consolidated Financial Statements — Continued

December 31, 2022

The unrealized losses were attributable to changes in interest rates that impacted the value of the investments, and not increased credit risk. During the years ended December 31, 2022, 2021, and 2020, the Company received proceeds of \$15.2 million, \$225.1 million, and \$14.0 million, including interest, from the sale of available-for-sale marketable securities, respectively. The Company realized immaterial gains and losses as a result of such sales. The Company does not intend to sell the investments that are in an unrealized loss position, nor is it more likely than not that the Company will be required to sell the investments before the recovery of the amortized cost basis, which may be its maturity. Accordingly, the Company did not record an allowance for credit losses associated with these investments.

The estimated amortized cost and fair value of available-for-sale securities by contractual maturity as of December 31, 2022, are as follows (amounts in thousands):

	December 31, 2022	
	Amortized Cost	Fair Value
Due within one year	\$ 803,011	\$ 797,053
Due after one year and through five years	225,640	213,725
Total	\$ 1,028,651	\$ 1,010,778

Convertible Preferred Stock Tranche Liabilities

In May 2020 and September 2020, Legacy QuantumScape executed a stock purchase agreement and related agreements and amendments thereto, with VGA for an investment of \$200 million in Legacy QuantumScape's Series F convertible preferred stock.

The terms of the Series F Preferred Stock Purchase Agreement with VGA obligated Legacy QuantumScape to issue and sell, and VGA to purchase, up to a total of 7,569,508 shares of Series F convertible preferred stock (the "tranche shares") at \$26.4218 per share, to be funded in two tranches: (1) 3,784,754 shares of Legacy QuantumScape Series F Preferred Stock issued for \$100 million on December 1, 2020 (the time-based portion of the agreement, "tranche shares 1"), and (2) 3,784,754 shares of Legacy QuantumScape Series F Preferred Stock will be issued for \$100 million subject to certain conditions including the achievement of a specified technical milestone by March 31, 2021, as set forth in such agreements ("tranche shares 2"). The Company concluded that the firm commitment to issue the tranche shares met the definition of a freestanding financial instrument. As the underlying convertible preferred shares of the outstanding tranche liabilities were redeemable outside the control of the Company, the fair value of the tranche liabilities was reported on the Company's balance sheets as a long-term liability, and the fair value change was recorded in other expense in the Consolidated Statements of Operations and Comprehensive Loss, as noted in the table below.

The Series F Preferred Stock Purchase Agreement with VGA, as amended, contains provisions pursuant to which, if the relevant closing of such Series F Preferred Stock Purchase Agreement (in whole or in part) occur only after effectiveness of the Merger, VGA agreed to purchase, and the Company agreed to issue, instead of the relevant number of shares of Legacy QuantumScape Series F Preferred Stock to be purchased at such closing, such number of shares of Class A Common Stock as would have been issued in the Merger in exchange for such shares of Legacy QuantumScape Series F Preferred Stock if they had been outstanding prior to the Merger. As a result of these provisions to issue shares of Class A Common Stock, and upon consummation of the Business Combination, the Company determine its obligation to issue Class A Common Stock pursuant to the Series F Preferred Stock Purchase Agreement was equity classified and the fair value of the tranche liabilities was reclassified to additional paid-in capital.

In August 2020, Legacy QuantumScape entered into Series F Preferred Stock Purchase Agreements and related agreements thereto with several new and existing investors, pursuant to which it agreed to sell, and the investors agreed to purchase, an aggregate of 7,115,335 shares of Legacy QuantumScape Series F Preferred Stock at \$26.4218 per share for an aggregate purchase price of \$188 million (tranche shares 3 and 4), of which: (1) \$94.0 million was to be funded at the earlier of December 1, 2020 or a SPAC business combination ("tranche shares 3"), and (2) the remaining \$94.0 million tranche ("tranche shares 4") was to be funded at the earlier of a SPAC business combination closing or March 2021. Similar to the tranche shares to VGA, the Company concluded that the firm commitment to issue the incremental tranche shares 3 and 4 met the definition of a freestanding financial instrument.

QuantumScape Corporation
Notes to Consolidated Financial Statements — Continued

December 31, 2022

Pursuant to the terms of these Series F Preferred Stock Purchase Agreements, funding of the tranche shares 3 and 4 occurred concurrent with the closing of the Business Combination. Upon funding and issuance of the 7,115,335 shares of Legacy QuantumScape Series F Preferred Stock, the convertible preferred stock tranche liability associated with tranche shares 3 and 4 was settled and the fair value of the tranche liability was recorded as redeemable convertible preferred stock.

The Company remeasured all tranche share liabilities as of closing date of the Business Combination based on the closing market price of Kensington immediately prior to the Business Combination. The fair value of the Series F convertible preferred stock tranche liabilities was calculated based on the traded stock price of Kensington at November 25, 2020 of \$23.50, adjusted for the Exchange Ratio, less the Series F exercise price of \$26.42.

The following table presents the reconciliation of the Series F convertible preferred tranche liabilities measured and recorded at fair value on a recurring basis using the significant unobservable inputs described above (amounts in thousands):

	Fair Value
Balance as of December 31, 2019	\$ —
Issuance and re-measurement loss recorded in other expense	999,865
Issuance of Legacy QuantumScape Series F Preferred Stock - tranche shares 3 and 4	(484,471)
Reclassification to additional paid-in capital upon Closing of the Business Combination - tranche shares 1 and 2	(515,394)
Balance as of December 31, 2020	\$ —

Note 5. Balance Sheet Components

Property and Equipment

Property and equipment as of December 31, 2022 and 2021, consisted of the following (amounts in thousands):

	December 31,	
	2022	2021
Computer equipment, hardware, and software	\$ 6,784	\$ 2,740
Furniture and fixtures	57,771	15,116
Leasehold improvements	72,201	23,192
Machinery and equipment	120,618	66,953
Construction-in-progress	108,585	101,420
Property and equipment, gross	365,959	209,421
Accumulated depreciation and amortization	(70,025)	(43,238)
Property and equipment, net	\$ 295,934	\$ 166,183

Depreciation and amortization expense related to property and equipment was \$27.4 million, \$11.7 million and \$7.5 million for the years ended December 31, 2022, 2021 and 2020, respectively.

Accrued Liabilities

Accrued liabilities as of December 31, 2022 and 2021, consisted of the following (amounts in thousands):

	December 31,	
	2022	2021
Accrued property and equipment	\$ 3,152	\$ 1,815
Accrued facilities expense	1,106	1,637
Other	3,219	2,626
Accrued liabilities	\$ 7,477	\$ 6,078

QuantumScape Corporation
Notes to Consolidated Financial Statements — Continued

December 31, 2022

Other Liabilities

Other liabilities as of December 31, 2022 and 2021, consisted of the following (amounts in thousands):

	December 31,	
	2022	2021
Long-term advance payments	\$ 2,615	\$ 315
Asset retirement obligation	5,873	—
Other liabilities	\$ 8,488	\$ 315

Note 6. Leases

The Company leases its headquarters, pre-pilot manufacturing facilities and certain equipment, with current lease terms running through 2032. Fixed rent generally escalates each year, and the Company is responsible for a portion of the landlords' operating expenses such as property tax, insurance and common area maintenance.

In April 2021, the Company entered into a lease agreement for premises consisting of approximately 197,000 rentable square feet of space located in San Jose, California to be used for QS-0. The lease expires in September 2032. Under this QS-0 lease, the Company has two five-year renewal options, which have not been included in the calculation of the lease liability and right-of use asset at the lease inception as the exercise of the options was not reasonably certain. This initial QS-0 lease is classified as a finance lease.

In June 2021, the Company amended the terms of its 2013 headquarter lease to provide for, among other things, an extension of the lease term to September 2032. Under the amended headquarter lease, the Company retained its one five-year renewal option, which has not been included in the calculation of lease liabilities and right of use assets at the amendment date, as the exercise of the option was not reasonably certain.

In November 2021, the Company entered into lease agreements for additional premises consisting of approximately 222,000 rentable square feet of space in San Jose, California adjacent to the site of QS-0. The November 2021 leases represent an expansion of space for QS-0 and the Company's engineering and development activities. Such leases will expire in September 2032 but include an option to extend the terms of the lease for an additional 10-year period. The November 2021 leases commenced in November 2021, January 2022, and April 2022 and were classified as operating leases. The additional 10-year extension period has not been included in the calculation of the lease liability and right-of-use asset at the lease inception as the exercise of the option was not reasonably certain.

The Company's leases do not have any contingent rent payments and do not contain residual value guarantees.

The components of lease-related expense are as follows (amounts in thousands):

Lease costs	Year Ended December 31,		
	2022	2021	2020
Finance lease costs:			
Amortization of right-of-use assets	\$ 2,873	\$ 1,915	\$ —
Interest on lease liabilities	2,399	1,419	—
Operating lease costs	9,082	3,016	2,143
Variable lease costs	2,330	530	409
Total lease expense	\$ 16,684	\$ 6,880	\$ 2,552

The components of supplemental cash and noncash information related to leases are as follows (amounts in thousands):

	Year Ended December 31,		
	2022	2021	2020
Operating outgoing cash flows - finance lease	\$ 1,610	\$ 330	\$ —
Financing outgoing cash flows - finance lease	809	73	—
Financing (incoming) cash flows - finance lease	—	(5,580)	—
Operating outgoing cash flows - operating lease	4,673	2,711	1,994
Right-of-use assets obtained in exchange for new finance lease liabilities	—	32,802	—
Right-of-use assets obtained in exchange for new operating lease liabilities	28,845	26,778	—

QuantumScape Corporation
Notes to Consolidated Financial Statements — Continued

December 31, 2022

The table below displays additional information for leases:

	December 31,	
	2022	2021
Finance lease		
Weighted-average remaining lease term - finance lease (in years)	9.8	10.8
Weighted-average discount rate - finance lease	6.06 %	6.06 %
Operating lease		
Weighted-average remaining lease term - operating lease (in years)	9.6	10.7
Weighted-average discount rate - operating lease	6.36 %	6.34 %

As of December 31, 2022, future minimum payments during the next five years and thereafter are as follows (amounts in thousands):

Fiscal Year	Operating Lease	Finance Lease
2023	\$ 7,461	\$ 3,751
2024	8,892	5,131
2025	9,104	5,272
2026	9,039	5,417
2027	9,135	5,565
Thereafter	46,370	28,065
Total	90,001	53,201
Less present value discount	(23,963)	(13,823)
Lease liabilities	\$ 66,038	\$ 39,378

As the Company's lease agreements do not provide an implicit rate, the Company used an estimated incremental borrowing rate that will be incurred to borrow on a collateralized basis over a similar term at the lease commencement date or modification date in determining the present value of lease payments.

Asset Retirement Obligations

The Company establishes assets and liabilities for the present value of estimated future costs to return certain of our leased facilities to their original condition upon the termination or expiration of a lease. The recognition of an asset retirement obligation requires the Company to make assumptions and judgments including the actions required to satisfy the liability, inflation rates and the credit-adjusted risk-free rate. The initially recognized asset retirement cost is amortized using the same method and useful life as the long-lived asset to which it relates. Accretion expense is recognized over time as the discounted liability is accreted to its expected settlement value.

Note 7. Commitments and Contingencies

From time to time, and in the ordinary course of business, the Company may be subject to certain claims, charges and litigation concerning matters arising in connection with the conduct of the Company's business activities.

QuantumScape Corporation
Notes to Consolidated Financial Statements — Continued

December 31, 2022

Warrants Litigation

Purported Company warrantholders filed actions against the Company in the United States District Court for the Southern District of New York alleging, among other things, that they were entitled to exercise their warrants within 30 days of the closing of the Business Combination and that the preliminary and final versions of the proxy statement/prospectus/information statement dated September 21, 2020, and November 12, 2020, were misleading and/or omitted material information concerning the exercise of the warrants. The actions have been consolidated for the purposes of discovery and motion practice. The operative consolidated complaint, filed January 21, 2022, seeks monetary damages for alleged breach of contract, securities law violations, and fraud. The parties have moved for partial summary judgment, which motions are pending. QuantumScape continues to believe it has meritorious defenses to the claims and intends to defend itself vigorously.

Securities Class Action Litigation

Beginning in January 2021 class action lawsuits were filed in the United States District Court for the Northern District of California by purported purchasers of Company securities. Lead plaintiff filed a consolidated complaint on June 21, 2021, which alleges a purported class that includes all persons who purchased or acquired our securities between November 27, 2020 and April 14, 2021. The consolidated complaint names the Company, its Chief Executive Officer, its Chief Financial Officer, and its Chief Technology Officer as defendants. The consolidated complaint alleges that the defendants purportedly made false and/or misleading statements and failed to disclose material adverse facts about the Company's business, operations, and prospects, including information regarding the Company's battery technology. On January 14, 2022, defendants' motion to dismiss the consolidated complaint was substantially denied. On December 19, 2022, the court granted plaintiffs' motion to certify the class. Defendants filed a petition with the Ninth Circuit Court of Appeals seeking permission to appeal the certification order. QuantumScape continues to believe it has meritorious defenses to the claims and intends to defend itself vigorously.

Shareholder Derivative Litigation

Two shareholder derivative suits were filed in February 2021 in the United States District Court for the Northern District of California against 11 officers and directors of the Company and have been consolidated into one action, with the first-filed complaint being designated the operative one. The Company is the nominal defendant. The complaint alleges that the individual defendants breached various duties to the Company and contains additional similar allegations based on the same general allegations in the class action described immediately above. VGA is also named as a defendant in the derivative litigation. The action is currently stayed.

Four shareholder derivative suits were filed beginning in June 2022 in the Court of Chancery of the State of Delaware against current and former directors and officers of the Company. The Company is the nominal defendant. The complaints allege that the individual defendants breached various duties to the Company. VGA is also named as a defendant in two of those actions. The suits were consolidated and are currently stayed.

Another shareholder derivative suit was filed in the Court of Chancery of the State of Delaware on August 16, 2022, against former and current directors and officers of the Company and of Kensington. The Company is the nominal defendant. The complaint alleges that the individual defendants breached various duties to the Company. Defendants moved to dismiss the complaint, which motion is pending.

QuantumScape Corporation
Notes to Consolidated Financial Statements — Continued

December 31, 2022

Section 205 Proceeding

On February 9, 2023, the Company filed a petition in the Court of Chancery of the State of Delaware pursuant to Section 205 of the DGCL asking the Court to ratify and validate potentially defective corporate acts (the “Petition”). The Petition concerned a November 25, 2020 vote by the stockholders of the Company to approve certain matters relating to the Business Combination. Among these matters was a proposal to amend the Company's then-effective Amended and Restated Certificate of Incorporation to, among other things, (i) increase the total number of authorized shares of Class A common stock, and (ii) opt out of the separate class voting requirements of Section 242(b)(2) of the DGCL (collectively the “Charter Amendments”). The Charter Amendments were approved by a majority of the shares of the Company's Class A common stock and Class B common stock, voting as a single class.

A recent ruling by the Court of Chancery introduced uncertainty as to whether Section 242(b)(2) of the DGCL would have required the Charter Amendments to be approved by a separate vote of the majority of the Company's then-outstanding shares of Class A common stock.

In light of that ruling, the Petition sought validation of the filing and effectiveness of the Charter Amendments and the shares and securities issued in reliance on the Charter Amendments to resolve any uncertainty with respect to those matters. A hearing on the merits of the Petition was held on February 27, 2023. The Court granted the relief sought in the Petition, validating and declaring effective pursuant to Section 205 of the DGCL the filing and effectiveness of the Charter Amendments and the shares and securities issued in reliance on the Charter Amendments.

For many legal matters, particularly those in early stages, the Company cannot reasonably estimate the possible loss (or range of loss), if any. The Company records an accrual for legal matters at the time or times it determines that a loss is both probable and reasonably estimable. Amounts accrued as of December 31, 2022 and 2021 were not material. Regarding matters for which no accrual has been made (including the potential for losses in excess of amounts accrued), the Company currently believes, based on its own investigations, that any losses (or ranges of losses) that are reasonably possible and estimable will not, in the aggregate, have a material adverse effect on its financial position, results of operations, or cash flows. However, the ultimate outcome of legal proceedings involves judgments, estimates, and inherent uncertainties and cannot be predicted with certainty. Should the ultimate outcome of any legal matter be unfavorable, the Company's business, financial condition, results of operations, or cash flows could be materially and adversely affected. The Company may also incur substantial legal fees, which are expensed as incurred, in defending against legal claims.

Other commitments

The Company's minimum purchase commitments consist of non-cancellable agreements to purchase goods and services, primarily for materials, and licenses and hosting services, entered into in the ordinary course of business.

As of December 31, 2022, future minimum purchase commitments in aggregate during the next five years and thereafter are as follows (amounts in thousands):

Fiscal Year	Minimum Purchase Commitments
2023	\$ 2,775
2024	3,150
2025	2,358
2026	2,105
2027	1,418
Thereafter	—
Total	\$ 11,806

Note 8. Assumed Common Stock Warrants

The Company assumed 11,499,989 Public Warrants and 6,650,000 Private Placement Warrants upon the Business Combination, all of which were issued in connection with Kensington's initial public offering (other than 75,000 Private Placement Warrants that were issued in connection with the closing of the Business Combination, which are referred to as the Working Capital Warrants) and entitled each holder to purchase one share of Class A Common Stock at an exercise price of \$11.50 per share.

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The Company recorded these warrants as liabilities on the Consolidated Balance Sheets at fair value, with subsequent changes in their respective fair values recognized in the Change in fair value of Assumed Common Stock Warrant liabilities within the Consolidated Statement of Operations and Comprehensive Income (Loss) at each reporting date prior to exercise or redemption. The Public Warrants were publicly traded and thus had an observable market price to estimate fair value, and the Private Placement Warrants were effectively valued similar to the Public Warrants. As a result, the Company recognized a \$168.7 million gain and \$581.9 million loss non-cash change in fair value of Assumed Common Stock Warrant liabilities, in the Consolidated Statements of Operations and Comprehensive Income (Loss) for the years ended December 31, 2021 and 2020, respectively.

All Public Warrants and Private Placement Warrants were exercised or redeemed during the year ended December 31, 2021.

Note 9. Stockholders' Equity

As of December 31, 2022 and 2021, 1,350,000,000 shares, \$0.0001 par value per share are authorized, of which, 1,000,000,000 shares are designated as Class A Common Stock, 250,000,000 shares are designated as Class B Common Stock, and 100,000,000 shares are designated as Preferred Stock.

Common Stock

Holders of the common stock are entitled to dividends when, as, and if, declared by the Board, subject to the rights of the holders of all classes of stock outstanding having priority rights to dividends. As of December 31, 2022, the Company had not declared any dividends. The holder of each share of Class A Common Stock is entitled to one vote, and the holder of each share of Class B Common Stock is entitled to ten votes.

In March 2021, the Company completed an underwritten public offering of shares of its Class A Common Stock and issued 11,960,000 shares for an aggregate purchase price of \$462.9 million, net of issuance costs of \$15.5 million (the "March 2021 Public Offering").

Equity Incentive Plans

Prior to the Business Combination, the Company maintained its 2010 Equity Incentive Plan (the "2010 Plan"), under which the Company granted options and restricted share units to purchase or directly issue shares of common stock to employees, directors, and non-employees.

Upon the closing of the Business Combination, awards under the 2010 Plan were converted at the Exchange Ratio and assumed into the 2020 Equity Incentive Award Plan (the "2020 Plan", and together with the 2010 Plan, the "Plans"). The 2020 Plan permits the granting of awards in the form of incentive stock options, nonqualified stock options, stock appreciation rights, restricted shares, restricted share units and performance awards to employees, directors, and non-employees.

As of December 31, 2022, 62,915,959 shares of Class A Common Stock are authorized for issuance pursuant to awards under the 2020 Plan, plus any shares of Class A Common Stock subject to stock options, restricted stock units or other awards that were assumed in the Business Combination and terminate as a result of being unexercised or are forfeited or repurchased by the Company, with the maximum number of shares to be added to the 2020 Plan equal to 69,846,580 shares of Class A Common Stock. As of December 31, 2022, 33,806,148 shares of Class A Common Stock are reserved and available for future issuance under the 2020 Plan.

Options may be granted at a price per share not less than 100% of the fair market value at the date of grant. If the option is granted to a 10% stockholder, then the purchase or exercise price per share shall not be less than 110% of the fair market value per share of the common stock on the grant date. Options granted generally vest over a period of four years and have ten-year contractual terms.

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Stock Options

Stock option activity under the Plans, including the EPA Program discussed below is as follows:

	Number of Shares Outstanding (in thousands)	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (Years)	Intrinsic value (in thousands)
Balance as of December 31, 2021 ⁽¹⁾	53,078	\$ 7.74	6.78	
Granted ⁽²⁾	2,100	23.04		
Cancelled and forfeited ⁽³⁾	(1,222)	16.66		
Exercised	(3,832)	1.39		
Balance as of December 31, 2022	50,124	\$ 8.65	6.05	\$ 129,209
Vested and expected to vest as of December 31, 2022 ⁽⁴⁾	40,549	\$ 5.25	5.36	\$ 129,209
Vested and exercisable as of December 31, 2022	31,042	\$ 1.73	4.44	\$ 122,355

(1) This includes 14.7 million options granted in December 2021 pursuant to the EPA Program.

(2) All options granted during the year ended December 31, 2022, were granted pursuant to the EPA Program.

(3) This includes 0.8 million options forfeited from the EPA program.

(4) This includes 6.4 million options granted pursuant to the EPA Program that are currently expected to vest. None of the options granted pursuant to the EPA Program were vested and exercisable as of December 31, 2022.

Options with a weighted average fair value of \$4.93 per share, \$20.58 per share and \$2.67 per share were granted during the year ended December 31, 2022, December 31, 2021 and December 31, 2020, respectively.

The aggregate intrinsic value of options exercised during the years ended December 31, 2022, December 31, 2021 and December 31, 2020 was \$42.0 million and \$489.7 million and \$3.5 million, respectively.

Additional information regarding options outstanding as of December 31, 2022, is as follows:

Range of Exercise Price per Share	Number of Options Outstanding (in thousands)	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (Years)
\$0.64	2,414	\$ 0.64	\$ 0.32
\$1.05 - \$1.35	19,107	\$ 1.29	\$ 3.85
\$2.38	10,112	\$ 2.38	\$ 6.56
\$6.23	2,533	\$ 6.23	\$ 7.68
23.04	15,958	\$ 23.04	\$ 8.96
	50,124	\$ 8.65	\$ 6.05

Stock-based compensation expense is based on the grant-date fair value. The Company recognizes compensation expense for awards with only service conditions on a straight-line basis over the requisite service period of the awards, which is generally the option vesting term of four years.

Excluding options granted pursuant to the EPA Program, as of December 31, 2022, the Company had stock-based compensation of \$6.4 million related to unvested stock options not yet recognized that are expected to be recognized over an estimated weighted average period of 1.8 years.

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The following weighted average assumptions were used as inputs to the Monte Carlo simulation in determining the estimated grant-date fair value of the Company's stock options for the year ended December 31, 2022:

	Year Ended December 31,	
	2022	2021
Volatility	98.69 %	112.49 %
Risk-free interest rate	3.52 %	1.44 %
Expected dividend	—	—
Cost of equity	14.62 %	11.66 %
Weighted average fair value at grant date	\$ 4.93	\$ 20.58

All options granted during the years ended December 31, 2022 and December 31, 2021, were granted pursuant the EPA Program and were valued using a Monte Carlo simulation. The Monte Carlo simulation used in the valuation of the options required the Company to make assumptions and judgements about the variables used in the calculation including the expected term, volatility of the Company's common stock and cost of equity. The Company estimated expected term based on the midpoint between the time of vesting and the remaining time to expiration of the option. For options granted in December 2021, given the limited market trading history of the Company's common stock, volatility is based on a weighted blend of (i) the average volatility of peer companies within the automotive and energy storage industries multiplied by a ratio of the Company's volatility based on available stock price data as compared to the average volatility of the Company's peers over the same period and (ii) our implied volatility from exchange traded options. For options granted in December 2022, volatility is based on a blend of (i) the Company's historical volatility from daily closing stock prices given increased trading history and (ii) the Company's implied volatility from exchange traded options. Cost of equity is calculated using (i) risk-free rate, (ii) average peer group market beta and (iii) the market-risk premium.

The following weighted average assumptions were used as inputs to the Black-Scholes Option Pricing Model in determining the estimated grant-date fair value of the Company's stock options for the years ended December 31, 2020:

	Year Ended December 31,	
	2020	
Volatility		70.00 %
Risk-free interest rate		0.39 %
Expected term (in years)		6.08
Expected dividend		—
Weighted average fair value at grant date	\$	2.67

For options granted with only service conditions, the Company uses the simplified calculation of the expected life for the valuation of options, which takes into consideration the grant's contractual life and vesting period and assumes that all options will be exercised between the vesting date and the contractual term of the option. Given the lack of a public market for the Company's common stock prior to the Business Combination and the Company's minimal history as a public company subsequent to the Business Combination, the estimate for volatility is based on an average of the historical volatilities of the common stock of several entities with characteristics similar to those of the Company. Since these comparable companies operate in the same industry segment, the Company expects that it would share similar characteristics, such as risks profiles, volatility, capital intensity, clientele, and market growth patterns and drivers. The risk-free rate is based on the U.S. Treasury yield curve in effect at the time of grant for periods corresponding with the expected life of the option.

EPA Program

In December 2021, the Company granted stock options for the purchase of an aggregate of approximately 14.7 million shares of the Company's Class A Common Stock to the Company's Chief Executive Officer and other members of the Company's management team pursuant to the EPA Program that was approved by the Company's stockholders in December 2021. In December 2022, the remaining 2.1 million stock options under the EPA Program were granted to members of the Company's management team under the same terms as those in the initial grant in 2021, representing the final grant pursuant to the EPA Program approved in December 2021. The EPA Program consists of five equal tranches (each a "Tranche") that vest if the Company meets certain business milestones (performance conditions) and stock price targets (market conditions).

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Business Milestones

The compensation committee of the Board selected the following eleven business milestones for the EPA Program, of which one milestone must be achieved for each tranche.

- Delivery of an A-sample battery cell that meets specifications agreed upon with an automaker
- The validation by an auto maker of a completed B-sample battery cell (a B-sample battery cell is a functional, complete battery cell prototype produced from our pre-pilot or sample production line)
- Delivery of at least 1-gigawatt hour (GWh) of battery cells to a single customer
- Delivery of at least 3-gigawatt hour (GWh) of battery cells to each of three or more customers, with at least one of such customer being an auto maker
- \$5 billion in GAAP revenue over a period of trailing four quarters
- \$10 billion in GAAP revenue over a period of trailing four quarters
- Total cumulative battery cell production of 500 GWh
- Total cumulative battery cell production of 1,000 GWh
- Adjusted EBITDA margin of at least 25% over four consecutive quarters
- 10% of worldwide market share in automotive battery cells (excluding China)
- 20% of worldwide market share in automotive battery cells (excluding China)

Once a business milestone has been achieved, that business milestone will be considered achieved, even if later the Company does not maintain performance at that level.

Stock Price Targets

The stock price targets of the five tranches of the EPA Program are \$60, \$120, \$180, \$240 and \$300.

To meet the stock price targets, the stock price must be sustained and not merely momentarily achieved. Except in the case of a change in control, the Company's stock price for the purposes of assessing the stock price target will be the 120-day trailing average closing price (based on trading days), but a stock price target will not be achieved unless the trailing average closing price of the last 30 trading days of such 120-trading day period also meets or exceeds the applicable stock price target. For a stock price target for any given Tranche to be achieved, the last day of the 120-day measurement period must occur on or after the date that the requisite number of business milestones have been achieved for such Tranche.

Vesting Tranches

Each of the five Tranches vest only if the Company achieves one of the business milestones (in addition to the business milestones already achieved in a prior Tranche) and achieves the applicable stock price target on or after the business milestone is achieved, within 10 years of the initial grants. Additionally, in order to vest in any Tranche, Participants generally must continue to provide service through the date of vesting in the same position, or a similar or higher role, as when the EPA Program awards are granted.

Tranche	Business Milestone Requirement	Stock Price Target
1	Achievement of 1 business milestone	\$60
2	Achievement of 2 business milestones (inclusive of the business milestone applicable to Tranche 1)	\$120
3	Achievement of 3 business milestones (inclusive of the business milestone applicable to Tranche 2)	\$180
4	Achievement of 4 business milestones (inclusive of the business milestone applicable to Tranche 3)	\$240
5	Achievement of 5 business milestones (inclusive of the business milestone applicable to Tranche 4)	\$300

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Change in Control

In the event of a change in control of the Company, a portion of the EPA Program awards may also be eligible to vest; in such event, the business milestone requirement will not be applicable and the Company's stock price for the purposes of the stock price targets will be the price per share paid in such change in control. In the event that the Company's stock price by this measure falls between two stock price targets, linear interpolation between the two applicable stock price targets will be used to determine an additional portion of the EPA Program awards that will vest. Any portion of an EPA Program award that is not vested upon and after giving effect to a change in control will terminate.

The Company accounts for the compensation expense associated with each tranche when it determines that achievement of a related business milestone is considered probable. As of December 31, 2022, the two tranches were considered probable.

For the years ended December 31, 2022 and 2021, the Company recorded stock-based compensation expense of \$49.4 and \$2.4 million, respectively related to the EPA Program. As of December 31, 2022, the Company had approximately \$65.3 million of total unrecognized stock-based compensation expense for the business milestones currently considered probable of achievement, which will be recognized over an estimated weighted-average period of 2.7 years. As of December 31, 2022, the Company had approximately \$178.4 million of total unrecognized stock-based compensation expense for the business milestones currently considered not probable of achievement.

Restricted Stock Units

Restricted stock unit activity under the Plans are as follows:

	Number of Restricted Stock Units (in thousands)	Weighted Average Grant Date Fair Value
Balance as of December 31, 2020	13,913	\$ 8.94
Granted	2,082	30.28
Vested	(5,027)	6.00
Forfeited	(414)	10.97
Balance as of December 31, 2021	10,555	14.48
Granted	12,466	13.13
Vested	(5,297)	12.75
Forfeited	(1,161)	17.18
Balance as of December 31, 2022	16,563	13.79

The fair value of restricted stock units which vested during the year ended December 31, 2022 and December 31, 2021 was \$65.5 million and \$198.0 million, respectively. No restricted stock units vested during the year ended December 31, 2020.

As of December 31, 2022, unrecognized compensation costs related to restricted stock units was \$207.9 million and is expected to be recognized over a weighted average period of 2.9 years.

Stock-Based Compensation Expense

Total stock-based compensation expense recognized in the accompanying Consolidated Statements of Operations and Comprehensive Loss for all equity awards is as follows (amounts in thousands):

	Year Ended December 31,		
	2022	2021	2020
Research and development	\$ 62,892	\$ 29,653	\$ 9,889
General and administrative	64,218	22,522	7,135
Total stock-based compensation expense	\$ 127,110	\$ 52,175	\$ 17,024

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Note 10. Earnings (Loss) Per Share

Basic net loss per share is computed by dividing the net loss by the weighted-average number of shares of common stock outstanding during the period. Diluted earnings per share adjusts basic earnings per share for the potentially dilutive impact of stock options and warrants. As the Company has reported a loss for the year ended December 31, 2022, potentially dilutive securities including stock options and warrants, are antidilutive and accordingly, basic net loss per share equals diluted net loss per share.

The following table sets forth the computation of basic and diluted loss per Class A Common Stock and Class B Common Stock (amounts in thousands, except per share amounts):

	Year Ended December 31,		
	2022	2021	2020
Numerator:			
Net loss attributable to common stockholders - Basic	\$ (411,907)	\$ (45,966)	\$ (1,681,777)
Less: Change in fair value of assumed common stock warrant liabilities	—	(168,674)	—
Net loss attributable to common stockholders - Diluted	<u>\$ (411,907)</u>	<u>\$ (214,640)</u>	<u>\$ (1,681,777)</u>
Denominator:			
Weighted average Class A and Class B Common Stock outstanding- Basic	432,973	404,259	252,144
Effect of dilutive securities	—	5,250	—
Weighted average Class A and Class B Common Stock outstanding - Diluted	<u>432,973</u>	<u>409,509</u>	<u>252,144</u>
Net loss per share attributable to Class A and Class B Common stockholders - Basic	\$ (0.95)	\$ (0.11)	\$ (6.67)
Net loss per share attributable to Class A and Class B Common stockholders - Diluted	\$ (0.95)	\$ (0.52)	\$ (6.67)

The following table presents the potential common stock outstanding that was excluded from the computation of diluted net loss per share of common stock as of the periods presented because including them would have been antidilutive (amounts in thousands):

	Year Ended December 31,		
	2022	2021	2020
Warrants	—	—	18,150
Options outstanding	50,124	53,078	55,316
Restricted stock units	16,563	10,555	13,913
VGA contingent purchase commitment ⁽¹⁾	—	—	15,221
Total	<u>66,687</u>	<u>63,633</u>	<u>102,600</u>

- (1) This refers to VGA's commitment to purchase 15.2 million shares of Class A Common Stock for \$100.0 million subject to certain conditions including the achievement of a specified technical milestone by March 31, 2021. All shares were issued subsequent to the fulfillment of these conditions.

Note 11. Joint Venture and Redeemable Non-Controlling Interest

As described in Note 2, Summary of Significant Accounting Policies, in September 2018, the Company entered into a JVA with VWGoA and VGA and formed QSV. The Company determined the entity was a VIE with a related party, and the Company's operations were more closely associated with QSV. As such, the Company consolidates QSV for financial reporting purposes, and a non-controlling interest is recorded for VGA's interest in the net assets and operations of QSV's operations to the extent of the VGA investment. The Company's Consolidated Balance Sheets includes \$3.4 million cash and cash equivalents, of QSV both as of December 31, 2022 and December 31, 2021. Although the Company has consolidated the net assets of QSV, it has no right to the use of those assets for its standalone operations.

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The following table sets forth the change in redeemable non-controlling interest for years ended December 31, 2022, 2021 and 2020 (amounts in thousands):

	Redeemable Non-Controlling Interest
Balance as of December 31, 2019	\$ 1,710
Net loss attributable to redeemable non-controlling interest in QSV	(6)
Balance as of December 31, 2020	\$ 1,704
Net loss attributable to redeemable non-controlling interest in QSV	(11)
Balance as of December 31, 2021	\$ 1,693
Net income attributable to redeemable non-controlling interest in QSV	11
Balance as of December 31, 2022	\$ 1,704

In May 2020, the Company amended the JVA and other related agreements regarding QSV in connection with VGA's investment of \$200.0 million in the Company's Series F convertible preferred stock. The Company determined the amendments represented a reconsideration event and determined that QSV is still a variable interest entity. As the significance and nature of the business of QSV continues to be more aligned with the core business of the Company and the Company continues to absorb a majority of the variability associated with QSV's anticipated economic performance, the Company continues to be the related party most closely associated with QSV.

In September 2020, the Company entered into an agreement with VWGoA under which the Company agreed to reserve \$134.0 million from the aggregate proceeds of the Series F Preferred Stock financings and the Business Combination to fund its expected equity contributions to QSV, which amounts are included in cash and cash equivalents and marketable securities in the accompanying Consolidated Balance Sheets as of December 31, 2022 and 2021.

Note 12. Income Taxes

The Company has no domestic provision for income taxes for the years ended December 31, 2022, 2021 and 2020. The Company has no domestic current tax expense from losses generated in the U.S. and no deferred expense from the valuation allowance. The Company established a foreign subsidiary in Japan during the year ended December 31, 2021. The foreign tax provision for the year ended December 31, 2022, and December 31, 2021 is not material.

A reconciliation from U.S. statutory rate of 21% to the effective rate is as follows:

	Year Ended December 31,		
	2022	2021	2020
Federal Statutory rate	21.0 %	21.0 %	21.0 %
State tax expense	7.0 %	7.1 %	0.0 %
Stock-based compensation	1.7 %	349.5 %	0.0 %
Change in fair value of assumed common stock warrant liabilities	0.0 %	103.1 %	(7.3 %)
Research and development tax credit	2.7 %	41.5 %	0.2 %
Permanent tax items	(0.1 %)	(7.1 %)	(0.2 %)
State rate differential - change in apportionment	0.0 %	4.4 %	(0.1 %)
Prior year deferred true-up	4.6 %	2.5 %	0.1 %
Change in fair value of Series F tranche liabilities	0.0 %	0.0 %	(12.5 %)
Sec. 162(m) wage limitation	(2.2 %)	(113.9 %)	(0.1 %)
Change to valuation allowance	(34.7 %)	(408.1 %)	(1.1 %)
Effective tax rate	0.0 %	0.0 %	0.0 %

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Significant components of the Company's net deferred tax assets as of December 31, 2022 and 2021, are as follows (amounts in thousands):

	Year Ended December 31,	
	2022	2021
Deferred tax assets:		
Net operating losses	\$ 336,617	\$ 257,426
Tax credits	58,476	35,149
Accruals and stock-based compensation	28,152	10,479
Lease liability	30,571	20,234
Section 174 capitalized research & development	45,369	—
Intangibles	—	685
Gross deferred tax assets	499,185	323,973
Valuation allowance	(438,212)	(293,211)
Total deferred tax assets	\$ 60,973	\$ 30,762
Deferred tax liabilities:		
Right of use assets	\$ (24,450)	\$ (18,999)
Intangibles	(561)	—
Fixed assets	(35,962)	(11,763)
Total deferred tax liabilities	(60,973)	(30,762)
Total net deferred tax assets	\$ —	\$ —

Recognition of deferred tax assets is appropriate when realization of such assets is more likely than not. Based upon the weight of available evidence, which includes the Company's historical operating performance, cumulative net losses, and projected future losses, the Company has provided a full valuation allowance against its deferred tax assets. The Company's valuation allowance increased by \$145.0 million, \$187.4 million and \$20.1 million for the years ended December 31, 2022, 2021 and 2020, respectively. A reconciliation of the beginning and ending balances of the valuation allowance is as follows (amounts in thousands):

	Year Ended December 31,		
	2022	2021	2020
Beginning of the year	\$ (293,211)	\$ (105,781)	\$ (85,677)
Increase	(145,001)	(187,430)	(20,104)
End of the year	\$ (438,212)	\$ (293,211)	\$ (105,781)

As of December 31, 2022, the Company had federal and state net operating loss carryforwards of approximately \$1.20 billion and \$1.19 billion, respectively. The federal net operating loss carryforwards of \$170.2 million generated prior to 2018 will expire at various dates beginning in 2030, if not utilized. We have federal net operating loss carryforwards of \$1.03 billion, which can be carried forward indefinitely. The state net operating loss carryforwards will expire at various dates beginning in 2030, if not utilized.

Section 382 and Section 383 of the Internal Revenue Code and similar provisions under state law has limitations on federal and state net operating loss carryforwards and research and development credit carryforwards. The Tax Reform Act contains provisions that limit the federal net operating loss carryforwards that may be used in any given year in the event of special occurrences, including significant ownership changes. A Section 382 "ownership change" generally occurs if one or more stockholders or groups of stockholders, who own at least 5% of the Company's stock, increase their ownership by more than 50 percentage points over their lowest ownership percentage within a rolling three-year period. The Company performed the analysis and determined that it has experienced an ownership change in December 2010 and in August 2012 as a result of the preferred stock financing rounds. The federal and state net operating loss carryforwards and research and development credit carryforwards are not subject to significant limitations under Section 382 and Section 383 of the Internal Revenue Code and similar provisions under state law.

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Notes to Consolidated Financial Statements — Continued

December 31, 2022

As of December 31, 2022, the Company also has federal and California research and development credits of \$68.4 million and \$48.5 million, respectively. The federal tax credit carryforwards will expire beginning in 2031, if not utilized. The state tax credit carryforwards do not expire.

The Company records unrecognized tax benefits in accordance with ASC 740-10, *Income Taxes*. ASC 740-10 which prescribes a recognition threshold and measurement attribute for the financial statement recognition and measurement of uncertain tax positions taken or expected to be taken in the Company's income tax return and also provides guidance on de-recognition, classification, interest and penalties, accounting in interim periods, disclosure, and transition.

A reconciliation of the beginning and ending balances of unrecognized tax benefits is as follows (amounts in thousands):

	Year Ended December 31,		
	2022	2021	2020
Beginning of the year	\$ 32,172	\$ 6,575	\$ 7,076
Increase—current year positions	12,388	20,633	1,553
Decrease—current year positions	(5,056)	—	—
Increase—prior year positions	13,298	5,056	193
Decrease—prior year positions	—	(92)	(2,247)
End of the year	<u>\$ 52,802</u>	<u>\$ 32,172</u>	<u>\$ 6,575</u>

Due to the Company's full valuation allowance, the unrecognized tax benefits would not materially impact the Company's effective tax rate when recognized. The Company does not anticipate the total amounts of unrecognized tax benefits will significantly increase or decrease in the next 12 months.

The Company's policy is to classify interest and penalties associated with uncertain tax positions, if any, as a component of its income tax provision. For the years ended December 31, 2022, 2021 and 2020, the Company had no interest or penalties related to unrecognized tax benefits.

The federal and state income tax returns are open under the statute of limitations subject to tax examinations for the tax years ended December 31, 2019 through December 31, 2021 and December 31, 2018 through December 31, 2021, respectively. To the extent the Company has tax attribute carryforwards, the tax years in which the attribute was generated may still be adjusted upon examination by the IRS or state tax authorities to the extent utilized in a future period.

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

None.

Item 9A. Controls and Procedures.**Limitations on Effectiveness of Controls and Procedures**

In designing and evaluating our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act), management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives.

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our principal executive officer and principal financial officer, has evaluated the effectiveness of the design and operation of our disclosure controls and procedures as of December 31, 2022, the end of the period covered by this Report. Based upon that evaluation, our principal executive officer and principal financial officer concluded that, as of the end of the period covered by this Report, our disclosure controls and procedures were effective.

Management's Report on Internal Controls Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over our financial reporting. Our internal control over financial reporting is designed to provide reasonable assurances regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with U.S. generally accepted accounting principles. Our internal control over financial reporting includes those policies and procedures that:

- pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of our assets;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with U.S. generally accepted accounting principles, and that receipts and expenditures are being made only in accordance with authorizations of our management and directors; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements.

Our internal control systems include the controls themselves, actions taken to correct deficiencies as identified, an organizational structure providing for division of responsibilities, careful selection and training of qualified financial personnel and a program of internal audits.

Because of its inherent limitations, internal control over financial reporting 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.

Our management has assessed the effectiveness of our internal control over financial reporting as of December 31, 2022. In making this assessment, management used the criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) (2013 framework).

Based on this assessment, our management concluded that our internal control over financial reporting was effective as of December 31, 2022.

Attestation of Independent Registered Public Accounting Firm

Ernst & Young LLP, an independent registered public accounting firm, which has audited and reported on the consolidated financial statements contained in this Report, has issued its report on the effectiveness of the Company's internal control over financial reporting which is included in Part II. Item 8 - Financial Statements and Supplementary Data.

Changes in Internal Control Over Financial Reporting

There was no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) that occurred during the quarterly period ended December 31, 2022 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information.

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections.

None.

PART III

In accordance with General Instruction G.(3) of Form 10-K certain information required by this Part III will either be incorporated into this Report by reference to our definitive proxy statement for our 2023 Annual Meeting of Stockholders filed within 120 days after December 31, 2022 or will be included in an amendment to this Report filed within 120 days after December 31, 2022.

Item 10. Directors, Executive Officers and Corporate Governance.

The information that is responsive to this Item 10 of Form 10-K will be included in our 2023 Proxy Statement and is incorporated herein by reference.

Item 11. Executive Compensation

The information that is responsive to this Item 11 of Form 10-K will be included in our 2023 Proxy Statement and is incorporated herein by reference.

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

The information that is responsive to this Item 12 of Form 10-K will be included in our 2023 Proxy Statement and is incorporated herein by reference.

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

The information that is responsive to this Item 13 of Form 10-K will be included in our 2023 Proxy Statement and is incorporated herein by reference.

Item 14. Principal Accounting Fees and Services.

The information that is responsive to this Item 14 of Form 10-K will be included in our 2023 Proxy Statement and is incorporated herein by reference.

PART IV

Item 15. Exhibits, Financial Statement Schedules.

(a) List the following documents filed as a part of the report:

(1) Financial Statements:

<u>Report of Independent Registered Public Accounting Firm (PCAOB ID:42)</u>	53
<u>Consolidated Balance Sheets as of December 31, 2022 and 2021</u>	56
<u>Consolidated Statements of Operations and Comprehensive Loss for the Years ended December 31, 2022, 2021 and 2020</u>	57
<u>Consolidated Statements of Redeemable Non-Controlling Interest and Stockholders' Equity for the Years ended December 31, 2022, 2021 and 2020</u>	58
<u>Consolidated Statements of Cash Flows for the Years ended December 31, 2022, 2021 and 2020</u>	59
<u>Notes to Consolidated Financial Statements</u>	60

(2) Financial Statement Schedules. None.

(3) The exhibits listed below are filed as part of this Report are incorporated herein by reference, in each case as indicated below.

Exhibit Index

Exhibit Number	Description	Incorporated by Reference			
		Form	File No.	Exhibit	Filing Date
2.1	<u>Business Combination Agreement, dated as of September 2, 2020, by and among Kensington Capital Acquisition Corp., Kensington Capital Merger Sub Corp. and Legacy QuantumScape.</u>	S-4/A	333-248930	2.1	November 12, 2020
2.2	<u>Amendment No. 1 to Business Combination Agreement, dated as of September 21, 2020, by and among Kensington Capital Acquisition Corp., Kensington Capital Merger Sub Corp. and Legacy QuantumScape.</u>	S-4/A	333-248930	2.2	November 12, 2020
3.1	<u>Amended and Restated Certificate of Incorporation of the Company.</u>	8-K	001-39345	3.1	December 2, 2020
3.2	<u>Amended and Restated Bylaws of the Company.</u>	8-K	001-39345	3.1	October 25, 2022
4.1	<u>Specimen Common Stock Certificate.</u>	8-K	001-39345	4.1	December 2, 2020
4.2	<u>Description of Securities.</u>	10-K	001-39345	4.4	February 28, 2022
10.1	<u>Registration Rights and Lock-up Agreement, dated as of September 2, 2020, by and among Kensington Capital Acquisition Corp. and the persons named therein.</u>	8-K	001-39345	10.3	September 3, 2020
10.2	<u>Form of Senior Employee Lock-Up Agreement.</u>	8-K	001-39345	10.5	September 3, 2020
10.3+	<u>Form of Indemnification Agreement by and between the Registrant and its directors and officers.</u>	8-K	001-39345	10.7	December 2, 2020
10.4+	<u>The Registrant's 2020 Equity Incentive Plan.</u>	8-K	001-39345	10.8	December 2, 2020
10.5+	<u>The Registrant's 2020 Equity Incentive Plan — Form of Stock Option Agreement.</u>	8-K	001-39345	10.9	December 2, 2020
10.6+	<u>The Registrant's 2020 Equity Incentive Plan — Form of Restricted Stock Unit Agreement.</u>	8-K	001-39345	10.10	December 2, 2020
10.7+	<u>The Registrant's 2020 Equity Incentive Plan — Form of Restricted Stock Agreement.</u>	8-K	001-39345	10.11	December 2, 2020
10.8+	<u>The Registrant's 2020 Employee Stock Purchase Plan.</u>	8-K	001-39345	10.12	December 2, 2020
10.9+	<u>Form of Performance Stock Option Agreement under the Extraordinary Performance Award Program</u>	DEF 14A	001-39345	Appendix 1	November 8, 2021
10.10	<u>First Letter Agreement, dated as of September 2, 2020, by and among Kensington Capital Acquisition Corp., Legacy QuantumScape, and Volkswagen Group of America Investments, LLC.</u>	8-K	001-39345	10.6	September 3, 2020
10.11	<u>Second Letter Agreement, dated as of September 2, 2020, by and among Kensington Capital Acquisition Corp., Legacy QuantumScape, and Volkswagen Group of America Investments, LLC.</u>	8-K	001-39345	10.7	September 3, 2020
10.12	<u>Third Letter Agreement, dated as of September 2, 2020, by and among Kensington Capital Acquisition Corp., Legacy QuantumScape, and Volkswagen Group of America Investments, LLC.</u>	8-K	001-39345	10.8	September 3, 2020

10.13+	Offer Letter from Legacy QuantumScape to Timothy Holme, dated January 1, 2011.	S-4/A	333-248930	10.13	November 12, 2020
10.14+	Offer Letter from Legacy QuantumScape to Kevin Hettrich, dated October 11, 2011.	S-4/A	333-248930	10.14	November 12, 2020
10.15+	Offer Letter from Legacy QuantumScape to Michael McCarthy, dated December 21, 2012.	S-4/A	333-248930	10.16	November 12, 2020
10.16+	Offer Letter from Legacy QuantumScape to Mohit Singh, dated April 3, 2013.	S-4/A	333-248930	10.17	November 12, 2020
10.17	Lease, dated May 31, 2013, by and between SI 55, LLC and Legacy QuantumScape.	S-4/A	333-248930	10.18	November 12, 2020
10.18	Amendment to Lease, dated May 19, 2014, by and between SI 55, LLC and Legacy QuantumScape.	S-4/A	333-248930	10.19	November 12, 2020
10.19#	Amended and Restated Limited Liability Company Agreement of QSV Operations LLC, dated May 14, 2020, by and between Legacy QuantumScape and Volkswagen Group of America Investments, LLC.	S-4/A	333-248930	10.20	November 12, 2020
10.20#	Amended and Restated Joint Venture Agreement, dated May 14, 2020, by and among Legacy QuantumScape and the persons named therein.	S-4/A	333-248930	10.21	November 12, 2020
10.21	First Amendment to Amended and Restated Joint Venture Agreement, dated September 21, 2020, by and among Legacy QuantumScape and the persons named therein.	S-4/A	333-248930	10.22	November 12, 2020
10.22#	Series F Preferred Stock Purchase Agreement, dated May 14, 2020, by and between Legacy QuantumScape and Volkswagen Group of America Investments, LLC.	S-4/A	333-248930	10.23	November 12, 2020
10.23	Amendment No. 1 to Series F Preferred Stock Purchase Agreement, dated September 3, 2020, by and among Kensington Capital Acquisition Corp., Legacy QuantumScape and Volkswagen Group of America Investments, LLC.	S-4/A	333-248930	10.24	November 12, 2020

10.24	Letter Agreement, dated as of December 7, 2020, by and among Legacy QuantumScape, the Registrant and Volkswagen Group of America Investments, LLC.	S-1/A	333-251433	10.30	December 28, 2020
10.25+	Employee Incentive Compensation Plan.	8-K	001-39345	10.1	March 15, 2021
10.26+	Form Change in Control and Severance Agreement.	8-K	001-39345	10.2	March 15, 2021
10.27	Series F Closing Agreement, dated March 30, 2021, by an among the Registrant, Legacy QuantumScape and Volkswagen Group of America, Inc.	8-K	001-39345	1.1	April 1, 2021
10.28	Lease Agreement, dated April 2, 2021, between Exeter 1710 Automation, LLC and Legacy QuantumScape	S-1/A	333-251433	10.34	May 10, 2021
10.29	Letter Agreement dated May 13, 2021, by and among Legacy QuantumScape, Volkswagen Group of America, Inc., Volkswagen Group of America Investments, LLC and QSV Operations LLC	8-K	001-39345	10.1	May 17, 2021
10.30	Second Amendment to Lease, dated June 22, 2021, between Legacy QuantumScape and SI 55, LLC.	8-K	001-39345	10.1	June 28, 2021
10.31	Guaranty of Lease, dated June 22, 2021, between Legacy QuantumScape and SI 55, LLC.	8-K	001-39345	10.2	June 28, 2021
10.32	Lease, dated November 1, 2021, by and between the 1750 Landlord and the Company	8-K	001-39345	10.1	November 5, 2021
10.33	Lease, dated November 1, 2021, by and between the 1756/62 Landlord and the Company	8-K	001-39345	10.2	November 5, 2021
10.34	Letter Agreement dated December 17, 2021, by and among QuantumScape Battery, Inc., Volkswagen Group of America, Inc., Volkswagen Group of America Investments, LLC and QSV Operations LLC	8-K	001-39345	10.2	December 17, 2021
10.35+	The Registrant's Outside Director Compensation Policy	10-Q	001-39345	10.2	May 2, 2022
10.36+	Celina Mikolajczak Separation Agreement and Release Dated June 6, 2022	10-Q	001-39345	10.2	July 29, 2022
10.37+	Celina Mikolajczak Scientific Advisory Board Agreement Dated June 6, 2022	10-Q	001-39345	10.3	July 29, 2022
10.38	Letter Agreement dated September 27, 2022, by and among QuantumScape Battery, Inc., Volkswagen Group of America, Inc., Volkswagen Group of America Investments, LLC and QSV Operations LLC	8-K	001-39345	10.1	September 28, 2022
10.39*#	Letter Agreement, dated as of July 28, 2022, by and between Legacy QuantumScape Battery, Inc. and Volkswagen Group of America Investments, LLC				
21.1*	List of Subsidiaries of the Registrant				
23.1*	Consent of Independent Registered Accounting Firm, Ernst & Young LLP.				
24.1*	Power of Attorney (included in signature page).				
31.1*	Rule 13a-14(a)/15(d)-14(a) Certification of Principal Executive Officer.				
31.2*	Rule 13a-14(a)/15(d)-14(a) Certification of Principal Financial Officer.				
32.1†	Certification of Principal Executive Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				
32.2†	Certification of Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				

101.INS	Inline XBRL Instance Document – the instance document does not appear in the Interactive Data File because XBRL tags are embedded within the Inline XBRL document.
101.SCH	Inline XBRL Taxonomy Extension Schema Document
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

* Filed herewith.

† These exhibits are furnished with this Quarterly Report on Form 10-Q and are not deemed filed with the Securities and Exchange Commission and are not incorporated by reference in any filing of QuantumScape Corporation 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.

Portions of this exhibit have been omitted in accordance with Item 601 of Regulation S-K.

+ Indicates a management or compensatory plan.

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended, the Registrant has duly caused this Report to be signed on its behalf by the undersigned, thereunto duly authorized.

QuantumScape Corporation

Date: February 28, 2023

By: /s/ Jagdeep Singh
Jagdeep Singh
Chief Executive Officer (Principal Executive Officer)

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Jagdeep Singh and Kevin Hettrich, and each of them or his attorney-in-fact, each with the power of substitution, for him in any and all capacities, to sign any amendments to this Annual Report on Form 10-K, and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that each of said attorneys-in-fact, or his substitutes, may do or cause to be done by virtue of hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, this Report has been signed below by the following persons on behalf of the Registrant in the capacities and on the dates indicated.

Name	Title	Date
<u>/s/ Jagdeep Singh</u> Jagdeep Singh	Chief Executive Officer and Chairman (Principal Executive Officer)	February 28, 2023
<u>/s/ Kevin Hettrich</u> Kevin Hettrich	Chief Financial Officer (Principal Financial and Accounting Officer)	February 28, 2023
<u>/s/ Frank Blome</u> Frank Blome	Director	February 28, 2023
<u>/s/ Brad Buss</u> Brad Buss	Director	February 28, 2023
<u>/s/ Jeneanne Hanley</u> Jeneanne Hanley	Director	February 28, 2023
<u>/s/ Susan Huppertz</u> Susan Huppertz	Director	February 28, 2023
<u>/s/ Jürgen Leohold</u> Jürgen Leohold	Director	February 28, 2023
<u>/s/ Gena Lovett</u> Gena Lovett	Director	February 28, 2023
<u>/s/ Fritz Prinz</u> Fritz Prinz	Director	February 28, 2023
<u>/s/ J.B. Straubel</u> J.B. Straubel	Director	February 28, 2023
<u>/s/ Dipender Saluja</u> Dipender Saluja	Director	February 28, 2023
<u>/s/ Jens Wiese</u> Jens Wiese	Director	February 28, 2023

CERTAIN IDENTIFIED INFORMATION HAS BEEN EXCLUDED FROM THE EXHIBIT BECAUSE IT IS BOTH (I) NOT MATERIAL AND (II) WOULD BE COMPETITIVELY HARMFUL IF PUBLICLY DISCLOSED. [*] INDICATES THAT INFORMATION HAS BEEN REDACTED.**

Volkswagen Group of America Investments, LLC
July 28, 2022

QuantumScape Battery, Inc.
1730 Technology Drive
San Jose, CA 95110
Attn: Jagdeep Singh, CEO

Dear Mr. Singh:

Reference is made to that certain Limited Liability Company Agreement (the “**Agreement**”) dated as of September 11, 2018, as amended and restated by that certain Amended and Restated Limited Liability Company Agreement dated as of May 14, 2020 (collectively, the “LLC Agreement”), by and between QuantumScape Battery, Inc. (f/k/a QuantumScape Corporation), a Delaware corporation (“QS”) and Volkswagen Group of America Investments, LLC, a Delaware limited liability company (“VW Member”). VW Member and QS are collectively referred to as the “Parties”.

In consideration of the mutual promises contained herein, the Parties agree as follows:

1. Amendment of LLC Agreement.

(a) The definition of “QS Member Call Right Trigger” under Article I of the LLC Agreement is hereby amended and restated in its entirety as follows:

“QS Member Call Right Trigger” shall be deemed to have occurred if the Phase 1 Trigger is not completed by May 31, 2023, provided, however, that QS must reasonably consult with VW for at least ten (10) Business Days prior to exercising it rights pursuant to the QS Member Call Right Trigger.”

(b) Paragraph (i) of the definition of “VW Member Put Right Trigger” under Article I of the LLC Agreement is hereby amended and restated in its entirety as follows:

“(i) [***]”

2. Miscellaneous.

- A. Full Force and Effect. Except as set forth in this Letter Agreement, the LLC Agreement is not being amended, supplemented or otherwise modified, and the Parties agree that the terms, conditions and agreements set forth in the LLC Agreement are hereby ratified and confirmed and shall continue in full force and effect. On or after the date hereof, each reference in the LLC Agreement to “this Agreement,” “the Agreement,” “hereunder,” “herein” or words of like import shall mean and be a reference to the Agreement as amended by this Letter Agreement.
- B. Entire Agreement. In the event of any conflict between the provisions of this Letter Amendment and the provisions of the LLC Agreement, the provisions of this Letter Agreement shall control. This Letter Agreement, together with the other Transaction Agreements (as defined in the LLC Agreement), contain the entire understanding and agreement among the Parties with respect to the subject matter thereof and supersede any other prior written or oral understandings or agreements among them with respect thereto.
- C. Board Approval. The board of managers of QSV Operations LLC has approved the content and execution of this Letter Agreement by unanimous written consent dated July 28, 2022.
- D. Governing Law. This Letter Agreement shall be governed by and construed and enforced in accordance with the laws of the State of Delaware without regard to any conflict of laws, rules or principles that would require the application of any other law.
- E. Dispute Resolution. Any dispute, claim or controversy arising out of or relating to this Letter Agreement shall be resolved in accordance with Section 9.10 of the JVA (as defined in the LLC Agreement), *mutatis mutandis*.
- F. Certain Provisions. Sections 9.8 (Word Meaning, Headings), 9.9 (*Binding Effect; Inconsistencies with the JVA*), 9.10 (*Successors; No Third-Party Rights*), 9.11 (*Interpretation*), 9.12 (*Severability*), 9.13 (*Counterparts*) and 9.14 (*Counsel*) of the LLC Agreement shall apply to this Letter Agreement, *mutatis mutandis*.

[signature page follows]

Sincerely,

VOLKSWAGEN GROUP OF AMERICA INVESTMENTS, LLC

By: /s/ Kevin Duke Name: Kevin Duke
Title: VP & Secretary

Accepted and Agreed:

QUANTUMSCAPE BATTERY, INC.

By: /s/ Michael McCarthy _Name: Michael
McCarthy Title: Chief Legal Officer

Subsidiaries of QuantumScape Corporation

Name:	Jurisdiction of Incorporation or Formation:
QuantumScape Battery, Inc.	Delaware
QSV Operations LLC	Delaware
QuantumScape Japan GK	Japan

Consent of Independent Registered Public Accounting Firm

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

- (1) Post-Effective Amendment No. 5 to Registration Statement (Form S-1 on Form S-3 No. 333-251433) of QuantumScape Corporation,
- (2) Registration Statement (Form S-3 No. 333-262659) of QuantumScape Corporation,
- (3) Registration Statement (Form S-3 No. 333-266419) of QuantumScape Corporation, and
- (4) Registration Statement (Form S-8 No. 333-252606) pertaining to the 2020 Equity Incentive Plan, 2020 Employee Stock Purchase Plan, and 2010 Equity Incentive Plan of QuantumScape Corporation;

of our reports dated February 28, 2023, with respect to the consolidated financial statements of QuantumScape Corporation and the effectiveness of internal control over financial reporting of QuantumScape Corporation included in this Annual Report (Form 10-K) of QuantumScape Corporation for the year ended December 31, 2022.

/s/ Ernst & Young LLP

San Jose, California
February 28, 2023

**CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Jagdeep Singh, certify that:

1. I have reviewed this Annual Report on Form 10-K of QuantumScape Corporation;
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(s) 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(s) 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 control over financial reporting.

Date: February 28, 2023

By: /s/ Jagdeep Singh

Jagdeep Singh
Chief Executive Officer and Chairman
(Principal Executive Officer)

**CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Kevin Hettrich, certify that:

1. I have reviewed this Annual Report on Form 10-K of QuantumScape Corporation;
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(s) 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(s) 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 control over financial reporting.

Date: February 28, 2023

By: /s/ Kevin Hettrich
Kevin Hettrich
Chief Financial Officer (Principal Financial and Accounting Officer)

- (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.

By: /s/ Jagdeep Singh
Jagdeep Singh
Chief Executive Officer and Chairman
(Principal Executive Officer)

Kevin Hettrich
Chief Financial Officer (Principal Financial and Accounting Officer)